National Minimum Dataset for Injury Surveillance

NMDS (Injury Surveillance)

National Injury Surveillance Unit
Australian Institute of Health and Welfare

Version 1.1 (As at 8 February, 1994)

Contents

Acknowledgments

NISU wishes to acknowledge the developers and users of the Injury Surveillance Information System. The extensive experience gained in conducting injury surveillance based on data collected in hospital emergency departments using this system has guided the development of the NMDS (injury surveillance). Many people engaged in injury surveillance and prevention in Australia have contributed to this project by commenting on earlier drafts, participating in meetings and seminars, and undertaking pilot and test studies using early versions of the standard. Finally, we thank Ms Cindy Moller and Dr Ray Cripps for their contributions to preparation of the manuscript.

1. Abstract

The NMDS (injury surveillance) is a set of data items and classifications designed to provide the information most necessary for basic, routine public health surveillance of injury. It is intended for use in a wide range of settings in which information necessary for injury surveillance is collected. The experience gained in using the Injury Surveillance Information System (ISIS), developed by the National Injury Surveillance and Prevention Project in a large number of hospital emergency departments during several years has been taken into account in designing the NMDS (injury surveillance).

The most important reason for the development of the NMDS (injury surveillance) is to provide a standard for injury surveillance information, to facilitate the comparisons between data sources, regions and times.

Principles underlying the NMDS (injury surveillance) are:

- usefulness for public health injury surveillance
- ease of data collection (especially at the basic level)
- provision for inclusion of more detailed classifications, and additional data items, for use in settings where these are required
- compatibility with the International Classification of Diseases (revisions 9[1], 9CM[2], and 10[3])
- compatibility with the Australian National Health Data Dictionary[4].

The NMDS (injury surveillance) consists of:

1. Five core injury data items, with associated simple classifications, which define the recommended minimum to be collected. The most important item is a text description of the injury event.

2. Provision for optional use of more detailed classifications to supplement core data items.

3. A recommendation concerning general case information that should be obtained.

4. Tables of concordance with ICD revisions 9 and 10.

5. Implementation guidelines and data interchange specifications.

2. Introduction

The National Injury Surveillance Unit, in conjunction with injury surveillance and prevention practitioners in Australia, has developed a new data standard for routine injury surveillance. The standard is designed principally for use in the emergency departments of hospitals, but is also suitable for use in other settings. The standard is based on extensive experience with injury surveillance using the method developed in the Nationnal Injury Surveillance and Prevention Project[5] (more than 600,000 cases recorded at more than 50 hospitals). It is designed to balance the competing needs for simplicity in data collection, for sufficient information to be useful for public health purposes, and for compatibility with other relevant data standards (notably, the International Classification of Diseases, and the National Health Data Dictionary).

The name proposed for the complete standard is the "National Data Standard for Injury Surveillance". The core items within the standard will be referred to as the "National Minimum Data Set for Injury Surveillance". (This replaces an earlier working name, 'basic routine injury surveillance' standard.)

Several groups active in injury surveillance and prevention in Australia are collaborating with NISU and, with directors of emergency departments, and software developers, to incorporate the new data standard for injury surveillance into computerised data collection systems which are being designed to meet the needs of hospital emergency departments for case management data systems.

At a meeting convened by NISU in Sydney on June 25, 1993, the four groups most actively involved in the early development and testing of the new standard met to discuss progress to date, and to recommend amendments to the standard based on their practical experience of applying it in software, or for data collection. The groups represented at the meeting were the Monash University Accident Research Centre, the Sydney region injury surveillance centres, the Queensland Injury Surveillance and Prevention Program, and NISU. In addition, the special data system requirements of small, rural and remote settings were represented by Mr Kevin Wolfenden active in injury surveillance in the New England Region of NSW, and by Miss DeeAnn Vahlberg, assisting in establishing data collection in the Northern Territory.

Recommendations made at the meeting led to relatively minor changes in the previously circulated draft standard. This document describes the standard, and contains these alterations. It is being released by NISU, for use by interested injury surveillance groups, and as the basis for consideration in the context of health information system developments. Further information can be obtained from NISU.

This document, as its name indicates, specifies a minimum data set, intended for widespread and uniform data collection at low cost per case. Several types of users, particularly including specialist injury prevention workers, have indicated their need for more detailed classifications than those in the MDS. Attention has been directed especially to elaborations of the 'Type of Place' and 'Nature of Activity' classifications. More detailled hierarchical classifications are being developed and tested. Contact NISU for further details.

3. Background

Routine scrutiny of the occurrence of injury is an essential component of effective public health injury control. Much can be achieved using data which are collected mainly for reasons other than public health injury surveillance. Coroners' records, hospital admission data, and workers' compensation records are examples of such data sources. The special virtue of these sources is that they are already in place, and the cost and difficulty of establishing a data collection system need not be borne (entirely) by those interested in injury prevention.

Typically, however, the data collected by these systems are of limited value, often because of the selection of data items, and the ways in which data are classified. For example, most Australian hospital admission data, and all deaths data, are classified in a way that enables (most) injury deaths to be identified. The data sets enable analysis of the data by age, sex, and a few other demographic variables.

As for information useful for prevention - particularly on how injury comes about - relatively little information is provided. A four-digit 'external cause' code (or 'E-code; currently as specified in the 9th revision of the International Classification of Diseases, ICD-9) provides some insight. E-codes are available for Australian deaths data and for hospital separation data. The E-code classification distinguishes categories such as 'Motor vehicle traffic accident involving collision with another vehicle, injury to pedal cyclist' (E813.6), 'Accidental drowning and submersion in bathtub' (E910.4), and 'Suicide and self-inflicted injury by other and unspecified means: jumping or lying before moving object' (E958.0).

E-codes provide useful information, but have important limitations. For example, E-codes do not (with a few exceptions) distinguish work-related cases, nor sporting and recreational cases, nor cases occurring in educational institutions. Yet all of these categories are important, because they define classes of injuries whose prevention falls into the domain of particular organisations and sectors. Nor do E-codes specifically distinguish drownings in domestic swimming pools, which are lumped into a group 'Accidental drowning and submersion: other'. Yet drownings account for one-third of injury deaths at ages 1-4 years in Australia, and about half of these drownings occur in domestic pools. A more general concern is that the E-code approach to classification begins by requiring a decision on the role of human intent in the occurrence of the injury ('accident', 'suicide', 'assault and homicide', 'uncertain intent'). Intent is more complex than is implied by the E-code approach, and the intent-based classification tends to obscure features such as the overall role of firearms as a cause of death.

Another part of ICD-9 provides codes to represent the nature and bodily location of injury. Examples are 'Fracture of neck of femur: transcervical fracture, closed' (820.0), 'Late effect of tendon injury' (905.8), and 'Poisoning by sedatives and hypnotics: barbiturates' (967.0). This classification (or its more detailed 'Clinical Modification') is used for hospital in-patient classification, but not for Australian deaths data.

One reaction to the limitations of existing data systems has been development of special data systems, designed for the purpose of injury surveillance. The Injury Surveillance Information System (ISIS) is one such system. ISIS was designed (largely by Mr Jerry Moller) mainly for use in hospital emergency departments, and was developed and piloted by the National Injury Surveillance and Prevention Project. When ISIS was developed, few

emergency departments had electronic case information systems in place. Hence, ISIS was developed as a 'stand-alone' system. A principle of its design was to create a 'multi-axial' classification, with a separate classification for each concept of interest.

In contrast, the ICD folds several concepts into a single classification, in a somewhat complex manner. For example, some E-codes embody each of the following concepts: intent (eg suicide); type of location (eg public highway); type of road user (eg motorcycle passenger); dynamics of an injury-producing event (eg 're-entrant collision with another motor vehicle); occupation (eg crew member of a commercial aircraft); context of person when injured (eg undergoing surgical or medical care); type of substance or object involved in producing injury (eg methyl alcohol, powered lawn-mower); type of 'breakdown event' (ie 'what went wrong' and resulted in injury; eg fall from slipping, tripping or stumbling); or the mechanism whereby injury was sustained (eg immersion, poisoning, burning, exposure to electricity).

The ISIS data set and classifications have been implemented in a software application that has been used at several dozen hospitals for periods of up to 5 years. More than 600,000 records have been collected.

The experience of using the ISIS data set has been mixed. Strengths include the relatively great depth of information, both in the coded items (notably 'body part', 'nature of injury', 'context', 'location', and 'factors'), and in the free text fields (notably the 'what went wrong' field). Limitations include difficulties with some classifications (particularly 'breakdown event' and 'mechanism'); the total size of the data set (found to be difficult to apply with good reliability and completeness of ascertainment); and difficulties in linking or comparing with data from other sources (in part because of differences in data definition and classification).

An alternative to the creation of a 'stand alone' injury surveillance data system is to develop a data set and classifications, designed mainly to be taken up into other data systems, such as hospital case information systems. With this approach in mind, NISU and a number of others interested in the subject proposed a data set for this purpose, late in 1991. The data set, originally referred to as the minimum data set for 'basic routine injury surveillance', is the basis for the NMDS (injury surveillance).

The following principle have guided development of the NMDS (injury surveillance):

It should:

Provide information seen as of central importance by injury prevention practitioners;

Be sufficiently small and simple to use (at least in its simplest form; it is hierarchical) to enable its incorporation as part of the routine operation of important types of data collection site (hospital emergency departments; possibly also hospital inpatient services, coroners' offices, etc);

Have good compatibility with the International Classification of Diseases and with other widely-used data standards; and

Be capable of providing reliable and valid data.

Several groups active in injury surveillance and prevention in Australia are collaborating with NISU and, with directors of emergency departments, and software developers, to incorporate the new data standard for injury surveillance into computerised data collection systems which are being designed to meet the needs of hospital emergency departments for case management data systems.

At a meeting convened by NISU in Sydney on June 25, 1993, the four groups most actively involved in the early development and testing of the new standard met to discuss progress to date, and to recommend amendments to the standard based on their practical experience of applying it in software, or for data collection. The groups represented at the meeting were the Monash University Accident Research Centre, the Sydney region injury surveillance centres, the Queensland Injury Surveillance and Prevention Program, and NISU. In addition, the special data system requirements of small, rural and remote settings were represented by Mr Kevin Wolfenden active in injury surveillance in the NewEngland Region of NSW, and by Miss DeeAnn Vahlberg, then assisting in establishing data collection in the Northern Territory.

Taking account of recommendations made at the meeting, relatively minor changes were made to the previously circulated draft standard. This document describes the standard, and contains these alterations. It is being released by NISU for use by interested injury surveillance groups and for further consideration in the context of the development of the National Health Data Dictionary. Further information can be obtained from NISU.

3.1 Information needs for injury surveillance

The main purposes of injury surveillance are to:

i. Describe injury levels and patterns:
   to provide a basis for broad policy development; and
   to inform communities of their injury experience.
ii. Identify and describe specific categories of injury and injury risk factors;
   which are to be the subject of control efforts (i.e. target-setting);
   and to monitor progress towards these.
iii. Identify new, unusual, and previously unrecognised injury events:
   to refine and update understanding of injury; and
   to monitor the occurrence of 'sentinel events'.
iv. Describe and characterise groups of injury cases epidemiologically:
   to generate hypotheses for causal research; and
   to provide the basis for research into causal factors and the effectiveness of preventive measures.

In addition, monitoring of some aspects of trauma management and rehabilitation services may be regarded as an aspect of injury surveillance.

Obtaining Necessary Data

Currently, information for injury surveillance is derived from Australian Bureau of Statistics mortality data, routine hospital inpatient collections, surveillance systems in use at some hospital emergency departments, and from a variety of special sources (e.g. a register of spinal cord injuries; police reports of persons injured in road crashes; and the National Health Survey). Several enhancements are necessary if the objectives for injury surveillance

are to be met. The NMDS(injury surveillance) will help direct attention to the most important information needs, will improve data consistency, and facilitate comparisons and linkage. In addition, specific enhancements to existing data sources, and new sources needed for certain aspects of injury surveillance. These are outlined in the following paragraphs.

Mortality Data

As recommended elsewhere[6,7], the routine data set used by the ABS should be expanded to include the International Classification of Diseases (ICD) codes for pathophysiological nature of trauma (i.e. Chapter XVII 'N-codes'), type of place of occurrence, and type of activity at time of occurrence (the latter is part of the 10th revision of the ICD). Preferably, the data collection should also enable access to the narrative descriptions that exist for most of these injury events, in coroners records. Access to the data in a form suitable for inclusion in the mortality collection would be achieved efficiently through a national coroners' information system (see next point). Enhancement of mortality information along these lines will bring it into accord with the proposed NMDS (Injury Surveillance).

Coroners' Information System

The information necessary to enhance mortality data in ways important for injury surveillance is, in the main, recorded by coroners in the ordinary course of their work. Coroners support the use for prevention of the information that they obtain. The practical obstacle is the lack of an adequate electronic data system for coroners' information. Coroners support the development of such a system, and a detailed needs assessment has been proposed. The system should be consistent with the NMDS (Injury Surveillance).

Routine In-patient Data

Improvement in national compatibility and accessibility of hospital separations data from all States and Territories, in accordance with the 'National Health Data Dictionary - Institutional Health Care' is the primary need for injury surveillance[8]. Depending on particular needs and resources, additional data relevant to injury surveillance should be collected in some hospitals. In general, such additional data should comply with the NMDS (Injury Surveillance). The potential to make greater use of inpatient computerised case management information systems requires exploration, as this offers the prospect of much more timely information than the routine separations data system can provide.

Ambulatory Patient Data

The primary need is for formal endorsement of, and support for, the NMDS(injury surveillance) and or incorporation of this standard into patient management information systems in emergency departments. The NMDS (Injury Surveillance) has been developed for this purpose, and has now been taken up in several PMIs.

In the longer term, extension to representative national coverage of injury attendances is desirable. The practicability of this depends on development and implementation of a national minimum data set for ambulatory health care, and the inclusion of injury surveillance data items in it.

The move towards injury surveillance data collection integrated into PMIs offers the potential for improvements in efficiency and effectiveness of data collection for injury surveillance. For example, in many settings patient-level sampling of cases on which to

collect data will be possible.

Integration of Information

Several useful types of analysis of injury surveillance data depend on an ability to link data, between and within data collections, on a state-wide or national basis. For example, estimates of the incidence of injury leading to admission are distorted by the inability, in most settings, to identify readmissions (to the same hospital or another) with the same problem. Likewise, information presently obtained in emergency departments on the circumstances of injury events usually cannot be linked easily to information on length or outcome of a subsequent inpatient stay - information essential for estimating severity and costs of injuries. Potential gains are also great from linking certain information from other sectors with health sector data. For example, police and transport departments collect information on the circumstances of occurrence of road crashes, but have poor data on resulting injuries. Health sector data have complementary strengths and weaknesses. The Road Injury Information Program at NISU is investigating this potential[9].

Progress in this area depends on technical and policy factors. The key technical consideration is data comparability, which can be improved by use of data standards (such as the NMDS [Injury Surveillance]), and by inclusion of common case identifiers. The policy issue is the balance that Australian society chooses to adopt between protection of privacy (and other ethical considerations which limit the use of information), and the facilitation of injury prevention research.

Rare Injury Registers

Certain injuries are relatively rare, yet are important subjects for injury surveillance. Importance may relate to severity of outcome (e.g. spinal cord injury), or to current research needs (e.g. near drowning in early childhood). In principle, a rare injury register is similar to the more familiar 'rare diseases registers'. Details of the method must be tailored to the problem. At present, a review of a previously used method for registration of spinal cord injuries is nearing completion. The report will recommend a modified method; implementation will require support. Other plausible candidates for registers are severe brain injuries, severe burns (both defined by type of trauma). Case definition for a register might also be defined by an exposure factor (e.g. injuries related to tractor roll-over).

Trauma Service Monitoring

Increasingly, trauma care services are being considered on a regional or state-wide basis, not only at the level of individual treatment facilities. Two (in some instances, three) inter-related, but distinct, needs for information systems have emerged.

1. Many hospitals which provide high-level trauma treatment services now have a specialised trauma team, which is brought into action to deal with severe cases. Clinicians involved in these systems often have an interest in obtaining detailed case information, for patient management, clinical audit, and research purposes. These information systems are usually called Trauma Registers.

2. Some hospitals which treat trauma collect information on all patients admitted due to trauma, whether or not managed by a specialist trauma team. Such data systems tend to be distinct from the routine hospital separations system, and to provide more detailed and clinically relevant information. Usually, however, the systems are simpler than the trauma registers used by trauma teams.

3. Regional or state trauma services, comprising several clinical facilities, and ambulance services, require information systems, mainly to monitor work load, and evaluate performance. Relatively little information is required on each case (principally an indicator of case severity, general type of injury, and information on transfers, and times of treatment.

There are not yet universally agreed Australian information standards for these purposes. Moves in this direction are under way[10]. It is timely to encourage the development of mutually compatible, national data standards for these purposes, preferably within the framework of the National Health Information Agreement, and the National Health Data Dictionary. The standards should also be compatible with the NMDS (Injury Surveillance).

Risk Factor and Exposure Monitoring

Interpretation of much information on the occurrence of injury is enhanced by having available information on the frequency and distribution of exposure to risk factors. While the frequency and/or severity of a type of injury may be sufficient to warrant preventive attention, priority-setting and interpretation of changes in frequency may be much enhanced by risk factor information. Research into injury causes, and quantitative evaluation of the effect of preventive interventions usually require exposure data. Moreover, where a risk factor has a well established relationship to an injury, and where the injury is rare, or otherwise difficult to measure, monitoring of risk factor exposure may be more appropriate than monitoring of the injury.

Increasing attention is being given to this aspect of injury surveillance. ABS surveys of Safety in the Home have recently been conducted in NSW[11] and Victoria.[12] Consideration should be given to extending the approach nationally, and to planning a program of repeat surveys to monitor changes in exposure. A recently completed project commissioned by the NISU Road Injury Information Program has studied needs and opportunities for improved exposure data relevant to road safety[13].

Resolution of most specific questions of cause and effect requires special, focused research, which needs information beyond that which a practicable surveillance system can provide. Two types of injury research question can be distinguished: questions about injury causation (e.g What are the relative contributions of several causal factors to a particular type of injury?); and questions about the evaluation of activities intended to prevent injury (Does a certain intervention work?). Surveillance data often provide a starting point for causal research, high-lighting areas warranting investigation, suggesting hypotheses, and sometimes providing a set of cases on which a study can be based. However, special collection of information is generally needed.

4. Outline of the NMDS (injury surveillance), version 1.0

4.1 Overview

The core of the NMDS(injury surveillance) data standard comprises five data items and their classifications. One item is a narrative text description of the injury event, and the core system contains no classification for this. The remaining four items are categorical, and each has a recommended classification system. For all four, a simple, minimum level of classification is provided. For two of the items (trauma and Main External Cause), a more detailed classification is proposed, for use where need and resources make this appropriate. (Optional detailed classifications are being developed for the other two items, and inclusion of these in the core system will be considered during 1993/94. See Appendix 5)

The more detailed classifications can be reduced to the basic classifications (with a few exceptions (see Appendix 2). The simple level classifications represent the minimum level of data that can be regarded as complying with the injury surveillance standard.

The core injury surveillance data items and classifications are described in Table 4.1. They are elaborated in Chapter 5. For convenient summary of items and classifications, see Appendic 6.

Table 4.1 NMDS(injury surveillance) core data items

Data Item	Minimum information	Extended information
1. Narrative description of injury event	Text field with capacity for 100 characters	Text field of unlimited capacity
2. Main 'External Cause'	2A. Main 'External Cause' list (29 categories)	Full ICD 'external cause' classification. (ICD9, ICD9-CM or ICD10)
	2B. Intent list (11 categories)	
3. Type of Place	Type of Place list. (13 categories)	Draft classification (See Appendix 5)
4. Type of Activity	Type of Activity list. (9 categories).	Draft classification (See Appendix 5)
5. Trauma	5A. Nature of injury list (30 categories)	Full ICD injury classification. (ICD-9CM chapter xvii or ICD10 chapter xix.)
	5B. Body region list (22 categories)	

A useful surveillance data set must include, in addition to the injury-specific core data items, socio-demographic and other general information. The injury surveillance data will

normally be part of a general-purpose emergency department data system. Such systems normally include general information, such as age and sex, personal identifiers, and date of attendance.

National standards and standard-setting mechanisms for health sector data are emerging. The main elements are a National Health Information Agreement between the States, Territories and the Commonwealth, a National Health Data Dictionary (NHDD), and Minimum Data Sets comprising data items from the NHDD to serve particular purposes (e.g. an annual survey of hospital inpatients). Nearly all of the general information items necessary for injury surveillance are part of the subset of NHDD items which comprise the Minimum Data Set for the annual survey of hospital inpatients.

Pending the development of a national data dictionary specifically for ambulatory services, the injury surveillance data standard recommends use of general data items defined and classified in accordance with the NHDD. The only exceptions are items concerning the time and date of injury, and the time of attendance, which are not covered by the NHDD. The recommended 'General' data items for injury surveillance are summarised in Table 4.2. Data definitions and classifications are detailed in Appendix 3 (which comprises copies of the relevant parts of the National Health Data Dictionary, version 2.0), and Appendix 4. The NHDD data item "mode of separation" is not entirely apt when "separation" is from a hospital emergency department, from where a common and important mode is "Admitted to hospital". Accordingly, an expansion of NHDD item P31 to include the option "Admitted" is recommended when it is used as part of an emergency department based injury surveillance system.

Table 4.2 NMDS (injury surveillance): Recommended general information items.

Item	NHDD data item	Comment
Establishment identifier	P1	
Patient identifier	P2	
Sex	P4	
Date of birth	P5	
Area of usual residence	P9	
Mode of Separation	P31	Recommend addition of 0 = "Admitted"
Country of birth	P6	
Aboriginality	P7	
Employment status	P14	
Occupation	P15	
Preferred language	(P11 - excluded item)	This item has been excluded from the NMDS, but is still defined in the NHDD.
Date of attendance	Not in NHDD	Format as NHDD P24
Date of injury	Not in NHDD	Format as NHDD P24
Time of injury	Not in NHDD	HH (24 hour clock)
Time of attendance	Not in NHDD	HH (24 hour clock)

An optional, supplementary injury-specific classification of causal 'factors' is recommended as a basis for classifying information from the narrative text field. Unlike the basic classifications, this classification will normally be applied after data collection, rather than in 'real time'. The classification recommended is the one used in the Injury Surveillance Information System, which was based largely on one developed by the US Consumer Safety Commission. Revision of the current version is planned (See Appendix 5). Other supplementary injury surveillance data items may be proposed in future.

In summary, the Injury Surveillance data standard includes three categories of data items, as outlined in Table 4.3.

Table 4.3: Categories of items in the National Injury Surveillance Data Standard

Type of data items	Source of data definitions	Purpose
Core items for injury surveillance	Based on ICD	Items essential for basic injury surveillance
General information items	National Health Data Dictionary	To provide context for core data
Supplementary items for injury surveillance	Various	Provides recommended framework for optional more detailed injury surveillance

5. Injury surveillance core data item specifications

This chapter contains full specifications of the core items in the NMDS (injury surveillance). It also details the minimum classifications for these items, and describes the more detailed 'extrended' classifications that are available for most items.

The core items of the NMDS(injury surveillance) are:

1. Narrative description of injury event.
2. Main 'external cause'.
   - 2A. Main 'external cause'
   - 2B. Intent
3. Type of place.
4. Type of activity.
5. Trauma
   - 5A. Nature of injury
   - 5B. Body region

Note that two of the items have parts A and B. The International Classification of Diseases, on which the items are based, often merges more than one concept into a single code. For the purposes of data collection for basic injury surveillance, it often is preferable to collect information separately on distinct concepts (this approach is sometimes refered to as 'multi-axial' classification). Thus, in the case of 'External Cause' of injury, the NMDS(injury surveillance) advocates separate recording of the main object or circumstance of injury (Item 2A), and of the role of human intent in the occurrence of the injury (Item 2B). Similarly, the NMDS(injury surveillance) advocates separate recording of the nature (or type) of the main trauma sustained (Item 5A), and the main part of the body so injured (Item 5B). Separate NMDS(injury surveillance) Minimum classifications are provided for part A and part B of these items.

In some circumstances, it is practicable to record information according to the full ICD standard. Where this is done, each 'External cause' code includes (implicitly or explicitly) information on the main object or circumstance of injury, and on the role of human intent. Likewise, full ICD (or ICD-CM) classification of trauma includes both 'nature' and 'body region' information.

In general, full ICD coding provides more information than does use of the NMDS(injury surveillance) Minimum classifications. Exceptions exist, however, particularly for injuries of 'suicidal', 'assaultive' or 'uncertain' intent, as the ICD9 'External Causes' classification provides many fewer classes for these than it does for 'accidental' injury.

In most instances, aggregation of full ICD codes (versions 9 or 10) to NMDS(injury surveillance) codes, is straightforward, despite the limited consideration given to multi-axial and hierarchical classification in the ICD. However, variations in categories, and in the way that residual categories have been used ('other specified', 'not stated', etc) are such that the mapping cannot be perfect.

Item 1 Narrative description of injury event.

This is a description, normally brief, in plain English of how the injury came about. The description should note what went wrong and so led to injury, the mechanism whereby bodily harm followed this event, and the object(s) or substance(s) most important in the event.

The prompt for this field on data collection forms should be:

> Describe what led to the injury. Outline **what went wrong**, and **what actually produced the bodily harm**. Be as specific as possible (mention brands and model names where known).

e.g. Hitting steel with 'Cyclone' claw hammer. Metal chip flew into eye. No eye protection.

Playing at home. Slipped on polished wood floor. Hit head on corner of glass coffee table.

Punched by another child at school during argument.

No upper limit to the length of the text description field has been set in the NMDS (injury surveillance). In some settings in which the NMDS (injury surveillance) may be used, long text descriptions may be readily available, and these can be accommodated. Where system or administrative constraints require a field length to be set, this should not be shorter than 100 characters.

Usage

The text data item in the NMDS (injury surveillance) data set is designed to obtain information on two topics: how the injury came about; and the identity of objects, substances, etc most centrally involved in the injurious event.

The text can be used in two ways. First, a researcher can read unaltered text, or search it electronically for words or phrases of interest. Sometimes the researcher may apply an ad hoc classification relevant to the particular question at hand.

Second, one or more standard classifications can be applied to the text of all cases (or to a sample of them) after collection of the data. The codes can then be used as key-words when searching for or selecting types of cases of interest.

Optional Classification for later coding of the NMDS (injury surveillance) text data

For certain purposes it is useful to code cases according to a standard classification of injurious objects, substances etc. In general, it is not practicable to do such coding as case data are recorded. Rather, coding must be done at a later time, usually by specially trained staff.

The NMDS (injury surveillance) recommends use of the Injury Surveillance Information System 'Factor' classification for this purpose. This classification was derived from one used by the US Consumer Product Safety Commission, supplemented by additional codes for industrial equipment, derived mainly from US National Institute of Occupational Safety and Health. The present factor classification requires updating and further supplementation.

Item Name	Description	Item Number
NARRATIVE	Description of the injury event	Core 1

Item Definition

A text description of the injury event, structured so as to outline: the context (eg at work as a cleaner) and place (eg in the coldstore of a supermarket) of the event, 'what went wrong' (eg slipped on spilt detergent), how the injury resulted from this (eg fell, striking head on a nearby table). Specific products, etc should be identified when possible (eg Black and Decker model XYZ power drill).

Item category	Sub-category	Item scope
Core Item	Narrative	All cases

Data Exch File Format	Data Exchange File Item Number
Text, preferably structured to indicate context, place, 'what went wrong', how injury resulted, and objects, product(s), etc involved.	1

Classification - MINIMUM	Classification - EXTENDED
None	None
Classification levels - MINIMUM	Classification levels - EXTENDED
Not applicable	Not applicable

Compatibility

The scope of this field is like that of the 3 text fields in the Injury Surveillance Information System, taken together.

Priority	Confidentiality	Reference/Source
Very high	Text can identify individuals	Injury Surveillance Information System

Data availability

Coroner: excellent (findings; autopsy report; etc). Hospital separations: uncertain. Emergency depts: good.

Comments

Text is rated of very high importance by users of ISIS, and other injury control workers. The length of the field should be left open. Where text is recorded specially for this purpose, brevity will be important. Experience with ISIS indicates that useful information on most cases can be recorded in 100 characters or fewer. Where extensive text, recorded for other purposes, is available (eg coroner systems), it should be used.

Item 2: Main 'external cause' of injury (including intent).

The International Classification of Diseases includes a widely-used system for classifying 'environmental events, circumstances and conditions as the cause of injury', known as 'External Causes codes' (E-codes). This is designed to identify a single 'cause' for each injury. Usually this is a substantial oversimplification, as most injury events are better explained as the outcome of several factors. Despite this limitation, E-codes facilitate comparison of injury data from various sources, and for summarising injury frequencies.

The full E-code classification includes several hundred classes, and so is not usually suitable for complete coding at the time of data collection (in paper-based systems; full collection may be practicable where collection is via a computer).

The simpler NMDS lists of external causes and intent are consistent with ICD E-codes (as specified in the 9th and 10th revisions of ICD). In constructing the lists an effort has been made to disentangle some of the numerous classification concepts embedded in the full E-code classification. The 'intent' concept has been placed in the second list. Further separation of coding concepts has some appeal, but is difficult to achieve while retaining a good level of comparability with ICD (especially between revisions), and simple code lists.

Users, especially those familiar with ICD-9 E-codes, should take care in using data coded according to these lists. For example, 'Falls' in NMDS itsm 2A includes more than the ICD-9 category 'Accidental falls'. 'Falls' also includes suicidal, and assaultive falls, and falls where intent is unknown. Information from NMDS item 2B enables these types of fall to be distinguished from one another.

Optional extended classification

Where possible, a more detailed classification should be used. Apply the full ICD-9 External Causes codes (4 digit), or the full ICD-10 Chapter XX codes. ICD-9 is likely to be preferable where these is an intention to make comparisons with other data coded to ICD-9 at a finer level of detail than is provided by the NMDS (injury surveillance) short classifications. In other circumstances, ICD-10 is likely to be preferable, as it includes a number of improvements over ICD-9.

Coding guidelines (MINUMUM classification)

Select the most appropriate option from the list of 'E-causes' (item 2A), AND the most appropriate option from the 'Intent' list (item 2B). Where two or more categories are judged to be equally appropriate, select the one that comes first in the list. Note:

- Land transport cases should be coded to the injured person's transport user status (eg. "Cyclist hit by car": code to "Pedal cyclist").
- Nearly all cases can be placed one of the specified 'E-cause' categories. - "Other specified external cause" should be needed very rarely. When it is used, great care should be taken to describe the unusual external cause in the narrative text field.
- A specific category should be used in preference to the "unspecified" category. Use "unspecified" only if no specific category is probable (certainty 'beyond reasonable doubt' is not required)
- 'Intent' refers to intent to produce injury, not intent to undertake an activity which happens to result in injury.
- "Other specified intent" should be needed rarely. Nearly all cases can be coded to other "intent"categories. If it is used, state the reason in the narrative field.

Core Item 2A: minimum classification for main 'external cause' of injury

<table>
<tr><td>Item Name
E_CAUSE</td><td colspan="2">Description
Composite item describing aspects of the circumstances and agencies of injury.</td><td>Item Number
Core 2A</td></tr>
<tr><td colspan="4">Item Definition
As for ICD 'External Causes'</td></tr>
<tr><td colspan="2">Item category
Core item</td><td>Sub-category
ICD</td><td>Item scope
All cases</td></tr>
<tr><td>Format: MINIMUM
NN</td><td>Data Exchange File Item No.
2</td><td>Format: EXTENDED
ANNN</td><td>Data Exchange File Item No.
22</td></tr>
<tr><td colspan="2">Classification
See below</td><td colspan="2">Classification
ICD-9 External cause codes E800-E999
or
ICD-10 External cause codes V01 to Y98.</td></tr>
<tr><td colspan="2">Compatibility
Mortality, hospital morbidity: good. ISIS: fair.</td><td colspan="2">Compatibility
Mortality, hospital morbidity: good. ISIS: limited.</td></tr>
<tr><td>Priority
Essential</td><td>Confidentiality</td><td colspan="2">Reference/Source
ICD and NISU</td></tr>
<tr><td colspan="4">Data availability
Coroner, inpatients: good. Emergency departments: good</td></tr>
<tr><td colspan="4">Comments
Extended E-cause classification is used for deaths and hospital separation data, and is being introduced into some emergency departments. Computer assisted coding may make full E-coding practicable in more settings.</td></tr>
</table>

Item 2A: Minimum classification

1. Motor vehicle - driver
2. Motor vehicle - passenger
3. Motorcycle - driver
4. Motorcycle - passenger
5. Pedal cyclist or pedal cycle passenger
6. Pedestrian
7. Horse related
8. Other transport-related circumstance
9. Fall - low (same level, or < 1 metre, or no info. on height)
10. Fall - high
11. Drowning, submersion - swimming pool
12. Drowning, submersion - other
13. Other threat to breathing (incl strangulation and asphyxiation)
14. Fire, flames, smoke
15. Hot drink, food, water, other fluid, steam, gas, or vapour
16. Hot object or substance
17. Poisoning - medication
18. Poisoning - other substance
19. Firearm
20. Cutting, piercing object
21. Dog related
22. Animal-related (not horse or dog)
23. Struck by object or person
24. Machinery in operation
25. Electricity
26. Hot conditions (natural origin, incl. sunlight)
27. Cold conditions (natural origin)
28. Other specified external cause
29. Unspecified external cause

Core Item 2B : Intent

<table>
<tr><td>Item Name
INTENT</td><td colspan="2">Description
Role of human intent in the injury occurrence</td><td>Item Number
Core 2B</td></tr>
<tr><td colspan="4">Item Definition
Assessment by the data recorder of the most likely role of human intent in the occurrence of the injury. (For this purpose, the issue is intent to produce injury, not intent to undertake an activity which happened to result in injury.)</td></tr>
<tr><td>Item category
Core Item</td><td>Data Exch File Item No
3</td><td>Sub-category
ICD</td><td>Item scope
All cases</td></tr>
<tr><td colspan="2">Format: MINIMUM
NN</td><td colspan="2">Format: EXTENDED
Separate intent item not req.</td></tr>
<tr><td colspan="2">Classification: if MINIMUM E_CAUSE data
1 Accident
2 Intentional self-harm
3 Sexual assault
4 Neglect or maltreatment by parent or guardian
5 Maltreatment by domestic partner
6 Other assault
7 Event of undetermined intent
8 Legal intervention or operations of war
9 Adverse effect or complications of medical and surgical care
10 Other specified intent
11 Intent not specified</td><td colspan="2">Classification: if FULL E_CAUSE data
Separate intent item not required.</td></tr>
<tr><td colspan="2">Compatibility
ICD, ISIS: good.</td><td colspan="2">Compatibility
ICD, ISIS: good.</td></tr>
<tr><td>Priority
High</td><td>Confidentiality
Sensitive</td><td colspan="2">Reference/Source
Derived from ICD</td></tr>
<tr><td colspan="4">Data availability
Good (but see Comments)</td></tr>
<tr><td colspan="4">Comments
Primary question is validity, given the ambiguity and sensitivity that surrounds assessment of intent in many cases.
Intent classification is implicit in Full E-code classification. In settings using full E-code classification it is not necessary to use a separate INTENT field for data collection.</td></tr>
</table>

Item 3: Type of place where the injury event occurred.

Information concerning the type of place at which injury occurred helps to divide injury cases into categories relevant to various responsible agencies, etc. Information about the setting of occurrence is often important for prevention.

The 13 categories of the MINIMUM classification can be grouped to match the ICD-9 or the ICD 10 'Place of occurrence' classifications by simple aggregation (see Appendix 2).

Usage notes in the ICD limit use of the 'Place of occurrence' classification to cases classified to ICD E-codes other than transport, legal intervention, operations of war, complications of medical and surgical care, and sequelae of external causes (late effects, etc.). These restrictions are not advocated here, and Type of Place should be recorded for all cases. In particular, it is important to code "Type of Place"="Street or Highway" in road traffic cases, as these cases cannot be distinguished otherwise.

Coding guideline (MINIMUM classification)
Select the most appropriate category. Where two or more categories are judged to be equally appropriate, select the one that comes first in the classification list. The specific type of place should be described in the narrative field.

Optional extended classification
Where desired, a more detailed classification may be used. (See Appendix 5).

<table>
<tr><td colspan="2">Item Name
PLACE</td><td colspan="2">Description
Type of place.</td><td>Item Number
Core 3</td></tr>
<tr><td colspan="5">Item Definition
Type of place at which the person was situated when injury occurred</td></tr>
<tr><td colspan="2">Item category
Core Item</td><td>Sub-category
ICD</td><td colspan="2">Item scope
All cases</td></tr>
<tr><td>Format: MINIMUM
NN</td><td>Data Exch File Item
4</td><td>Format: EXTENDED
NNNN</td><td colspan="2">Data Exch File Item
23</td></tr>
<tr><td colspan="2">Classification
See table below and Appendix 2.</td><td colspan="3">Classification
See Appendix 5 for proposed classification.</td></tr>
<tr><td colspan="2">Compatibility
ICD 9 & 10: good ISIS: fair</td><td colspan="3">Compatibility
ICD 9 & 10: good. ISIS: good</td></tr>
<tr><td>Priority
Essential</td><td>Confidentiality</td><td colspan="3">Reference/Source
ICD; NISU</td></tr>
<tr><td colspan="5">Data availability
Coroner, emergency departments, hospital separations: good.</td></tr>
<tr><td colspan="5">Comments
Place codes in ICD-10 are only slightly changed from those in ICD-9. PLACE distinguishes groups of injury cases of importance to major interest groups and regulatory agencies.
Some types of place could, with justification, be allocated to more than one of the categories.

For example, is a public swimming pool a place for sport (6) or recreation (5)? Is a post office better regarded as a trade or service area (8) or a public building (3)? Where they offer guidance, we have followed the guidelines of ICD-9 and ICD-10 in making these decisions. A more substantial problem is the absence of ICD guidance for coding many types of place. Queries and suggestions are invited.</td></tr>
</table>

Coding examples

Code	Type of Place	Includes	Excludes
1	Home	Farm house, home premises, house, non-institutional place of residence, apartment, boarding house, caravan park (resident.), private: driveway to home, garage, garden/yard to home, path (walk) to home, swimming pool in private house, garden	Institutional place of residence (2), abandoned, derelict house (12), home under construct but not yet occupied (9)
2	Residential institution	Children's home, dormitory, home for the sick, military camp, nursing home, old people's home, orphanage, reform school, hospice, prison	Hospital (4)
3	School, other institution, public administration area	Building, including adj grounds, used by the general public or by a particular group of the public such as: assembly hall, campus, church, cinema, clubhouse, college, court house, dance hall, day care centre, gallery/library, kindergarten, museum, music hall, post office, university/inst for higher education, opera house, public hall, school (public private), theatre, youth centre.	Hospital (4), building under construction (9), sports and athletics areas (6), recreation areas (5), trade and service areas (8).
4	Hospital	Hospital	Hospice, nursing home
5	Place for recreation	Amusement park, public park,	Sports, athletics grounds (6)
6	Sports and athletics area	Cricket ground, riding school, basketball court, golf course, stadium, skating rink	Amusement park, public park
7	Street or highway	Freeway, road, footpath	Private driveway (1)
8	Trade or service area	Bank, petrol station, supermarket	
9	Industrial/construct -ion area	Any building under construction, dry dock, industrial yard, workshop	Mine, quarry, tunnel under construct. (10)
10	Mine/quarry	Mine quarry tunnel under constr.	
11	Farm	Farm buildings and land, ranch.	Farm house (1)
12	Other spec place	Forest, beach, pond, abandoned or derelict house.	Park, public or amusement (5)
13	Unspec. place		

Sources: ICD-9 and ICD-10

Item 4: Type of activity of the person when injured.

The type of activity at the time of injury helps to divide injury cases into groups of interest to responsible agencies, such as occupational health and safety organisations, sporting bodies, and educational authorities, and helps to describe the setting of occurrence A classification of Activity has been introduced in revision 10 of the ICD. The classification proposed here is based on that of the ICD, with the addition of two categories (6 and 7).

ICD10 limits use of 'Activity' to events codable to external causes except legal intervention, operations of war, complications of medical and surgical care and sequelae of external causes (late effects etc.). These restrictions are not advocated here: Injury associated with legal intervention and operations of war may be sustained while engaged in many types of activity. Medical complications usually occur when the type of activity is 'being cared for'.

Coding guideline
Select the most appropriate category. Where two or more categories are judged to be equally appropriate, select the one that comes first in the classification. "Other specified activity" should be used infrequently. When it is used, care should be taken to describe the activity in the narrative field.

Optional EXTENDED classification
Where desired, a more detailed classification may be used. (See Appendix 5).

<table>
<tr><td>Item Name
ACTIVITY</td><td colspan="2">Description
Type of activity when injured</td><td>Item Number
Core 4</td></tr>
<tr><td colspan="4">Item Definition
Type of activity being undertaken by the person when injured.</td></tr>
<tr><td colspan="2">Item category
Core Item</td><td>Sub-category
ICD</td><td>Item scope
All cases</td></tr>
<tr><td>Format: MINIMUM
N</td><td>Data exchange file item
5</td><td>Format:EXTENDED
NNN</td><td>Data exchange file item
24</td></tr>
<tr><td colspan="2">Classification
1 Sports activity
2 Leisure activity
3 Working for income
4 Other type of work (incl housework)
5 Resting, sleeping, eating, other personal activity
6 Being cared for
7 Engaged in formal educational activity
8 Other specified activity
9 Unspecified activity</td><td colspan="2">Classification
See Appendix 5.</td></tr>
<tr><td colspan="2">Compatibility
ICD-9: no equiv. ICD-10: full ISIS: limited.</td><td colspan="2">Compatibility
ICD-9: no equiv. ISIS: fair (with CONTEXT)</td></tr>
<tr><td>Priority
Essential</td><td>Confidentiality</td><td colspan="2">Reference/Source
ICD-10; NISU</td></tr>
<tr><td colspan="4">Data availability
Coroners, hospital separations: OK. Emergency Depts: good.</td></tr>
<tr><td colspan="4">Comments
ACTIVITY is the only new component of ICD added to revision 10 that is relevant to injury. As a new classification, it can be expected to require some modification. It will enable important categories of injury to be distinguished easily for the first time, notably occupational injury.</td></tr>
</table>

Coding examples for 'Type of activity'

Code	Type of activity: Injured while engaged in:	Includes	Excludes
1	Sports activity	Physical exercise with a described functional element such as: golf, jogging, riding, school athletics, skiing, swimming, trekking, water-skiing.	
2	Leisure activity	Hobby activities; leisure-time activities with an entertainment element such being at a cinema, a dance or a party; participation in activities of a voluntary organisation.	Sports activities (1) Being cared for (6)
3	Working for income	Paid work for salary, bonus and other types of income; transportation (time) to and from such activities.	
4	Other type of work	Unpaid domestic duties such as: caring for children and relatives, cleaning, gardening, household maintenance; and other duties for which income is not gained (eg unpaid work in a family business).	Engaged in educational activity (7)
5	Resting, sleeping, eating, other personal activities	Personal hygiene	
6	*Being cared for	Care of infant by parent, patient by nurse.	
7	*Engaged in formal educational activity (as student)	Learning activities (eg attending a school session or lesson); Undergoing formal education.	
8	Other specified activity		
9	Unspecified activity		

(Based on ICD 10 guidelines)

Item 5: Trauma

This item records the nature and body region of the trauma resulting from the injury event. It is preferable to record all distinct injuries sustained in the event. To accommodate the need for simple coding, however, the classification has been designed to alow single coding.

The ICD trauma classifications (chapter XVII in ICD9; chapter XIX in ICD10) incorporate both nature of injury and bodily location in many codes. The NMDS MINIMUM classifications separate these concepts into two items.

Core item 5A, Nature, is required for all cases. Body region of injury (Core item 5B) is also required for most cases. However, some types of injury, such as poisoning, can be regarded as having a general effect, and hence do not require specification of a bodily location. Other injuries, such as dental injury, have an implicit body region. A 'filler' value of "Body region" is provided for use where a specific value does not make sense (ie "22. Body region code not required"). Figure 5.1 summarises the valid combinations of "Nature" and "Body region". The "Nature" codes which require a specific "Body region" code are marked with an asterisk in the code lists.

Provision is made for coding 'multiple injuries'. Multiple injury codes should be used if more than one clinically significant injury has been sustained, and the data system in use does not permit coding of each of them. However, if one clinically significant injury has been sustained (eg a fractured femur), along with one or more insignificant injuries (eg some minor abrasions), the major injury should be coded alone, in preference to coding as "multiple injuries". As a general guide, injuries which, on their own, would be unlikely to have led to the attendance may be regarded as 'insignificant'. Where multiple injuries have been sustained, and all are codable to the same "Nature of injury" category, use this category rather than the "Multiple injuries" category (eg. two lacerations on the head should be coded to "Open wound", not to "Multiple injury".

Coding guideline

Select the most appropriate category. Where two or more "Nature" categories are judged to be equally appropriate, select the one that comes first highest in the classification. Then select the most appropriate of the "Body region" categories that are valid for the selected "Nature" category (refer to Figure 5.1).

Coding Examples:

"fractured skull and fractured femur": => fracture; multiple body regions.
"fractured vault of skull; fractured base of skull": => fracture; head.
(NOT "multiple" because within same body region.)
"fractured skull; deeply lacerated thigh": => multiple injury; multiple body regions.
"fractured skull; scratched thigh": => fracture; head.
(principle: ignore minor injuries.)
"head injury": => unspecified nature; head.
"multiple pelvic and abdominal injuries": => unspecified nature; multiple body regions.
"multiple fractures": => fractures; unspecified body region.
"multiple fractures, all limbs": => fractures; multiple body regions.
"injured" or "multiple injuries": => unspecified nature; unspecified body region.
"radiation burns": => other specified nature; unspecified body region.

"decompression sickness": => other specified nature; body region not required.
"head and chest injury": => unspecified nature; multiple body regions.
"lacerations and fractures": => multiple injuries; unspecified body region.
"lacerations and fractures, all limbs": => multiple injuries; multiple body regions.
"poisoning and drowning": => multiple injuries; body region not required.
"fractured femur and electrical injury": => multiple injuries; multiple body regions.

Optional EXTENDED classification

Where possible, a more detailed classification should be used. Apply the full ICD-9 CM Injury and Poisoning codes (Chapter XVII), or the ICD-10 Injury, Poisoning, etc codes (Chapter XIX). ICD-9 is likely to be preferable where these is an intention to make comparisons with other data coded to ICD-9 at a finer level of detail than is provided by the NMDS (injury surveillance) short classifications. In other circumstances, ICD-10 is likely to be preferable, as this classification includes a number of improvements over ICD-9.

Core item 5A: Nature of injury.

Item Name	Description	Item Number
NATURE	Nature of main injury	Core 5A
Item Definition: The patho-physiological nature of injury.		
Item category: Core Item	Sub-category: ICD	Item scope: All cases
Format: MINIMUM: NN	Data Exchange File No.: 6	Format: EXTENDED: ANNNN / Data Exchange File No.: 25
Classification: 30 categories. See below for list. See Coding Concordance Tables, Appendix 2, for further details.	Classification: ICD-9 Chapter XVII codes 800-999 or ICD-10 Chapter XIX codes (S00-T98)	
Compatibility: ICD-10: very good. ICD-9: good. ISIS: fair-good.	Compatibility: ICD: full. ISIS: fair	
Priority: Essential	Confidentiality	Reference/Source: ICD-9 & 10; NISU
Data availability: Coroner, hospital separation, emergency dept: good		
Comments: ICD-10 combines "body part" and "nature" information more systematically than does the equivalent part of ICD-9, and lends itself well to disaggregation of the two dimensions. The disaggregated short lists are, with some exceptions, consistent with an aggregation of ISIS codes.		

Nature of injury: MINIMUM classification

1. *Superficial (excl. eye)
2. *Open wound (excl. eye)
3. *Fracture (excl. tooth)
4. *Dislocation
5. *Sprain or strain
6. *Inj. to nerve (incl spinal cord; excl intracran)
7. *Injury to blood vessel
8. *Injury to muscle or tendon
9. *Crushing injury
10. *Traumatic amputation
11. *Injury to internal organ
12. *Burn or corrosion
13. Eye injury (excl fb in external eye; incl burns)
14. Foreign body in external eye
15. Foreign body in ear canal
16. Foreign body in nose
17. Foreign body in respiratory tract (excl nose)
18. Foreign body in alimentary tract
19. Foreign body in genito-urinary tract
20. Intracranial injury (incl. concussion)
21. Dental injury (incl fractured tooth)
22. Drowning, immersion
23. Asphyxia, or other threat to breathing
24. Electrical injury
25. Poisoning, toxic effect (excl venomous bite)
26. Bite, incl invenomations
27. Other specified nature of injury
28. Injury of unspecified nature
29. Multiple injuries of more than one 'nature'
30. No injury detected

Note: "Other specified nature of injury" includes: effects of radiation; high/low temperatures; high/low air pressures; thirst; hunger; exhaustion due to exertion; complications of medical and surgical care n.e.c.; anaphylactic shock.

Core item 5B: Body Region of injury.

Item Name	Description	Item Number
REGION	Bodily location of main injury	Core 5B
Item Definition: The body part injured.		
Item category: Core Item	Sub-category: ICD	Item scope: All cases
Format:MINIMUM: NN	Data Exchange File No.: 7	Format: EXTENDED: Separate REGION code not required when full ICD codes are being used.
Classification: 2 digits, 22 categories. See below for list. See Coding Concordance Tables, Appendix 2, for further details.		Classification: Not applicable
Compatibility: ICD-10: very good. ICD-9: good. ISIS: fair-good.		Compatibility: ICD: full. ISIS: fair
Priority: Essential	Confidentiality	Reference/Source: ICD; NISU
Data availability: Coroner, hospital separation, emergency dept: good		
Comments: ICD-10 combines "body region" and "nature" information more systematically than does the equivalent part of ICD-9, and lends itself quite well to disaggregation of the two dimensions. The disaggregated short lists are, with some exceptions, consistent with an aggregation of ISIS codes.		

Body region:

1. Head
2. Face
3. Neck
4. Thorax
5. Abdomen
6. Lower back
7. Pelvis
8. Shoulder
9. Upper arm
10. Elbow
11. Forearm
12. Wrist
13. Hand (incl fingers)
14. Hip
15. Thigh
16. Knee
17. Lower leg
18. Ankle
19. Foot
20. Unspecified bodily location
21. Multiple injuries (involving more than one bodily location)
22. Body Region Code NOT REQUIRED

As "Body region not required" is implicit when certain "Nature" codes are selected collection systems may be designed to automate its entry for these "Nature" categories.

Figure 5.1: Valid combinations of 'Nature' and 'Body Region'

Permitted combinations are indicated by unshaded squares. Where 'Body Region' is implied by the 'Nature' category, no specific body region code is required. This applies to eye injury, foreign bodies in body orifices and organs, intracranial injury, and dental injury.

Body Region / Nature	HEAD	FACE	NECK	THORAX	ABDOMEN	LWR BACK	PELVIS	SHOULDER	UPPER ARM	ELBOW	FOREARM	WRIST	HAND	HIP	THIGH	KNEE	LOWER LEG	ANKLE	FOOT	UNSPEC	MULTIP >1 loc	NOT REQ
Superfic (excl eye)																						
Open (excl eye)																						
Fract (excl tooth)																						
Dislocation																						
Sprain or strain																						
Nerve inj (incl spinal cord; excl intracranial)																						
Injury to blood ves																						
Inj to musc/tendon																						
Crushing injury																						
Traum amputat																						
Inj to internal organ																						
Burn, corrosion																						
Eye injury (excl f.b. in external eye)																						
FB in external eye																						
FB in ear canal																						
FB in nose																						
FB in respiratory tract (excl nose)																						
FB in alim tract																						
FB in gen/urin tract																						
Intracranial inj (incl concussion)																						
Dental injury (incl tooth fracture)																						
Drowning, immersion																						
Asphyxia/threat to breathing																						
Electrical injury																						
Poisoning, toxic effect (excl bites)																						
Bites (incl invenom)																						
Other specified nature of injury																						
Unspec nature																						
Mult inj, >1 nature																						

6. Injury Surveillance Dataset: implementation guidelines

[This chapter will be developed further in later editions of this document.]

It is expected that the NMDS (injury surveillance) will be used in two main ways within hospital emergency departments. Many hospitals are introducing computerised case information systems, and more will do so. It is recommended that provision be made in these systems for the core NMDS (injury surveillance) data items, particularly in the case of emergency department data systems. Often, these systems will already be capable of providing recommended general information.

In other hospitals, emergency department data systems specifically designed for injury surveillance may continue to be used.. These should, at least, be capable of providing information consistent with the NMDS (injury surveillance) core items and basic classifications, along with the recommended general information .

The NMDS (injury surveillance) is not intended only for use in hospital emergency departments. It should be considered for coroner data systems, trauma registers, hospital inpatient data systems, and systems recording injury experience in settings such as schools and sporting clubs. The following comments, however, relate most directly to use of the NMDS (injury surveillance) in emergency departments.

Case Definition

The primary aim of this system for injury surveillance is to collect information during the FIRST ATTENDANCE by each emergency case at a participating hospital where the attendance is judged to be due to an EVENT WHICH PRODUCED, OR MIGHT HAVE PRODUCED, INJURY.

- '**first attendance**': in its present form, the focus of the system is on the incidence of injuries.

- '**emergency**': arrangements and terminology differ between hospitals, some having a single service for receiving injury cases (eg an Emergency Department); others have two or more services (eg a Priority Emergency Service and a Casualty Department). Injury cases attending all services should be included.

- '**event which...might have produced**': the case definition is normally applied by emergency department staff when a person arrives. At this stage, the fact of injury may be apparent (e.g. open wound) or not (e.g. crying child, said to have fallen from a horse, without obvious injury). People presenting should be included if (i) injury is apparent; or (ii) the reason for the attendance is consistent with injury occurrence. A consequence of this approach is that some cases will be collected in which, following assessment, no injury or trivial injury is found. A 'Nature of injury code for 'no injury detected' is provided.

- '**injury**' includes acute trauma, acute poisoning, conditions of rapid onset to which factors external to the person contributed significantly. It includes any condition which may properly be classified to a code in Chapter 17, 'Injury and Poisoning', of the current (9th) revision of the International Classification of Diseases (ICD-9)[2], or its

clinical modification (ICD9CM)[3]. It also includes any attendance resulting from a causal factor which may properly be classified to a code in the 'Supplementary Classification of Injury and Poisoning' (known as 'E-codes'), which forms part of ICD-9 and ICD9CM. This includes adverse consequences and complications of medical and surgical care.

The presence of factors which may have contributed to the occurrence of an injury does not alter the fact of injury. Injury surveillance data should be collected irrespective of the involvement of:

- Human intent, whether that of the injured person, or of some other person;
- Pre-existing physical or mental state; and
- Pre-existing or inter-current disease.

Difficult cases

A minority of cases present definitional difficulties, some of which are discussed here. Consult NISU if necessary.

1. **Uncertainty, on presentation, whether injury or disease** (eg unconsciousness which might be due to poisoning, a blow to the head or to a stroke). Assume injury until another diagnosis is made.

2. **Exacerbations of chronic conditions**. Typical instances are certain types of painful musculo-skeletal conditions. Sudden recurrences, or acute exacerbations, can be regarded as new events for the purposes of the 'first attendance' rule.

3. **Iatrogenic injury**. Attendances due to effects of medical treatment should be included (eg adverse reaction to a medication; poisoning due to error in dose; effects of surgery).

4. **Delayed presentation**. Cases otherwise satisfying the case definition should not be excluded simply because the person has not presented until long after the injury (e.g. A welder presents with long-standing eye irritation. On investigation, this is found to be due to a fragment of metal in his eye.)

Optional supplementary items and classifications

Data items beyond those described in this document are essential for some injury surveillance purposes, and often are desirable. Where interest and resources permit the collection of additional information, a consistent data standard should be complied with as far as possible. Supplementary data item definitions and classifications will be developed to facilitate this.

The list of supplementary items, below, includes all Injury Surveillance Information System (ISIS) data items and classifications not referred to elsewhere in the NMDS (injury surveillance). Users of ISIS who wish to adopt the NMDS (injury surveillance) while maintaining maximum consistency with ISIS should consider using these items.

Further supplementary items and classifications may be recommended, on the basis of advice from injury researchers.

Item	Item definition and Classification
Injury severity	Abbreviated Injury Score and Injury Severity Score
Blood alcohol value	g/dL
Counterpart (in transport collisions)	As in ICD-10
Geographic location of injury event	Australian Standard Geographic Classification units
Seating position in vehicle	As in ISIS
Consent to follow up contact	As in ISIS
Breakdown event	As in ISIS
Mechanism of injury	As in ISIS

7. Specification for Injury Surveillance Data interchange.

7.1 Overview

The purpose of this specification is to provide a standard file format for the exchange of Injury Surveillance Data amongst participants whose data conforms to the NMDS(injury surveillance). It does not advise on the format for coding within individual software applications, nor does it provide the means to map coding internal to particular implementations to that of the standard format. Such issues are the responsibility of individual users.

7.2 Data File Format

To enable compatibility with the many operating systems and applications used for collection of data, NMDS (injury surveillance) data-sets for exchange should consist of items in Delimited ASCII format, in which each field is enclosed in double quotes (eg. "8109"), fields are separated by a comma (eg. "8109","6") and each record is separated by a Carriage Return and Line Feed. (i.e. ASCII $0D^{Hex}$, $0A^{Hex}$)

Delimited ASCII has been chosen in preference to fixed format ASCII, mainly because of case to case variation in the length of the narrative text field.

7.3 Data Item Formats and Sequence

Data items should be exported in the format and sequence as specified in Table 7.1. To ensure commonality between files, fields 1 to 26 must be included regardless of whether or not the item has been collected.

Null values (ie fields that are empty, because they are not in use, because data have been lost, or because data were not collected) should be indicated with a single period (ie "."; ASCII $2E^{Hex}$.)

7.4 Optional Supplementary Items and Classifications

The Injury Surveillance Dataset allows for the optional collection of supplementary data items. To accommodate the various categories and combinations of items which may be collected, supplementary items should be included as pairs of fields at the end of each record. In each pair, the even-numbered field describes the contents of the following, odd-numbered field.

The first (Category) field in the pair is a text descriptor or heading of the item and the second (Detail) field in the pair contains either the relevant code, or a readily understood text value.

For example: To code seating position and model of vehicle:
1. To specify the ISIS code for motor vehicle position of driver, field 27 would be "ISIS motor vehicle seating position" and field 28 would contain "1".
2. To specify Commodore as the make of vehicle, field 29 would be "Motor vehicle model" and field 30 would be "Commodore".

8. Review and Revision Timetable

NISU proposes to institute a regular annual cycle of review and revision of the NMDS (injury surveillance). This cycle is expected to match that set for the National Minimum Dataset for Institutional Health Care, which is as follows:

Identify and accept topics for review : All Year
Set priorities for review : November
Review and revise definitions : January-June
Close review and prepare definitions : July-September
Users accept definitions : September
Agree to implement : October
Prepare for implementation by members : October-June
Implement definitions : 1 July

Revisions will take account of the imjportance of maintaining consistent time series. Where changes in classifications may have an impact on continuity, rules for appropriate treatment of data will be provided.

Table 7.1 Data Exchange File Format

No.	Field Descriptor	Format	Comments
1	Narrative	ASCII TEXT	Core Item Number 1
2	Minimum:External Cause	NN	Core Item Number 2A
3	Minimum:Intent	NN	Core Item Number 2B
4	Minimum:Place	NN	Core Item Number 3
5	Minimum:Activity	N	Core Item Number 4
6	Minimum:Nature of Main Injury	NN	Core Item Number 5A
7	Minimum:Body region of Main Injury	NN	Core Item Number 5B
8	Establishment Identifier	AAAAAA	NHDD Item - P1
9	Sex	N	1=Male, 2=Female, 9=unknown NHDD Item P4
10	Date of Birth	DD/MM/YY	NHDD Item - P5
11	Date of Attendance	DD/MM/YY	Similar to NHDD Item P24 (same format)
12	Area of Usual Residence	NNNN	NHDD Item - P9. Statistical/Local Area, coded according to the Australian Standard Geographical Classification
13	Mode of Separation From Emergency Department	N	Replaces ISIS 'Disposal'. As for NHDD Item P31 with additional category 0=admitted.
14	Country of Birth	NN	NHDD Item - P6
15	Aboriginality	N	NHDD Item P7 1=ATSI, 2=Other
16	Employment Status	N	NHDD Item - P14
17	Occupation	NN	NHDD Item - P15
18	Preferred Language	NN	NHDD Item - P11
19	Date of Injury	DD/MM/YY	Format as for NHDD item - P24
20	Time of Injury	HH:MM	24 Hour Clock
21	Time of Attendance	HH:MM	24 Hour Clock
22	Extended:External Cause	ANNN	ICD-9CM External Cause or ICD-10 Chapt XX code
23	Extended:Place	NNNN	Expansion of ICD 'Place'
24	Extended:Activity	NNN	Expansion of ICD 'Activity'
25	Extended:Main Injury	ANNNN	ICD-9CM Chapter XVII or ICD-10 Chapter XIX
26	Factor	AAAA	As for ISIS 'Factor'
27 29....	Supplementary Item Category	Text	See 7.4 Supplementary items and classifications
28 30....	Supplementary Item Detail	Text	See 7.4 Supplementary items and classifications

Formats: Text = Variable length text N = Numeric Code C = Alphabetical Code
A = Alpha-numeric Code
Abbreviations: NHDD=National Health Data Dictionary

Appendix 1. Development of the NMDS for Injury Surveillance

1986-1989: National Injury Surveillance and Prevention Project developed the Injury Surveillance Information System (ISIS) and supported its implementation in over 40 hospital emergency departments.

1990-1993: National Injury Surveillance Unit maintained ISIS and supported its users, and accepted responsibility for further development of injury surveillance.

Sept 1991: NISU convened a seminar of ISIS users. Participants proposed development of an NMDS.

Oct 1991: A discussion paper was circulated for comment (paper 0.1)

Sept 1992: A preliminary data item specification paper was prepared (paper 0.2)

Dec 1992: Preliminary specification of data classifications (paper 0.3)

Dec 1992 to Feb 1993: Consultation meetings

June 1993: An NMDS (injury surveillance) workshop proposed version 1.0 (for 1993/94)

July-December 1993: Preparation of NMDS (injury surveillance) ver. 1.0 documentation

Participants in NMDS (injury surveillance) 1.0 workshop (25th of June 1993).

Victor Carey	Childsafe NSW
Lesley Day	Monash University Accident Research Centre
Rodney Green	Childsafe NSW
James Harrison	NISU
Denise Jones	Queensland Injury Surveillance and Prevention Project
Terry Nolan	Vic. Injury Surveillance System/Royal Children's Hospital
Joan Ozanne-Smith	MUARC/VISS
Rob Pitt	QISPP
Steve Trickey	NISU
Kevin Wolfenden	Taree Community Health Centre
Dee-Ann Vahlberg	Northern Territory University

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Appendix 2. Concordance Tables: NMDS(injury surveillance) and ICD.

This appendix contains tables which map the NMDS (injury surveillance) core data item classifications against related sections of the International Classification of Diseases. Tables are provided for versions 9 and 10 of the ICD.

Key:
E826-829/.1,.3 means: "all E-codes in the range 826-829 where the 4th digit is .1 or .3".
Where particular 4th digits are not mentioned, all are implied.

2A. Main 'external cause'

NMD	Type of 'external cause'	ICD-9	ICD-10
1	Motor vehicle - driver.	E810-E825/.0	V40-V48, V50-V58, V60-V68, V70-V78/.0,.5 V49, V59, V69, V79/.0,.4
2	Motor vehicle - passenger or unspecified occupant	E810-E825/.1	V40-V48, V50-V58, V60-V68, V70-V78/.1-.4,.6,.7,.9 V39, V49, V59, V69, V79/ .1-.3,.5-.9
3	Motorcycle - driver	E810-E825/.2	V20-V29/.0,.4 V30-V38/.0,.5 V39/.0,.4
4	Motorcycle - passenger or unspecified whether driver or passenger	E810-E825/.3	V20-V29/.1-.3, .5-.9 V30-V38/.1-.4, .6-.9, V39/.1-.3, .5-.9
5	Pedal cyclist or cycle passenger	E800-E807/.3 E826-E829/.1 E810-E825/.6)	V10-V19
6	Pedestrian	E800-E807/.2 E810-E825.7 E826-E829/.0	V01-V09
7	Horse related Fall from; trampled, kicked or bitten by; etc. Injuries to pedestrians or vehicle occupants resulting from collision with a horse are coded to NMDS categories 1 to 6.	The 3 NMDS 'animal' categories (7,23 and 24) cannot be distinguished in ICD-9. The 3 categories combined are nearly equivalent to the following E-codes: E810-E825/.5 E826-E829/.2,.3 E905/all but .7 E906	Not well distinguished in ICD10. V80 part (incl other draught animals as well as horses) W55 part (incl bites by all mammals exc rats and dogs) NMDS 7 + 23 is equivalent to ICD10 V80, W53, W55-59, and W64(part)

8	Other transport related circumstances (incl railways, water transport, air transport)	E800.0-807.9/0,1,8,9 E810-E829/.4,.8,.9, E958/.5,6 E988/.5,.6 E830-847 Note: includes drowning associated with accident to watercraft (830)	V81-V99; X82;Y03; Y32.
9	Fall - low Same level, or <1m, or no info on height. Code falls in/on/from transport to transport categories.	ICD-9 does not generally specify height of fall. NMDS groups 9 + 10 are equivalent to: E880-888; E957, E968.1, and E987	W00-W08; W18; W19; Y30^{+}
10	Fall - high (>=1m) Incl jump from high place, excl fall in/on/from transport.	Refer to Group 9	W09-W17; X80, Y01, Y30^{+}
11	Drowning, submersion - swimming pool	E910.8 part (residual category)	W67-W68
12	Drowning, submersion - other than swimming pool or not specified, or associated with accident to watercraft (Gp 8)	E910/.0-.7,.9 E954 E964 E984	W65-W66 W69-W74 X71 X92 Y21
13	Other threat to breathing (incl inhalation of food, suffocation in enclosed space, strangulation, etc	E911-E913, E953, E963, E983	W75-W84, X70, X91, Y20
14	Fire, flames, smoke (incl asphyxiation or poisoning related to fires, explosion related to conflagration)	E890-E899, E958.1, E968.0, E988.1, E990	X00-X09, X76, X97, Y26
15	Hot drink, food, water, other fluid, steam, gas, or vapour (ie scalds)	E924.0, E958.2, E968.3, E988.2,	X10-X14, X77(*16) X98(*16) Y27(*16); Y36.3
16	Hot object or substance (ie contact burns etc)	E924.8(part)	X15-X19, X77(*15), X98(*15), Y27(*15), Y36.3
17	Poisoning - drugs and medicinal substances	E850-E858 E930.0-E950.5 E962.0; E980/.0-.5	X40-X44, X60-X64, X85, Y10-Y14
18	Poisoning - other substance (or unspecified whether medication)	E860.0-E869.9, E950.6-E952.9 E962.1-E962.9 E980.6-E980.9 E972, 981-982, 997.2	X45-X49, X65-X69, X86-X90, Y15-Y19

19	Firearms	E922; E955/.0-.4 E965/.0-.4; E970; E985/.0-.4; E991/.0-.2	W32-W34, X72-X74, X93-X95, Y22-Y24, Y35.0
20	Cutting, piercing object (excl machinery, power tools or appliances: 24)	E920/.3, .4, .8, .9, E956, E966, E974, E986	W25-W27, W45, X78, X99, Y28, Y35.4
21	Dog related	Refer to Group 7 (E906.0 is dog bite)	W54
22	Other animal related (all except horse or dog)	Refer to Group 7.	V80 part; W53, W55(part), W56-59, W64(part)
23	Struck by object or person (excl: pinching/jamming between objects (28); machinery in operation (24); firearm projectile (19); cutting object (20)	E916, E917, E968.2, E973, 960.0, 918, 958.0, 988.0	W20-W22, W50-52, X79, X81, Y00, Y02, Y29, Y31 Y35.3
24	Machinery in operation (incl power tools, appliances, excl in context of transport.)	E919, E920/.0, .1, .2, E836	W24, W28-W31
25	Electricity	E925, E958.4, E988.4	W85-W87
26	Hot conditions (natural origin), sunlight	E900.0	X30, X32, W92
27	Cold conditions (natural origin)	E901.0	X31, W39
28	Other specified external cause (incl late effects)	E870-E879, E900.1,E900.9, E901.1, E901.9, E902-E904, E905.7, E906.1-E906.4, E907-E909, E914-E915, E921, E923, E924/.1, .9, E926-E929, E955.5, E958/.3, .5, .7-.9, E959, E961, E965.5-E965.9, E967, E968/.4-.9, E969, E971, E975-E978, E988, E989, E991/.3, .4, E992-E999/.0, .1, .8, .9	W23-W24, W35, W56-W64, W88-W99, X20-X29, X33-X39, X81, X83-X84, X96, Y02, Y04, Y25, Y31, Y35.1-Y35.2, Y35.6-Y98.9
29	Unspecified external cause	No ICD-code for this	No ICD code for this

2B. Main External Cause: Intent

Code	Intent	ICD-9	ICD-10
1	Accident (i.e. no obvious human intention to produce the injury)	E800-E929	V01-X59
2	Intentional Self Harm	E950-E959	X60-X84
3	Sexual Assault	E960.1 (rape only)	Y05, Y07*
4	Neglect or Maltreatment by Parent or Guardian	Refer to 6 E967.0 (parent)	Y06.1, Y06.8, Y07.1, Y07.8
5	Maltreatment by Domestic Partner	Refer to 6	Y06.0, Y07.0
6	Other Assault	Sub-groups not well distinguished in ICD9 4+5+6=E960-E969	X85.0-Y04.9, Y06.2, Y06.9, Y07.2, Y07.3, Y07.9-Y09.9
7	Event of Undetermined Intent	E980-E989	Y10-Y34
8	Legal Intervention or Operations of War	E970-E978, E990-E999	Y35-Y36
9	Medical Misadventure, Adverse Effect or Complications of Medical and Surgical Care	E870-E876, E878-E879, E930-E949	Y40-Y84
10	Other Specified Intent	No ICD-9 code for this	No ICD-10 code for this
11	Intent Not Specified	No ICD-9 code for this	No ICD-10 code for this

3. Type of Place Where Injury Event Occurred

Code	Place	ICD-9	ICD-10
1	Home (incl farm house)	.0	.0
2	Residential institution (excl hospital; eg hospice, prison)	.7	.1
3	School, other institution, public admin area (excl hospital, incl day care)	.6	.2
4	Hospital	.7	.2
5	Recreation area (eg amusement park, public park)	.4	.8
6	Sports and athletics area (eg cricket ground, riding school)	.4	.3
7	Street or highway	.5	.4
8	Trade or service area (eg bank, petrol station, supermarket)	.6	.5
9	Industrial or construction area	.3	.6
10	Mine or quarry	.2	.6
11	Farm (excl farm house)	.1	.7
12	Other specified place (incl forest)	.8	.8
13	Unspecified place	.9	.9

The following tables show the aggregations of NMDS 'Place' codes required to map to ICD9 and ICD10

ICD-9	NMDS
0	1
1	11
2	10
3	9
4	5+6
5	7
6	3+8
7	2+4
8	12
9	13

ICD-10	NMDS
0	1
1	2
2	3+4
3	6
4	7
5	8
6	9+10
7	11
8	5+12
9	13

4. Type of Activity of Person When Injured

Code	Activity	ICD-10
1	Sports Activity	0
2	Leisure Activity	1
3	Working For Income	2
4	Other Type of Work (incl housework and related shopping)	3
5	Resting, sleeping, eating, other personal activity	4
6	Being Cared For (eg infant by parent, patient by nurse)	4
7	Engaged in formal Educational Activity (as student)	3
8	Other Specified Activity	8
9	Unspecified Activity	9

5A. NATURE AND BODILY LOCATION OF INJURY

NMDS(injury surveillance) 'nature of injury' groups map on ICD categories as follows:

NMDS 'Nature' category	ICD 9CM	ICD 10
1. Superficial (excl eye)	910-917; 919/.0-.3, .6-.9; 920; 922-924	S00; S10; S20; S30; S40; S50; S60; S70; S80; S90; T00;T09.0;T11.0;T13.0;T14.0
2. Open wound (excl eye)	872-884; 890-894	S01; S11; S21; S31; S41; S51; S61; S71; S81; S91; T01;T09.1;T11.1;T13.1;T14.1
3. Fracture (excl tooth)	800-801/.0,.5; 802; 803-804/.0,.5; 805-829	S02/.0-.4,.6-.9; S03/.0-.1,..3-.5; S12; S22; S32; S42; S52; S62; S72; S82; S92; T02; T08; T10; T12; T14.2
4. Dislocation	830-839	S03/.0, .1, .3; S13/.0-.3; S23/.0-.2; S33/.0-.4; S43/.0-.3; S53/.0-.1; S63/.0-.3; S73.0; S83/.0-.3; S93/.0-.3
5. Sprain/strain	840/.0,.1,.2,.8,.9; 841-848	S03/.4, .5; S13/.4-.6; S23/.3-.5; S33/.5-.7; S43/.4-.7; S53.4; S63/.4-.7; S73.1; S83/.4-.7; S93/.4-.6; T03; T09.2; T11.2; T13.2; T14.3
6. Nerve (incl sp cord; excl brain)	950-957	S04/.0,.4-.6,.9; S14; S24; S34; S44; S54; S64; S74; S84; S94; T06/.0-.2; T09/.3,.4; T11.3; T13.3; T14.4
7. Blood vessel	900-904	S09.0; S15; S25; S35; S45; S55; S65; S75; S85; S95; T06.3;T11.4;T13.4;T14.5
8. Muscle/tendon	840/.3-.6; 880-884/.2; 890-894/.2;	S09.1; S16; S29.0; S39.0; S46; S56; S66; S76; S86; S96; T09.5; T11.5; T13.5; T14.6
9. Crush injury	925-929	S07; S17; S28.0; S38/.0,.1; S47; S57; S67; S77; S87; S97; T04; T14.7
10. Amputation (incl partial)	885-887; 895-897	S08;S18;S28.1;S38/.2,.3;S48;S58;S68; S78;S88;S98;T05;T09.6;T11.6;T13.6
11. Internal organ	860-869	S26; S27; S36; S37; T06.5
12. Burn/corrosion (excl eye)	941-949	T20-T32
13. Eye injury (exc fb in ext eye)	870;871;918;921;940	S01.1; S05; T26
14. Foreign body: external eye	930	T15
15. Foreign body: ear canal	931	T16
16. Foreign body: nose	932	T17/.0, .1
17. Foreign body: resp tract	933; 934	T17/.2-.9
18. Foreign body: aliment tract	935-938	T18
19. Foreign body: genito-ur tract	939	T19
20. Intracranial (incl concussion)	800,801,803,804 /.1-.4, .6-.9; 850-854	S06
21. Dental (incl fractured tooth)	873/.62, .63, .72, .73.	S02.5; S03.2
22. Drowning, immersion	994.1	T75.1
23. Asphyxia/threat to breathing	994.7	T71
24. Electrical injury	994.8	T75.4
25. Poison/toxic effect (ex bite)	960.0-989.4; 989/.6-9	T36; T62; T64; T65
26. Bite (incl invenomation)	919/.4, .5; 989.5	T63
27. Other specified nature of injury	905-909; 990-994.0; 994/.2-.6, .9; 995-999	T09.8; T11.8; T13.8; T14.8; T33-T35; T66-T70; T73; T74; T75/.0, .2, .3, .8; T78; T79.0-T98.3
28. Unspecified nature of injury	959	T09.9; T11.9; T13.9; T14.9; T78.9
29. Injuries of >1 nature	-	-

The following tables map NMDS(injury surveillance) groups for nature of injury AND body region onto ICD categories. Each table deals with one NMDS(injury surveillance) nature of injury group. Tables are presented only for the 12 nature of injury groups which require body region codes. Characteristics of the ICD limit mapping at this level of detail, though much less with ICD-10 than with ICD-9.

Key:
+ = the range of ICD codes includes residual categories (other, multiple etc) for this and another body region eg S71.1-S71.8(+14) means that the indicated range may include "residual" cases strictly codable to 14 (hip).
* = the NMDS code comprises only part of the scope of this ICD category. Numbers indicate which other NMDS codes from this table must be combined with this one to equal the ICD category. eg. *7,8 means that the ICD-10 code S30 includes Abdomen, Lower back and Pelvis.
**For the purposes of this table, "unspecified body region" includes "region not specified in sufficient detail to allow allocation to one of the available categories".

Nature Code 1: Superficial (excl eye)

Code	Body region	ICD-9	ICD-10
1	Head (excl face)	910, 920 (*2,3)	S00.0, S00.7-S00.9
2	Face (excl eye)	910, 920 (*2,3)	S00.1-S00.5
3	Neck	910, 920 (*2,3)	S10
4	Thorax	911, 922/.0, .1	S20
5	Abdomen	911, 922.2	S30(*6,7)
6	Lower Back	911, 922.3	S30(*5,7)
7	Pelvis	911, 922/..4, .8, .9 (+5,6)	S30(*5,6)
8	Shoulder	912, 923/.00, .01, .02	S40
9	Upper Arm	912, 923/.03, .09 (+8)	S40
10	Elbow	913, 923.11	S50.0
11	Forearm	913, 923.10	S50.1-S50.9
12	Wrist	913, 923.21	S60.2-S60.9(*13)
13	Hand (incl fingers)	914, 915, 923.20, 923.3	S60.0-S60.9(*12)
14	Hip	916, 924.01	S70.0 (excl mult and unspec hip and thigh)
15	Thigh	916, 924.00	S70.1, S70.7-S70.9 (incl mult/unspec hip & thigh)
16	Knee	916, 924.11	S80.0
17	Lower Leg	916, 924.11	S80.1-S80.9
18	Ankle	916, 924.21	S90.0
19	Foot	917, 924.20, 924.3	S90.1-S90.9(incl mult/ unspec ankle and foot)
20	**Unspecified bodily location	919, 924.5, 923.9	T09.0, T11.0, T13.0, T14.0
21	Multiple injuries (involving >1 bodily location)	919, 923.8, 924.4	T00

Nature Code 2: Open Wound (excl eye)

Code	Body region	ICD-9	ICD-10
1	Head (excl face, open wound with intracranial injury (N20))	873.0-873.1	S01.0, S01.7-S01.9
2	Face (excl eye (N13))	870, 872, 873.2-873.9 (+2)	S01.1-S01.5
3	Neck	874	S11
4	Thorax (if with injury to internal organ then N11)	875	S21
5	Abdomen (if with injury to internal organ then N11)	879.2-879.5 (+4,6)	S31(*6,7)
6	Lower Back	876-877	S31(*5,7)
7	Pelvis	878	S31(*5,6)
8	Shoulder	880.0-880.2 (5th digit 0, 1 or 2)	S41.0
9	Upper Arm	880.0-880.2 (5th digit 3 or 9)(+8)	S41.1-S42.9(+8)
10	Elbow	881.0-881.2 (5th digit 1)	S51.0
11	Forearm	881.0-881.1 (5th digit 0)	S51.7-S51.9(+10)
12	Wrist	881.0-881.1 (5th digit 2)	S61(*13)
13	Hand (incl fingers)	882.0-882.1, 883.0-883.1	S61(*12)
14	Hip	890.0-890.1(*15)	S71.0
15	Thigh	890.0-890.1(*14)	S71.1-S71.8(+14)
16	Knee	891.0-891.1(*17,18)	S81.0
17	Lower Leg	891.0-891.1(*16,18)	S81.7-S81.9(+16)
18	Ankle	891.0-891.1(*16,17)	S91.0
19	Foot	892.0-892.1	S91.1-S91.9(+18)
20	Unspecified bodily location	879.6-879.9, 884.0-884.1, 894.0-894.1(*21)	T09.1, T11.1, T13.1, T14.1
21	Multiple injuries (involving >1 bodily location)	879.6-879.9, 884.0-884.1, 894.0-894.1(*20)	T01

Nature Code 3: Fracture (excl tooth)

Code	Body region	ICD-9	ICD-10
1	Head (excl face, tooth)(if fracture of skull with intracranial injury then N20)	800, 801, 803, 804/.0,.5	S02.0-S02.1, S02.7-S02.9(+2)
2	Face (excl tooth)	802	S02.2-S02.4, S02.6
3	Neck	805.0-805.1, 806.0-806.1	S12
4	Thorax	805.2-805.3, 806.2-806.3, 807.0-807.6	S22
5	Abdomen		-
6	Lower Back	805.4-805.7, 806.4-806.7	S32.0-S32.2
7	Pelvis	808	S32.3-S32.8(+6)
8	Shoulder	810, 811, 812/.0, .1	S42.0-S42.2
9	Upper Arm	812.2-812.3	S42/.3, .5-.8, (+8)
10	Elbow	812/.4, .5, 813/.0, .1	S42.4, S52/.0, .1
11	Forearm	813/.2, .3, .8, .9	S52.2-S52.4, S52.7-S52.9(+10,13)
12	Wrist	813/.4, .5, 814	S62/.0, .1
13	Hand (incl finger)	815-817	S62.2-S62.8(+12)
14	Hip	820	S72/.0, .1, .2
15	Thigh	821.0-821.1	S72/.3, .7, .8, .9 (+14)
16	Knee	821/.2, .3, 822, 823/.0, .1	S82/.0, .1, S72.4
17	Lower Leg	823.2-823.9	S82/.2, .4, .7-.9 (+18)
18	Ankle	824	S82.3, S82.5, S82.6
19	Foot	825-826	S92
20	Unspecified bodily location	805/.8, .9, 806/.8, .9, 809, 818, 827.0-827.1, 829.0-829.1	T08, T10, T12T14.2
21	Multiple injuries (involving >1 bodily location)	804.0-804.3, 805, 809, 819, 827, 828.0-828.1	T02

Nature Code 4: Dislocation

Code	Body region	ICD-9	ICD-10
1	Head (excl face)		S03.3
2	Face	830	S03.0-S03.1
3	Neck (incl traumatic rupture of disc)	839.0-839.1	S13.0-S13.3
4	Thorax (incl traumatic rupture of disc)	839/.21, .31, .61, .71	S23.0-S23.2
5	Abdomen		-
6	Lower Back	839/.20, .30, .4, .5	S33/.0, .1, .2
7	Pelvis	839.69, 839.79	S33/.3, .4(+6)
8	Shoulder	831	S43.0-S43.3
9	Upper Arm		-
10	Elbow	832	S53.0-S53.1
11	Forearm		-
12	Wrist	833	S63.0
13	Hand (incl finger)	834	S63.1-S63.3
14	Hip	835	S73.0
15	Thigh		-
16	Knee (incl torn cartilage/meniscus)	836	S83.0-S83.3
17	Lower Leg		-
18	Ankle	837	S93.0
19	Foot	838	S93/.1, .2, .3(+18)
20	Unspecified bodily location	839.8-839.9	see sprain/strain no 20
21	Multiple injuries (involving >1 bodily location)	839.8-839.9	see sprain/strain no 21

Nature Code 5: Sprain or Strain

Code	Body region	ICD-9	ICD-10
1	Head (excl face)	848.8 part	S03.5
2	Face	848.0-848.1	S03.4
3	Neck	847.0, 848.2	S13.4-S13.6
4	Thorax	847.1, 848.3-848.4	S23.3-S23.5
5	Abdomen		-
6	Lower Back	847.2-847.9, 846.0-846.9	S33/.5, .6
7	Pelvis	848.5	S33/.6, .7(+6)
8	Shoulder	840/.0, .1, .2	S43.4-S43.7
9	Upper Arm		-
10	Elbow	841.0-841.9	S53.4
11	Forearm		-
12	Wrist	842.0	S63.5
13	Hand (incl finger)	842.1	S63.6-S63.7, S63.4 (+12)
14	Hip	843	S73.1
15	Thigh		
16	Knee	844	S83.4-S83.7
17	Lower Leg		-
18	Ankle	845.0	S93.4
19	Foot	845.1	S93.5-S93.6
20	Unspecified bodily location	847.9, 848.9	T09.2, T11.2, T13.2, T14.3
21	Multiple injuries (involving >1 bodily location)		T03

Note: ICD-9 groups dislocations and subluxations (as "dislocations"), and "sprains and strains of joints and adjacent muscles". In contrast, ICD-10 groups "dislocations", and "injury of muscle and tendon". In NMDS(injury surveillance), 3 groups have been distinguished, as follows:

	ICD-9	ICD-10
Dislocation	Dislocation (830-839)	Dislocation/sprain/strain (the dislocation part)
Sprain and strain of joint/ligament	Sprain/strain (the part referring to joint/ligament)	Dislocation/sprain/strain (the rest)
Injury to muscle or tendon.	Sprain/strain (the part referring to muscle/tendon)	Injury to muscle/tendon

Nature Code 6: Injury to nerve (incl spinal cord, excl intra cranial injury) _

Code	Body region	ICD-9	ICD-10
1	Head (excl face)	950, 951/.0, .3, .5, .9, 957.0(*3)	S04/.0, .4, .6, .9
2	Face	951.4(facial nerve)	S04.5(facial)
3	Neck	952.0, 953.0, 954.0	S14
4	Thorax	952.1, 953.1,	S24
5	Abdomen	954.1	S34(*6,7)
6	Lower Back	952.2-952.4, 953.2-953.5,	S34(*5,7)
7	Pelvis	956.3	S34(*5,6)
8	Shoulder		S44(*9)
9	Upper Arm		S44(*8)
10	Elbow		S54(*11)
11	Forearm		S54(*10)
12	Wrist		S64(*13)
13	Hand (incl finger)		S64(*12)
14	Hip		S74(*15)
15	Thigh		S74(*14)
16	Knee		S84(*17)
17	Lower Leg		S84(*16)
18	Ankle		S94(*19)
19	Foot		S94(*18)
20	Unspecified bodily location	957.9	T09.3, T09.4, T11.3, T13.3, T14.4
21	Multiple injuries (involving >1 bodily location)	957.8	T06.0-T06.2

Nature Code 7: Injury to blood vessel

Code	Body region	ICD-9	ICD-10
1	Head (excl face)	900(*2,3)	S09.0(*2)
2	Face	900(*1,3)	S09.0(*1)
3	Neck	900(*1,2)	S15
4	Thorax	901	S25
5	Abdomen	902(*7)	S35(*6,7)
6	Lower Back		S35(*5,7)
7	Pelvis	902(*5)	S35(*5,6)
8	Shoulder	903(*9-13)	S45(*9)
9	Upper Arm	903(*8, 10-13)	S45(*8)
10	Elbow	903(*8, 9, 11-13))	S55(*11)
11	Forearm	903(*8-10, 12, 13)	S55(*10)
12	Wrist	903(*8-11, 13)	S65(*13)
13	Hand (incl finger)	903(*8-12)	S65(*12)
14	Hip	904/.0-.8(*14, 15-19)	S75(*15)
15	Thigh	904/.0-.8(*14, 16-19)	S75(*14)
16	Knee	904/.0-.8(*14, 15, 17-19)	S85(*17)
17	Lower Leg	904/.0-.8(*14-16, 18, 19)	S85(*16)
18	Ankle	904/.0-.8(*14-17, 19)	S95(*19)
19	Foot	904/.0-.8(*14-18)	S95(*18)
20	Unspecified bodily location	904.9	T11.4, T13.4, T14.5
21	Multiple injuries (involving >1 bodily location)		T06.3

Nature Code 8: Injury to muscle or tendon

Code	Body region	ICD-9	ICD-10
1	Head (excl face)	***	S09.1(*2)
2	Face	***	S09.1(*1)
3	Neck	***	S16
4	Thorax	***	S29.0
5	Abdomen	***	S39.0(*6,7)
6	Lower Back	***	S39.0(*5,7)
7	Pelvis	***	S39.0(*5,6)
8	Shoulder	880/.20, .21, .22. 840/.3-.6(*9)	S46(*9)
9	Upper Arm	880/.23, .29(+8), 840/.3-.6(*8)	S46(*8)
10	Elbow	881.21	S56(*11)
11	Forearm	881.20	S56(*10)
12	Wrist	881.22	S66(*13)
13	Hand (incl finger)	882.2, 883.2	S66(*12)
14	Hip	890.2(*15)	S76.0
15	Thigh	890.2(*14)	S76.1-S76.4
16	Knee	891.2(*17,18)	S86(*17)
17	Lower Leg (incl Achilles tendon)	891.2(*17,19)	S86(*16)
18	Ankle (excl Achilles tendon)	891.2(*18,19)	S96(*19)
19	Foot	892.2	S96(*18)
20	Unspecified bodily location	884.2, 894.2(*21)	T09.5, T11.5, T13.5, T14.6
21	Multiple injury (>1 body region)	884.2, 894.2(*20)	

Injury to muscle or tendon is not separated as clearly from other injuries in ICD-9 as it is in ICD-10. In the main, closed injuries of muscle or tendon belong, in the ICD-9 system, with "sprains and strains", while open injuries involving these structures would be coded to "open wounds". For purposes of relating NMDS coded data to ICD-9, injury to muscles or tendons in body regions 1 to7 should be coded to the appropriate "open wounds" categories (Nature Code 2).

Nature Code 9: Crushing injury

Where crushing is incidental to more important and specific injury, code to those injuries (eg. intracranial injury, injury to internal organ).

Code	Body region	ICD-9	ICD-10
1	Head (excl face)	925(*2,3)	S07.1-S07.9
2	Face	925(*1,3)	S07.0
3	Neck	925(*1,2)	S17
4	Thorax	926(*5-7)	S28.0
5	Abdomen	926(*4,6,7)	S38.0-S38.1(*6,7)
6	Lower Back	926(*4,5,7)	S38.0-S38.1(*5,7)
7	Pelvis	926(*4-6)	S38.0-S38.1(*5,6)
8	Shoulder	927/.00, .01, .02	S47(*9)
9	Upper Arm	927/.03, .09(+8)	S47(*8)
10	Elbow	927.11	S57.0
11	Forearm (excl elbow)	927.10	S57.8, S57.9
12	Wrist	927.21	S67.8(+*13)
13	Hand (incl finger)	927.20, 927.3	S67.0, S67.8(*12)
14	Hip	928.01	S77.0
15	Thigh	928.00	S77.1, S77.2 (hip and thigh)
16	Knee	928.11	S87.0
17	Lower Leg	928.10	S87.8(+16)
18	Ankle	928.21	S97.0
19	Foot	928.20	S97.1, S97.8
20	Unspecified bodily location	929.9, 869.0, 926.9, 927.9, 928.9	T14.7 (this code also includes traumatic amputation of unspecified body region)
21	Multiple injuries (involving >1 bodily location)	929.0, 869.0, 928.8, 927.8	T04

Nature Code 10: Traumatic amputation (include partial amputation)

Code	Body region	ICD-9	ICD-10
1	Head (excl face)	***	S08(*2)
2	Face (ie decapitation)	***	S08(*1)
3	Neck	***	S18
4	Thorax	***	S28.1
5	Abdomen	***	S38.3(*6,7)
6	Lower Back	***	S38.3(*5,7)
7	Pelvis	***	S38.3(*5,6)
8	Shoulder	887/.2-.4(*9,10)	S48.0
9	Upper Arm	887/.2-.4(*8,10)	S48.1, S48.9(+8)
10	Elbow	887/.2-.4(*8,9)	S58.0
11	Forearm	887.0-887.1(*12,13)	S58.1, S58.9(+10)
12	Wrist	887.0-887.1(*11,13)	S68.4-S68.9 incl unspec (+13)
13	Hand (incl fingers)	887.0-887.1(*11,12), 885, 886	S68.0-S68.3
14	Hip	-	S78.0
15	Thigh	897.2-897.7	S78.1, S78.9(+14)
16	Knee	897.2-897.3	S88.0
17	Lower Leg	897.0-897.1(*18)	S88.1, S88.9(+16)
18	Ankle	897.0-897.1(*17)	S98.0
19	Foot	895, 896	S98.1-S98.4
20	Unspecified bodily location	887/.4-.7	T09.6, T11.6, T13.6
21	Multiple injuries (involving >1 bodily location)	-	T05

***For body regions 1 to 7, ICD-9 does not distinguish (partial) amputation from other open wounds. When translating NMDS data to ICD-9 equivalents, convert these cases to the equivalent "Body region" categories in Nature Code 2 ("Open wound, excl eye)"

Nature Code 11: Injury to internal organ

Code	Body region	ICD-9 (includes crushing)	ICD-10
1	Head (excl face)(if intracranial injury then N20)		See intracranial injuries (19) and eye injuries (13) ?traumatic rupture of eardrum (S09.2)
2	Face		
3	Neck		
4	Thorax	860-862	S26-S27
5	Abdomen	863-866, 868	S36
6	Lower Back		
7	Pelvis	867	S37
8	Shoulder		
9	Upper Arm		
10	Elbow		
11	Forearm		
12	Wrist		
13	Hand (incl finger)		
14	Hip		
15	Thigh		
16	Knee		
17	Lower Leg		
18	Ankle		
19	Foot		
20	Unspecified bodily location	869(*21)	
21	Multiple injuries (involving >1 bodily location)	869(*20)	T06.5

Nature Code 12: Burn or Corrosion

Code	Body region	ICD-9	ICD-10
1	Head (excl face)	941.x/0,6,9	T20(*2,3)
2	Face (excl eye)	947.0, 941.x/1,3,4,5,7	T20(*1,3), T28.0, T28.5
3	Neck	941.x8	T20(*1,2)
4	Thorax	942(*5-7), 947.1-947.2	T21(*5,6,7), T27
5	Abdomen	942(*4,6,7)	T21(*4,6,7), T28.1-T28.9
6	Lower Back	942(*4,5,7)	T21(*4,5,7)
7	Pelvis	942(*5-7)	T21(*4,5,6)
8	Shoulder	943.x/4,5,6	T22(*9,10,11)
9	Upper Arm	943.x3	T22(*8,10,11)
10	Elbow	943.x2	T22(*8,9,11)
11	Forearm	943.x1	T22(*8,9,10)
12	Wrist	944.x7	T23(*13)
13	Hand (incl finger)	944.x/0-6,8	T23(*12)
14	Hip	945.x6(*15)	T24(*15,16,17)
15	Thigh	945.x6(*14)	T24(*14,16,17)
16	Knee	945.x5	T24(*14,15,17)
17	Lower Leg	945.x4	T24(*14,15,16)
18	Ankle	945.x3	T25(*19)
19	Foot	945.x/1,2	T25(*18)
20	Unspecified bodily location	943, 945.x0, 947.8, 947.9, 948-949	T30.0-T32.9
21	Multiple injuries (involving >1 bodily location)	943, 945.x9, 946.0-946.5	T29

Note: "x" indicates that any available code is valid for the fourth digit.

Burns/corrosions of respiratory tract have been included in "Thorax".
Burns/corrosions of other internal organs (including gastrointestinal tract below mouth and pharynx) have been included in "Abdomen".

The final two NMDS (injury surveillance) 'nature of injury' groups are beyond the scope of ICD9CM chapter XVII and ICD10 chapter XIX. Group 29 has no ICD equivalent. Group 30 corresponds to ICD codes in chapters other than the injury and poisoning chapter.

29	Multiple injuries of more than one nature	No ICD equivalent.	No ICD equivalent.
30	No injury detected	V65.5, V68/.0,.2,.8, V71	Z03.6, (Z04/.1-.5), Z71.1

Appendix 3. General Data Items - from the National Health Data Dictionary

This Appendix contains the full specifications for the data items in the National Health Data Dictionary version 2.0[4] which are recommended for use as general information items for use when the NMDS (injury surveillance) is used.

4.2 Patient-level data items

Item P1:	**Establishment identifier**
Scope:	Acute hospitals Private psychiatric hospitals Public psychiatric hospitals (inpatients) Public psychiatric hospitals (non-inpatients) Nursing homes
Level of enumeration:	Patient/resident
Definition:	Identifier for the establishment in which inpatient episode occurred. Each separately administered health care establishment to have a unique identifier at the national level.
Classification/coding:	Six characters—detailed type derived from hospital number State identifier—one character Establishment type—one character For example: 1 = public 2 = private 3 = repatriation Region—one character Establishments number—three characters
Justification:	To enable analyses based on geographic location of establishment and/or establishment type (public or private). Recommended by the National Committee on Health and Vital Statistics (1979).
Working party:	Morbidity Working Party Psychiatric Working Party Nursing Homes Working Party

Comment:
This data item must be used in a manner compatible with the classification of establishments in the National Minimum Data Set. A residential establishment is considered to be separately administered if managed as an independent institution for which there are financial, budgetary and activity statistics. For example, if establishment-level data for components of an area health service are not available separately at a central authority, this is not grounds for treating such components as a single establishment unless such data are not available at any level in the health care system. Refer to Section 6.1.2 for further information.

Patient Data Item P2	
Item P2:	Patient identifier
Scope:	Acute hospitals Private psychiatric hospitals Public psychiatric hospitals (inpatients) Public psychiatric hospitals (non-inpatients) Nursing homes
Level of enumeration:	Patient/resident
Definition:	Patient identifier unique within establishment.
Classification/coding:	Unspecified
Justification:	This item could be used for editing at the establishment or collection authority level and, potentially, for episode linkage. There is no intention that this item would be available beyond collection authority level.
Working party:	Morbidity Working Party Psychiatric Working Party Nursing Homes Working Party

Comment:

To date, there has been little attempt to link data within hospital morbidity collections to provide information on utilisation which is patient-based (and thus may cover a number of admissions). However, it has been done successfully in Western Australia for some years using a statewide medical record numbering system. More recently, in the Hunter region of New South Wales, patient linkage has been shown to be feasible using unit record number within hospital, and a set of identifiers excluding name, over several hospitals (Hall et al. 1986). The concept of link ability does not require routine record matching, but rather the maintenance of sufficient identifiers to allow records to be matched. In a linkable system, the actual matching of records is a special analysis and only carried out when justified.

The linking of records raises the issues of privacy and confidentiality. Methods have been developed to safeguard confidentiality. For example, in a data set in which numbers are used as identifiers, the numbers can be changed systematically so that matching is still accurate but the person to whom the records relate is not identifiable. Linkable records are preferred to routinely linked data on the grounds of preservation of privacy (Hall et al. 1986).

Item P4:	Sex
Scope:	Acute hospitals
	Private psychiatric hospitals
	Public psychiatric hospitals (inpatients)
	Public psychiatric hospitals (non-inpatients)
	Nursing homes
Level of enumeration:	Patient/resident
Definition:	The sex of the patient.
Classification/coding:	1 = male
	2 = female
	9 = unknown/indeterminate
Justification:	Required for analyses of service utilisation and epidemiological studies.
Working party:	Morbidity Working Party
	Psychiatric Working Party
	Nursing Homes Working Party

Comment:

This data item formed part of the National Committee on Health and Vital Statistics (1979) recommended level-one minimum data set and was also recommended by the Taskforce on National Hospital Statistics (1988). The Australian Health Ministers' Advisory Council Health Targets and Implementation Committee (1988) recommended that it be included in all national health statistics.

Item P5:	Date of birth
Scope:	Acute hospitals Private psychiatric hospitals Public psychiatric hospitals (inpatients) Public psychiatric hospitals (non-inpatients) Nursing homes
Level of enumeration:	Patient/resident
Definition:	The date of birth of the patient.
Classification/coding:	DD MM YY If date of birth is not known, provision should be made to collect age (in years) and a date of birth derived.
Justification:	Required to derive age of patient for analysis of utilisation by age at admission or separation (as required).
Working party:	Morbidity Working Party Psychiatric Working Party Nursing Homes Working Party

Comment:

This data item formed part of the National Committee on Health and Vital Statistics (1979) recommended level-one minimum data set and was also recommended by the Taskforce on National Hospital Statistics (1988). The Australian Health Ministers' Advisory Council Health Targets and Implementation Committee (1988) recommended that it be included in all national health statistics.

Item P6: Country of birth

Scope: Acute hospitals
Private psychiatric hospitals
Public psychiatric hospitals (inpatients)
Public psychiatric hospitals (non-inpatients)
Nursing homes

Level of enumeration: Patient/resident

Definition: The country in which the patient was born.

Classification/coding: Australian Bureau of Statistics 2-digit classification (0–99)

Justification: Ethnicity is an important concept, both in the study of disease patterns and in the provision of services. Country of birth is the most easily collected and consistently reported of possible ethnicity data items.

Uses of this data item included:

- investigating the differences in health status between different population groups in Australia and providing a basis for planning, resourcing and service delivery to reduce inequalities cost-effectively;
- enabling health care authorities and organisations to monitor the health status of migrants;
- assisting health care workers to provide socioculturally acceptable and non-discriminatory services to all migrant and ethnic groups.

Working party: Morbidity Working Party
Psychiatric Working Party
Nursing Homes Working Party

Comment:

The development of appropriate data items for classification of patients by ethnicity is made difficult by the confusion of terms used by Aboriginal groups, other ethnic groups, health professionals, States and Commonwealth and the general community.

The National Population Council *Guide to appropriate use of terminology* (1987) comments that the term 'ethnic' is used in Australia for:

- immigrants of a non-English speaking background
- recent, not long established immigrants
- not Aborigines.

However, some countries refer to 'ethnic minorities' with a long history of settlement in the country sometimes preceding the current dominant cultural group, for example, China.

The *National Guidelines for the Collection of Ethnicity Data* (Office of Multicultural Affairs 1988) made the following points:

- that data items be carefully selected to reflect the purposes of the collection; and
- that the following questions should be considered core questions for 'ethnicity'.

Priority 1: country of birth
Priority 2: proficiency in English
—very good
—good
—not good
—none
language at home.

The 1986 census included questions on country of birth, language at home, proficiency in English (as above) and ethnic origin/ancestry. 'What is each person's ancestry? For example, Greek, English, Indian, Armenian, Aboriginal, Chinese etc.'

The Australian Bureau of Statistics have proposed that the ancestry question be excluded from the 1991 census and considers that the remaining ethnicity questions are not very satisfactory (Australian Bureau of Statistics 1984).

The Taskforce on National Hospital Statistics (1988) recommended that the two ethnicity data items 'country of birth' and 'period of residence in Australia' in the National Committee on Health and Vital Statistics national minimum data set should be replaced by 'interpreter required'.

The Morbidity Working Party reviewed the possible ethnicity data items at its December 1988 meeting and identified the following possible measures of ethnicity, which are discussed below:

- country of birth
- period of residence in Australia
- Aboriginality
- ethnic group
- preferred language
- language spoken at home
- proficiency in English
- need for interpreter services.

Country of birth

This is collected by all States and Territories. It is the most easily collected and consistently reported of possible ethnicity data items and is identified as the highest priority item by the Office of Multicultural Affairs. The working party decided that this item should be reincluded in the National Minimum Data Set.

Period of residence

There is considerable evidence about changes in morbidity patterns related to length of stay in host country. Some health problem profiles change over time to mirror that of the host culture: for example, cardiovascular disease among Greek immigrants in Australia.

The overall health status of some groups on arrival is poorer than that of Australians.

However, this item was not considered a high priority by the Office of Multicultural Affairs and the working party considered that only 'country of birth' and 'Aboriginality' could be justified for inclusion in the National Minimum Data Set.

Aboriginality

This is included at Item P7 in the National Minimum Data Set.

Ethnic Group

Some health problems are generally linked to race or ethnic origin; for example, Mediterranean anaemia in Italians and Greeks, lactose intolerance in Australian Aborigines, and alcohol metabolism (lack of metabolising enzyme) in Japanese.

Some health problems are magnified due to discrimination.

Some problems are created or magnified because of racial or ethnic behaviours; for example, attitude to sex, food taboos, cooking patterns.

The Commonwealth Department of Community Services and Health proposed that after 'country of birth', the second ethnicity data item should be:

- Aboriginal
- Caucasoid
- Chinese
- Arabic
- Negroid
- Vietnamese
- Other.

South Australia and Queensland use the following ethnicity categories in their hospital morbidity collections:

South Australia	Caucasian
	Aboriginal
	Asian
	Other.
Queensland	Caucasian/European
	Aboriginal
	Torres Strait Islander
	Asian
	Other.

The Morbidity Working Party concluded that, while other ethnic groups have significant health problems, Aborigines have been clearly identified as having by far the lowest health status of any ethnic or racial group and that resources should be devoted to improving the reliability and uniform collection of 'Aboriginality' rather than towards nationally collecting an expanded set of ethnic categories. The inclusion of 'country of birth' will in any case go a long way towards identifying the health problems and service use of other ethnic groups. The Nursing Homes Working Party concurred with this view.

Language-related items:

See Item P11.

Item P7: Aboriginality

Scope:
Acute hospitals
Private psychiatric hospitals
Public psychiatric hospitals (inpatients)
Public psychiatric hospitals (non-inpatients)
Nursing homes

Level of enumeration: Patient/resident

Definition: Aboriginality of patient according to the following Commonwealth/ Australian Bureau of Statistics 'working definition':

> An Aboriginal or Torres Strait Islander is a person of Aboriginal or Torres Strait Islander descent who identifies as an Aboriginal or Torres Strait Islander and is accepted as such by the community with which he or she is associated (Department of Aboriginal Affairs, Constitutional Section 1981).

This definition shall be used in the National Minimum Data Set. Aboriginality shall be determined by patient self-identification.

Classification/coding:
1 = Aboriginal or Torres Strait Islander
2 = Other

Justification: Given the gross inequalities in health status between Aborigines and non-Aborigines in Australia, the size of the Aboriginal population and their historical and political context, there is a strong case for ensuring that information on Aboriginality is collected for planning and service delivery purposes and for monitoring Aboriginal health.

Working party:
Morbidity Working Party
Psychiatric Working Party
Nursing Homes Working Party

Comment:

All States and Territories except Queensland record Aboriginality for acute hospital inpatients. That State currently collects ethnicity in non-metropolitan public acute hospitals and is moving progressively towards collecting it in other metropolitan acute hospitals.

The Morbidity Working Party noted that the Aboriginality data were relatively unreliable. In many hospitals, Aboriginal status was often coded only by 'appearance'. Several members stated that the Aboriginality question was the 'most bitterly resented' by admission clerks because they felt the patient could be embarrassed or annoyed at being asked.

The 1984 Taskforce on Aboriginal Health Statistics proposed the following standard for questions on Aboriginal origin in hospital morbidity, maternal and perinatal collections:

Are you of Aboriginal or Torres Strait Islander origin?	No Yes, Aboriginal Yes, Torres Strait Islander

It was recommended that each question should be accompanied by the following explanation:

For persons of mixed origin, indicate the one to which they consider(ed) themselves to belong.

In relation to the last point, the Morbidity Working Party noted that Queensland and South Australia collect Aboriginality within a more general ethnicity question (see comment to Item P6). The working party endorsed the Commonwealth/Australian Bureau of Statistics definition of Aboriginality but did not go as far as recommending that a standard question be asked explicitly of all patients, leaving it up to each authority to implement the data item in an appropriate and consistent manner.

The Nursing Homes Working Party followed the reasoning of the Morbidity Working Party by recommending the inclusion of Aboriginality. However, it too did not go as far as to recommend that

a standard question regarding Aboriginality be explicitly asked of all patients, leaving it up to each authority to implement.

The NH5 form for nursing home patients contains the following question, which is similar to the one above but does not distinguish Torres Strait Islanders:

Are you of Aboriginal or	No
Torres Strait Island origin?	Yes

Item P9: Area of usual residence

Scope:
Acute hospitals
Private psychiatric hospitals
Public psychiatric hospitals (inpatients)
Public psychiatric hospitals (non-inpatients)
Nursing homes

Level of enumeration: Patient/resident

Definition: Geographic location of usual residence as stated by the patient at time of admission.

Classification/coding:
1. Statistical local area to be coded where place of usual residence is in same State or Territory as the establishment in which episode takes place. 4-digit statistical local area to be coded from the residential address using the Australian Standard Geographical Classification (Australian Bureau of Statistics 1986b). Where complete residential address is not collected, the statistical local area should be derived from postcode using a postcode-to-statistical local area key.
2. State or Territory to be coded where place of residence is in different State or Territory to the establishment in which episode takes place.

Justification: To define:
- catchments and geographical patterns of patient flows, bed planning;
- geographical differences in service utilisation;
- geographical patterns in treated prevalence of health and related problems.

Working party:
Morbidity Working Party
Psychiatric Working Party
Nursing Homes Working Party

Comment:

The statistical local area code replaces the local government area code recommended by the National Committee on Health and Vital Statistics (1979). Local government area codes have several limitations:

- They cover only part of Australia. The major areas not covered are northern South Australia and the two Territories.
- They are not compatible with Australian Bureau of Statistics statistical subdivisions. Certain local government areas fall across two or more statistical subdivisions.
- They are not consistent in terms of population size. For example, the city of Brisbane consists of one local government area.

Statistical local areas correspond, in the majority of cases, to legal local government areas. The main exceptions are:

- where the boundaries of one or more statistical subdivision cuts across a legal local government area, the legal local government area must be split into two or more parts, each of which falls into the relevant statistical subdivision and forms an statistical local area;
- where a particular legal local government area is substantially different from the general run of legal local government areas in terms of size and economic significance, the legal local government areas can be split into sub-areas; a case in point is the city of Brisbane, which covers a large area and is split into 173 statistical local areas.

The Psychiatric Working Party noted that derivation of the statistical local area from suburb or postcode was not a simple matter. Western Australia coded centrally from the residential address while South Australia had individual hospitals allocating the statistical local area using a mapping from postcode based on the statistical local area in which the centre of the postcode region fell.

Members of that working party accepted that problems associated with statistical local area misallocation became less significant as statistical local areas are aggregated into regions of interest, and that for national purposes, the errors resulting from postcode-to-statistical local area mapping were not significant. They accepted that both geographical codings needed to be included in the National Minimum Data Set to satisfy the requirements of potential users.

All working parties recognised that the statistical local area represented an improvement on legal local government area (which did not cover all of Australia) and it was agreed that statistical local area was the more appropriate measure for the National Minimum Data Set.

However, both Morbidity and Nursing Homes Working Parties recommended that only the statistical local area be coded as the indicator of usual residence. Where only the postcode was collected, this could be mapped to the statistical local area.

The Nursing Homes Working Party also considered that for long-stay residents of nursing homes, areas of usual residence prior to admission might not be of great value.

The Commonwealth Department of Community Services and Health has suggested that there is potential for the information for nursing homes to be useful, provided data are used with caution.

It is noted that the NH5 form for nursing homes also requests details of the patient/resident's accommodation before admission on both a physical and relational basis; that is, whether they live in a house, flat or other accommodation and with whom they live. In relation to physical basis of accommodation for nursing home residents, see Item P10.

Item P11: Preferred language

Scope: Public psychiatric hospitals (non-inpatients)
Nursing homes

Level of enumeration: Patient/resident

Definition: The language (including sign language) most preferred by the patient for communication. This may be a language other than English even where the patient can speak fluent English.

Classification/coding: The proposed coding system is that used by the New South Wales Department of Health. It is based on the Australian Bureau of Statistics 2-digit classification of country of birth. Matching codes are used for languages and countries where possible. The major Chinese dialects and Indian languages are separately coded.

Code	*Language*
00	Australian Aboriginal language
01	English
02	Fijian
03	Hawaiian
04	Maori languages
05	Pidgin English
06	New Guinea native language
07	Samoan
08	Tongan
09	Other Oceanic language
10	
11	Scots Gaelic
12	Welsh
13	
14	Irish
15	Albanian
16	Macedonian
17	Icelandic
18	Bulgarian
19	Czech
20	Danish
21	Estonian
22	Finnish
23	French
24	German
25	Greek
26	Hungarian
27	Italian
28	Latvian
29	Lithuanian
30	Maltese

31	Dutch/Flemish
32	Norwegian
33	Polish
34	Portuguese
35	Romanian
36	Spanish
37	
38	Slovenian
39	Ukrainian
40	Russian
41	Serbo-Croatian
42	Arabic
43	Armenian
44	Burmese
45	Khmer/Cambodian
46	Mandarin
47	Cantonese
48	Hokkien
49	Teochew
50	Georgian
51	Hindi
52	Indonesian (Bahasa)
53	Iranian/Persian/Farsi
54	Assyrian
55	Hebrew
56	Japanese
57	Bengali
58	Korean
59	Lao
60	Lebanese
61	Malay
62	Pakistani/Urdu
63	Filipino/Tagalog
64	Tamil
65	Sinhalese/Sri Lankan
66	Telegu
67	Tetum
68	Thai
69	Punjabi
70	Turkish
71	Vietnamese
72	Other Asian language not elsewhere classified
73	Dari

74	
75	Croatian
76	Serbian
77	Slovak
78	Yiddish
79	Other European language not elsewhere classified
80	Central American Indian language
81	South American Indian language
82	North American Indian language
83	
84	
85	Bantu language
86	Ethiopian
87	Sudanese
88	Swahili
89	
90	Afrikaans
91	Other African language—unspecified
92	Chinese (dialect specified but not elsewhere classified)
93	Chinese (dialect unspecified)
94	
95	
96	Sign language
97	Other language not elsewhere classified
98	Inadequately described
99	Not known

Note: All sign languages are to be coded 96

- Code = 97 (other language not elsewhere classified) is only to be used where there is no indication of even the continent in which it is spoken. It should only appear in exceptional circumstances.
- Code = 98 (inadequately described) means that the respondent has not been able to communicate the name of the language which he or she prefers.
- Code = 99 (not known) means that information could not be obtained about the preferred language.

Justification:

Preferred language is an important indicator of ethnicity, especially for persons born in non-English speaking countries. It is also a surrogate measure for English language proficiency, which is an important determinant of access to health services. The National Better Health Program has a major goal: that is, the reduction in health status differentials among ethnic groups, and has recommended the routine recording of level of facility with English in all statistical collections.

Patient Data Item P11

Working party: Morbidity Working Party
Psychiatric Working Party
Nursing Homes Working Party

Comment:

The Taskforce on National Hospital Statistics (1988) recommended that 'need for interpreter services' be included in the National Minimum Data Set to assist in health services planning. English language proficiency is also an important determinant of access to health services and of effective communication between health professionals and consumers.

It was pointed out that the National Better Health Program has the reduction of health inequalities between ethnic groups in Australia as a major goal (Health Targets and Implementation Committee 1988). The Australian Health Ministers' Advisory Council Health Targets and Implementation Committee recommended that national health statistical collections should routinely identify the various groups of concern. This would require the routine recording in all collections of the following ethnicity data items:

- birthplace (essential)
- race (especially the identification of Aborigines and Torres Strait Islanders)
- level of facility with English (highly desirable).

Inclusion of all these items in the National Minimum Data Set is highly desirable to allow the Commonwealth and the States and Territories to monitor progress towards the achievement of health goals and targets and the outcomes of specific initiatives under the National Better Health Program.

The nursing homes patient database maintained by the Commonwealth Department of Community Services and Health (derived from the NH5 form) contains the following language-related data item:

What is your preferred language? (including sign language)

( ) English

( ) Other (please specify).

On the other hand, 'proficiency in English' is the data item recommended for use by the Office of Multicultural Affairs (1988) and the Australian Health Ministers' Advisory Council Health Targets and Implementation Committee (1988).

The New South Wales hospital morbidity collection contains an item 'language used at home'. New South Wales introduced their language item because in some areas of Sydney up to 70 per cent of patients speak a non-English language at home. Proficiency in English was considered less important because, although they may speak English well, they may prefer the language used at home in a stressful situation.

Acute hospital and private psychiatric hospitals

The working party decided that a language-related item should not be included in the National Minimum Data Set, but recommended that the preferred form for language-related data items in hospital morbidity collections should be that of the Australian Bureau of Statistics census questions:

17. Does the person speak a language other than English at home?
    - No, speaks only English
    - Yes

      If yes, please print language spoken .....

18. Answer Question 18 for each person who speaks a language other than English at home.

    How well does the person speak English?

    Very well

    Well

    Not very well

    Not at all.

Public psychiatric hospitals

The working party agreed to endorse this item as being desirable to collect, as psychiatric patients often regressed to their preferred language. However, it was more of a long-term goal and might take some time to implement.

Nursing homes

The Nursing Homes Working Party felt that nursing home needs were different from acute hospital needs as migrant long-stay elderly residents may tend to revert to their original language, thus providing an argument for including this item in the data set. In addition, the Commonwealth Department of Community Services and Health has a strong interest in this area and will continue to collect it on the NH5.

New South Wales already collects 'language spoken at home' and 'country of birth'. It considered that 'preferred language' was an important data item to collect, particularly in relation to access to health care.

South Australia also recommended the inclusion of this item in *The National Health Data Dictionary* for nursing homes.

Item P14: Employment status

Scope:
Acute hospitals
Private psychiatric hospitals
Public psychiatric hospitals (inpatients)
Public psychiatric hospitals (non-inpatients)

Level of enumeration: Patient

Definition: Self-reported employment status, as defined by the categories given below, immediately prior to admission.

Classification/coding:
Acute hospitals and private psychiatric hospitals
Unemployed/pensioner Yes/no
Public psychiatric hospitals
1. Child not at school
2. Student
3. Employed
4. Unemployed
5. Home duties
6. Other

Justification:
The Australian Health Ministers' Advisory Council Health Targets and Implementation Committee (1988) identified socioeconomic status as the most important factor explaining health differentials in the Australian population. The committee recommended that national health statistics routinely identify the various groups of concern. This requires routine recording in all collections of indicators of socioeconomic status. In order of priority, these would be employment status, income, occupation and education.

In practice, this data item and current or last occupation could probably be collected with a single question, as is done in Western Australia.

Occupation? For example:

- housewife or home duties
- pensioner miner
- tree feller
- retired electrician
- unemployed trades assistant
- child
- student
- accountant

However, for National Minimum Data Set purposes it is preferable to distinguish these two data items logically.

Working party:
Morbidity Working Party
Psychiatric Working Party
Nursing Homes Working Party

Comment:

Acute hospitals and private psychiatric hospitals

Employment status is currently collected in South Australia but is never used. South Australia considered this item very low priority for the National Minimum Data Set, and felt that it should be reviewed at a later stage. Tasmania collects all categories of employment status.

The Morbidity Working Party considered the following categories of employment status:

1. Child not at school: includes preschool children and handicapped children under 16 not otherwise engaged.
2. Student: full-time or with study occupying 20 hours per week; child at school.
3. Employed: employed, self-employed or employer.
4. Unemployed: unemployed but looking for work or on unemployment benefit.
5. Home duties.
6. Retired and/or pensioner. If the pensioner works in paid employment more than ? hours per week, employed status should be recorded.
7. Other/unknown.

The Morbidity Working Party expressed interest in a feasible and collectable socioeconomic data item but considered that the proposed employment status item had too many categories and would not be possible to implement on already crowded discharge forms. The working party recommended in the first instance that a single category 'unemployed/pensioner' be included in the National Minimum Data Set, and that this be reviewed after a few years.

Public psychiatric hospitals

Victorian data for public psychiatric hospitals (Office of Psychiatric Services 1987) shows that the majority (62 per cent) of admissions are of people who are unemployed or pensioners at the time of admission. Relatively few admission episodes are of people whose occupational backgrounds are in the middle and upper socioeconomic groupings.

The Psychiatric Working Party felt that pension status (see Item P20 for discussion) was more relevant for psychiatric patients. However, in order to collect occupation (Item P15), it is important to include employment status. This item is included for psychiatric hospitals, although it may in practice be collected as a category of Item P15.

For example, Victoria intends to add the following codes to the 2-digit Australian Standard Classification of Occupations groups for occupation:

- child not yet attending school
- student
- home duties
- other.

For the National Minimum Data Set, employment status has been logically separated. The proposed categories for patients of public psychiatric hospitals are based on those to be used in Victoria.

Item P15: Occupation

Scope: Acute hospitals (to be evaluated)
Private psychiatric hospitals (to be evaluated)
Public psychiatric hospitals (inpatients)
Public psychiatric hospitals (non-inpatients)

Level of enumeration: Patient

Definition: The current occupation of the patient is the current job or duties which the patient is principally engaged in.

Classification/coding: 2-digit Australian Standard Classification of Occupations code (see Table 4.8, included with this item).

Justification: There is considerable user demand for data on occupation-related injury and illness, including from Worksafe and from industry, where unnecessary production costs are known in some areas and suspected to be related to others in work-related illness, injury and disability. The report *Health for All Australians* also identifies occupational related ill-health as a focus for health promotion and illness prevention activities.

Lack of morbidity data is severely hampering the development of preventive interventions in this area. User demand can be expected to grow.

There is an increasing commitment by governments to reducing inequalities in health status between population sub-groups. There is already some evidence of higher incidence of morbidity and mortality in particular occupations, but greater knowledge in this area is required.

A recent report prepared for the National Occupational Health and Safety Commission (Roder, Holman 1987) recommended that occupation be recorded on hospital discharge forms. This report argued that 'there has been a recent increase in interest in occupation as a cause of disease and disability in Australia. This is reflected in the establishment of the National Occupational Health and Safety Commission and the steps taken to introduce a minimum data set for monitoring workplace injuries and diseases of rapid onset.

'The minimum data set is a crucial development but the associated data-collection system will not cover the whole workforce nor all work-related diseases. Complementary data-collection mechanisms will therefore be needed and should be based on death records, hospital records, cancer registries, perinatal and birth defect statistics, communicable disease notifications, sentinel medical practice reporting and household surveys.

'It is recognised that the resulting occupational information, while much improved, will still be limited in quality and detail. However, it will suffice for general analyses of mortality and morbidity in the Australian workforce and for developing and initially checking hypotheses of occupational causes of disease. The data will not be adequate for rigorous in-depth studies. Because in-depth studies usually require extensive resources, preliminary analyses of general death and morbidity record systems would be appropriate to ensure that there are sufficient grounds for committing resources to these projects.'

The Australian Health Ministers' Advisory Council Health Targets and Implementation Committee (1988) identified socioeconomic status as the most important factor explaining health differentials in the Australian population. The committee recommended that national health statistics

routinely identify the various groups of concern. This requires routine recording in all collections of indicators of socioeconomic status. In order of priority, these would be employment status, income, occupation and education.

Working party: Morbidity Working Party
Psychiatric Working Party

Comment:

Occupation is currently recorded on hospital morbidity forms or hospital admission forms in all States and Territories except Victoria. It is coded only in Western Australia and Tasmania. Occupation was recommended by the National Committee on Health and Vital Statistics (1979) as a second-level data item for inclusion in the National Minimum Data Set.

Hall et al. (1986) recommended to the National Committee on Health and Vital Statistics that occupation be collected in both mortality and hospital morbidity data and that there should be a pilot study of the validity and reliability of occupational coding. They noted that occupation is recognised as an important factor in studying disease (Mathews 1983). Principal occupation during lifetime for males is recorded on death certificates. It has been common practice not to record occupation, but only marital status, of females.

However, in the census current occupation is recorded. Hence, the census and mortality registers use different operational definitions of occupation. This makes it impossible to calculate proportional mortality rates by occupation groups by combining mortality and census data.

The National Committee on Health and Vital Statistics (1979) asked all government health authorities to provide comments on the inclusion of occupation in hospital morbidity collections. The consensus at that time was that, while occupational data would be a useful addition to the database and was collected by some authorities, it was recognised that a number of difficulties existed. For example, a number of older patients would have their occupation recorded as retired, and in the case of occupation-related illness, the current occupation may differ from the occupation responsible for the illness.

The National Occupational Health and Safety Commission has developed a minimum data set for the national monitoring of workplace injuries and diseases of rapid onset (Worksafe Australia 1987). Roder and Holman (1987) argued that complementary data collection mechanisms are needed to ensure that Australia has comprehensive occupational health statistics. The importance of occupational related ill-health has been underlined by the Health Targets and Implementation Committee of the Australian Health Ministers' Advisory Council (1988). Roder and Holman (1987) noted that 'where the contribution of occupational factors is not self-evident, and there are delays of years or even decades between occupational exposure and manifestation of disease, it will not be possible to rely upon workplace reporting. Rather, data will have to come from those places where diseases are diagnosed and deaths are notified.

'Workers' compensation data will not be suitable for the surveillance and discovery of diseases not yet known to be work-related. Moreover, the validity of these data for epidemiological surveillance will be suspect in those areas subject to changes in compensation policy.

'Sometimes there are circumstances where workers are fearful of special health risks in their workplaces. Routine data systems can be useful to assess whether prevailing mortality and morbidity rates offer justification for these concerns.'

In such applications, data would be used at a superficial level to ensure that there are sufficient grounds for committing resources to more in-depth studies. Waddell and Holman (1985) have shown the potential value of collecting occupational data in hospital morbidity collections in a preliminary analysis of Western Australian data.

Roder and Holman (1987) made the following recommendations in relation to hospital morbidity collections:

1. Hospital admission clerks record industry and occupation on discharge forms for all patients aged 15 years and over, as pertaining to: (i) the main lifetime job; and, where different, (ii) the present job.

2. The National Occupational Health and Safety Commission prepare guideline manuals to assist hospital admission clerks to record occupational information.
3. Pilot programs precede the introduction of these initiatives to ensure that the methodology proposed is practical. Thereafter, recording should be introduced incrementally by regions of Australia, with a progressive resolution of any unexpected difficulties.
4. Occupation be coded using the Australian Standard Industrial Classification and Australian Standard Classification of Occupations, as for census data.

In relation to the first recommendation, it was noted that a Victorian pilot study (Working Party on Feasibility of Collecting Occupational Data Relevant to Cancer, 1983) had shown that hospital admission clerks can obtain information of a reasonable accuracy on patients' present jobs and industries, and their main lifetime jobs and industries. The misclassification of occupational information obtained in routine collections such as hospital morbidity collections is of the order of 30 per cent (Roder, Holman 1987). This is considered sufficient for initial analyses of trends. Validation checks of US death registration data have indicated that misclassifications tend to occur at random, thereby effecting an attenuation of correlations with occupational factors, but not a systematic bias (Schumacher 1986). Perhaps more important than the question of accuracy is the tendency in Australia and many other countries to:

- record only the last occupation, not the longest lifetime occupation, as would be more appropriate for long-latency diseases;
- record only 'retired' or 'pensioner' for those age groups contributing most to death statistics;
- provide too vague a description of occupation for specific classification;
- give too little attention to the occupations of women, a legacy from the days when women were seldom part of the paid workforce;
- provide no information on industry.

This latter deficiency is important because jobs in individual occupation categories are often heterogeneous across industries. Combined industry-occupation codes provide a much greater specificity and the opportunity to infer exposures by applying job exposure matrices (Roder 1986).

Roder and Holman recommended a style of questioning similar to (1) that used by the Australian Bureau of Census and Statistics in censuses; and (2) that advocated for the minimum data set for workers' compensation statistics. The following aspects should be included:

- the name of the occupation
- the tasks and duties performed by the decedent
- the trading name of the employer and, where feasible, the employer's main address
- the kind of business or service carried out by that business.

The 1986 Australian census asked the following questions relating to occupation and industry:

29. In the main job held LAST WEEK, what was the person's occupation?
- Give full title.
- For example, Civil Engineering, Draftsman, Accounts Clerk, Fast Foods Cook, 1st Class Welder, Extruding Machine Operator, Coal Miner.
- Armed Service personnel state rank as well as occupation.

30. What are the main tasks or duties that the person usually performs in that occupation?
- Describe as fully as possible.
- For example, preparing drawings for dam construction, recording and paying accounts, cooking hamburgers and chips, welding of high pressure steam pipes, operating plastic extruding machine, operating continuous mining machine.

Occupation is coded using Australian Standard Classification of Occupations (Australian Bureau of Statistics 1986a). This classification is based on a 'kind of work' criterion with an emphasis on skill

level (length and type of training) and skill specialisation (for example, subject matter knowledge). The structure of Australian Standard Classification of Occupations has four levels:

8	Major groups	1-digit code
52	Minor groups	2-digit codes
282	Unit groups	4-digit codes
1079	Occupations	6-digit codes

For example:

Level	*Code*	*Title*
Major group	2	Professionals
Minor group	28	Artists and related professionals
Unit group	2805	Designers and illustrators
Occupation	2805–13	Graphic designer

The 2-digit Australian Standard Classification of Occupations occupation groups are listed in Table 4.8.

A Computer Assisted Coding system is available from the Australian Bureau of Statistics to assist in coding occupational data to Australian Standard Classification of Occupations codes.

The Commonwealth Department of Community Services and Health informed the working party that it supported the collection of occupation data based on a 2-digit Australian Standard Classification of Occupations code.

Five of the eight morbidity systems currently collect current occupation but do not code it apart from Western Australia. The Morbidity Working Party examined the proposal to include 'current occupation' in the National Minimum Data Set and noted the following:

- Most States felt that it was difficult to code, had low level of accuracy and required substantial resources. The Commonwealth Department of Community Services and Health argued that its accuracy was comparable to that of collected items such as principal diagnosis.
- The Australian Bureau of Statistics noted that the limitations of collecting health data in sample surveys were much greater than those of collecting occupational data in administrative collections.
- New South Wales was sympathetic to the concept of collecting socioeconomic data but felt that the resources needed were not available. Several States expressed interest in collecting socioeconomic data if funded by the Commonwealth.
- Victoria has done a study which suggested it might be of limited use at the hospital level, but this would require asking several questions.
- South Australia uses a 2-digit Australian Standard Classification of Occupations code in psychiatric hospitals.
- Western Australia has collected it for years but regards it as neither reliable nor useful (big gaps in data).

The Morbidity Working Party decided not to recommend that occupation be included in the National Minimum Data Set at its first meeting. However, following the request of the Department of Community Services and Health to reconsider this item for inclusion as it is already collected in a majority of systems, the working party subsequently agreed in principle to endorse the inclusion of 'occupation' in the National Minimum Data Set. It also recommended that the collection of occupational data for inpatients of acute hospitals be tested in trials, using in-hospital surveys (linked to morbidity data) for six or twelve month periods in a selected sample of hospitals. Such trials should evaluate the costs and benefits of sampling options versus routine collection for all inpatients.

With regard to psychiatric hospitals, all States collect occupation except New South Wales. The Psychiatric Working Party felt that, given the emphasis on socioeconomic differentials in health, occupation data would be worthwhile collecting and recommended that occupation be included in the National Minimum Data Set for psychiatric hospitals.

In Victoria, lifetime occupation is currently collected on admission to State psychiatric hospitals and upon registration with outpatient and other community services. Codes currently used are a

modification of Australian Bureau of Statistics standard codes but revision of the outpatient collection system is now under way, and Victoria will adopt the Australian Standard Classification of Occupations framework (2-digit codes). Revision of the inpatient system will soon follow. The justification for this item is based on the important role that vocational rehabilitation plays in improving outcomes for people with psychiatric disability. Data on the lifetime occupation of clients of psychiatric services assist in the identification of rehabilitation needs and the development of service options. The collection of such data is generally accepted by providers and clients.

Principal lifetime occupation is defined as 'the occupation the patient has engaged in that accounts for the greatest number of working years'.

Collection of 'lifetime occupation' in routine morbidity data collections is likely to be more difficult than 'current occupation'. This should also be evaluated as part of the trial recommended above, and a final decision on which definition to use should then follow.

Table 4.8: *Australian Standard Classification of Occupations 2-digit occupation group*

1.	**Managers and administrators**	**2.**	**Professionals**
11	Legislators and government appointed officials	21	Natural scientists
12	General managers	22	Building professionals and engineers
13	Specialist managers	23	Health diagnosis and treatment practitioners
14	Farmers and farm managers	24	School teachers
15	Managing supervisors (sales and service)	25	Other teachers and instructors
16	Managing supervisors (other business)	26	Social professionals
		27	Business professionals
		28	Artist and related professionals
		29	Miscellaneous professionals
3.	**Paraprofessionals**	**4.**	**Tradespersons**
31	Medical and science technical officers and technicians	41	Metal fitting and machining
32	Engineering and building associates and technicians	42	Other metal tradespersons
33	Air and sea transport technical workers	43	Electrical and electronics tradespersons
34	Registered Nurses	44	Building tradespersons
35	Police	45	Printing tradespersons
36	Miscellaneous paraprofessionals	46	Vehicle tradespersons
		47	Food tradespersons
		48	Amenity horticultural tradespersons
		49	Miscellaneous tradespersons
5.	**Clerks**	**6.**	**Salespersons and personal service workers**
51	Stenographers and typists	61	Investment, insurance and real estate salespersons
52	Data processing and business machine operators		
53	Numerical clerks	62	Sales representatives
54	Filing, sorting and copying clerks	63	Sales assistants
55	Material recording and despatching clerks	64	Tellers, cashiers and ticket salespersons
56	Receptionists, telephonists and messengers	65	Miscellaneous salespersons
59	Miscellaneous clerks	66	Personal service workers
7.	**Plant and machine operators and drivers**	**8.**	**Labourers and related workers**
71	Road and rail transport drivers	81	Trades assistants and factory hands
72	Mobile plant operators(except transport)	82	Agricultural labourers and related workers
73	Stationary plant operators	83	Cleaners
74	Machine operators	84	Construction and mining labourers
		89	Miscellaneous workers

Source: Australian Bureau of Statistics (1986a)

Item P31:	Mode of separation
Scope:	Acute hospitals Private psychiatric hospitals Public psychiatric hospitals (inpatients) Nursing homes
*Effective from:	1 July 1993
Level of enumeration:	Patient/resident
Definition:	Status at separation of patient (discharge/transfer/death) and place to which patient is released (where applicable).
Classification/coding:	1 = Discharge/transfer to an(other) acute hospital 2 = Discharge/transfer to a nursing home 3 = Discharge/transfer to an(other) psychiatric hospital 4 = Discharge/transfer to other health care accommodation* 5 = Statistical discharge—type change 6 = Left against medical advice/discharge at own risk 7 = Statistical discharge from leave 8 = Died 9 = Other (includes discharge to usual residence/own accommodation/welfare institution#) * includes mothercraft hospitals and hostels recognised by the Commonwealth Department of Health, Housing and Community Services, unless this is the usual place of residence # includes prisons, hostels and group homes providing primarily welfare services
Justification:	Required for outcome analyses, analyses of intersectoral patient flows and to assist in the classification of episodes into Diagnosis Related Groups.
Working party:	National Minimum Data Set Review Committee

Comment:

The National Minimum Data Set Review Committee recommended that the modes of separation for acute and private psychiatric hospitals and public psychiatric hospitals and nursing homes, as determined by the various working parties, be rationalised. The terminology of the modes relating to statistical separation have been modified to be consistent with the changes to P21 'episode of care', as recommended by the Patient Abstracting and Coding Project, Commonwealth Department of Health, Housing and Community Services.

NMDS (injury surveillance) note: For use as part of the NMDS (injury surveillance), especially in the setting of emergency departments, it is recommended that one additional coding alternative should be provided:

0=Admitted to hospital

Appendix 4. General data items - other

Four of the NMDS (injury surveillance) recommended general data items do not have exact equivalents in the National Health Data Dictionary, version 2.0. The items are: Date of Attendance, Date of Injury, Time of Attendance and Time of Injury.

Discussions with emergency department physicians indicate that date and time of attendance are seen as basic elements of a general purpose patient data system. Date and time of injury are important for prevention (temporal patterns of occurence), retrieval (assessment of time to treatment) and health service utilisation (assessment of repeat visits following a single injury). Recommended specifications for these items follow.

Injury date

Item Name	Description	Item Number
INJURY_D	Date on which injury occurred	
Item Definition: Date on which injury occurred (or best estimate), or was first noticed (if gradual onset).		
Item category: Recommended	Sub-category: General item	Item scope: All cases
Format: DD/MM/YY	Data Exchange File No. 19	
Classification: none		
Compatibility: Mortality: good. Hospital morbidity: good. ISIS: good.		
Priority: High	Confidentiality:	Reference/Source: Based on NHDD 2.0 item P24
Data availability: Mortality: usually determined by coroners. Inpatients: potentially. Emergency depts: good		
Comments: Date of injury is the same as date of attendance for many emergency dept and inpatient cases. Date of injury, used together with a patient identification (which can be in anonymous encrypted form), enables multiple visits due to the same injury to be analysed.		

Injury time

Item Name	Description		Item Number
INJURY_T	Time at which injury occurred		
Item Definition: Time of day when injury occurred or was first noticed.			
Item category: Recommended		Sub-category: General item	Item scope: All cases
Format: MINIMUM: HH (MM set to 00)	Data Exchange File no.: 20	Format:EXTENDED: HH:MM	Data Exchange File no. 20
Classification:MINIMUM: 0000-0059=0000, 0100-0159=0100,..,2300-2359=2300.		Classification:EXTENDED: None (ordinary 24 hour time)	
Compatibility: Mortality: not applicable. Hospital separations: not applicable. ISIS: full.			
Priority: High	Confidentiality:	Reference/Source: ISIS	
Data availability: Coroners: probably good. Hospital separations: ? ISIS: good.			
Comments			

Attendance date

Item Name	Description	Item Number
ATTEND_D	Date of attendance at data collection site	
Item Definition: Date on which injured person attends an emergency department, or is admitted to hospital, or the date on which a fatally injured person's body is received by a coroner.		
Item category: Recommended	Sub-category: General item	Item scope: All cases
Format: DD/MM/YY	Data Exchange File No.: 11	
Classification: none		
Compatibility: Mortality: not applicable. Hospital separations: good. ISIS: not applicable.		
Priority: High	Confidentiality:	Reference/Source:
Data availability: Coroners: potentially good. Hospital separations: excellent. ISIS: potentially good.		
Comments: Date of Attendance is useful for analysis including delay between injury and attendance, clinical load, and repeat attendances.		

Time of Attendance

Item Name	Description	Item Number
ATTEND_T	Time of attendance at data collection site	
Item Definition: Hour of attendance of injured person at ED, or hour of admission to hospital, or hour of receipt of body of fatally injured person by coroner.		
Item category: Recommended	Sub-category: General items	Item scope: All cases
Format: HH (MM set to 00)	Data Exchange File No.: 21	Format:EXTENDED: HH:MM / Data Exchange File No.: 21
Classification: MINIMUM: 0000-0059=00, 0100-0159=01,..,2300-2359=23.	Classification: EXTENDED: None (ordinary 24 hour time)	
Compatibility: Mortality: not applicable. Hospital separations: ? ISIS: not applicable		
Priority: Low	Confidentiality:	Reference/Source:
Data availability: Mortality: ?poor. Hospital separations: ? ED: potentially good.		
Comments: Useful for analyses of typical patterns in attendance, for calculation of time taken to reach treatment facility, and for assessment of patient waiting times etc.		

Appendix 5. Proposed Changes and Extensions

Chapters 4 and 5 and Appendix 2 detail the first version of the NMDS (injury surveillance). The data standard is not intended to be unchangeable. As outlined in Chapter 8, an annual cycle of review and revision is envisaged. As part of this process, data items and classifications which have been proposed for inclusion in the NMDS, but are not yet part of it will be published and circulated for comment, to enable interested groups to test the proposed changes, and to indicate likely directions for development to users generally.

Future versions of this appendix will contain proposals for "Extended" classifications, for the core items "Type of place" and "Type of activity", and possibly other items, and a revised version of the "Factor" codes used in the Injury Surveillance Information System.

EXTENDED TYPE OF PLACE and TYPE OF ACTIVITY CLASSIFICATIONS

For some purposes, more detailed information if required on type of place and type of activity then is provided by the NMDS(injury surveillance) Minimum classifications. Dr Robert Pitt, Director of Ambulatory Services at the Mater Children's Hospital, Brisbane, has proposed extended classifications for these two items, and is field-testing testing these. Further information can be obtained from NISU or from Dr Pitt.

REVISED FACTOR CODES

The Injury Surveillance Information System includes a classification of objects and substances in the environment which may be involved in the occurrence of an injury. In the ISIS, these are known as "Factors". A factor may contribute materially to the occurrence of an injury by being involved in an event (usually an uncontrolled event) which leads to an injury, or by direct interaction with the human body that sustains injury. For example, if a part of a ladder breaks, leading a person on it to fall and sustain injury when striking a wheelbarrow parked below, the ladder is a factor of the first type (called 'breakdown' factors in ISIS), and the wheelbarrow is a factor of the second type (referred to as 'mechanism' factors in ISIS).

The ISIS Factor classification (based mainly on one developed by the US Consumer Product Safety Commission) contains several hundred categories, and has been found to deal quite well with much of the range of objects and substances found to be involved in injury cases presenting to Australian hospital emergency departments. A number of limitations have emerged, and a review of the classification is now warranted. Areas clearly in need of revision include sports and pharmaceutical substances.

The final version of the ISIS Factor classification is available from NISU. It is anticipated that a revision will be based on this version, and some surveillance centres may wish to use the current version as an interim measure.

Appendix 6. Summary of Core Data Items.

Australian Institute of Health and Welfare
National Injury Surveillance Unit

National Minimum Dataset for injury surveillance. Minimum classifications for Core Data Items

Version 1.0 (as at October 1993)

1. Text Description of Injury Event

Describe what led to the injury. Outline **what went wrong**, and **what actually produced the bodily harm**. Be as specific as possible (mention brands and model names where known).
Examples: (1) Hitting steel with 'Hurricane' claw hammer. Metal chip flew into eye. No eye protection. (2) Playing at home. Slipped on polished wood floor. Hit head on corner of glass coffee table. (3) Punched by another child at school during argument.

2A. Main 'external cause' of injury

1. Motor vehicle - driver
2. Motor vehicle - passenger
3. Motorcycle - driver
4. Motorcycle - passenger
5. Pedal cyclist and cycle passenger
6. Pedestrian
7. Horse related (fall from, struck or bitten by)
8. Other transport-related circumstance
9. Fall - low (same level, or < 1 metre, or no information on height)
10. Fall - high
11. Drowning, submersion - swimming pool
12. Drowning, submersion - other
13. Other threat to breathing (incl strangulation, asphyxiation)
14. Fire, flames, smoke
15. Hot drink, food, water, other liquid, steam, gas, or vapour
16. Hot object or substance (not food, liquid, gas)
17. Poisoning - medication
18. Poisoning - other or unspecified substance
19. Firearm
20. Cutting, piercing object
21. Dog related (bitten, struck by, etc)
22. Animal related (except horse, dog)
23. Struck by object or person
24. Machinery in operation
25. Electricity
26. Hot conditions (natural origin); sunlight
27. Cold conditions (natural origin)
28. Other specified external cause
29. Unspecified external cause

2B. Most likely role of human intent

1. Accident
2. Intentional self-harm
3. Sexual assault
4. Neglect or maltreatment by parent or guardian
5. Maltreatment by domestic partner
6. Other assault
7. Event of undetermined intent
8. Legal intervention, or operations of war
9. Adverse effects or complications of medical or surgical care or treatment
10. Other specified intent
11. Unspecified intent

3. Type of place where injury event occurred

1. Home (incl. farm-house)
2. Residential institution (excl. hospital; incl. hospice, prison)
3. School, other institution, public admin. area (excl. hospital; incl day care centre)
4. Hospital
5. Recreation area (eg amusement park, public park)
6. Sports and athletics area (eg football arena, riding school)
7. Street or highway (incl adjacent footpath)
8. Trade or service area (eg bank, petrol station, supermarket)
9. Industrial or construction area
10. Mine or quarry
11. Farm (excl. farm house)
12. Other specified place (incl forest, beach, abandoned building)
13. Unspecified place

4. Type of activity of the person when injured

0. Sports activity
1. Leisure activity
2. Working for income
3. Other type of work (incl unpaid housework, related shopping, etc)
4. Resting, sleeping, eating, other personal activity
5. Being cared for (eg infant by parent; patient by nurse)
6. Engaged in formal educational activity (as student)
8. Other specified activity
9. Unspecified activity

5A. Nature of main injury

(* = Body Region code is required)

1. *Superficial (excl. eye)
2. *Open wound (excl. eye)
3. *Fracture (excl. tooth)
4. *Dislocation
5. *Sprain or strain
6. *Injury to nerve (incl spinal cord; excl. intracranial injury)
7. *Injury to blood vessel
8. *Injury to muscle or tendon
9. *Crushing injury
10. *Traumatic amputation
11. *Injury to internal organ
12. *Burn or corrosion
13. Eye injury (excl. fb in external eye; incl burn)
14. Foreign body in external eye
15. Foreign body in ear canal
16. Foreign body in nose
17. Foreign body in respiratory tract (excl nose)
18. Foreign body in alimentary tract
19. Foreign body in genitourinary tract
20. Intracranial injury (incl. concussion)
21. Dental injury (incl fractured tooth)
22. Drowning, immersion
23. Asphyxia or other threat to breathing
24. Electrical injury
25. Poisoning, toxic effect (excl bites)
26. *Bites (incl invenomations)
27. Other specified nature of injury
28. *Injury of unspecified nature
29. Multiple injuries (more than one 'nature')
30. No injury detected

5B. Body region of main injury

1. Head (excl face)
2. Face
3. Neck
4. Thorax
5. Abdomen
6. Lower back
7. Pelvis
8. Shoulder
9. Upper arm
10. Elbow
11. Forearm
12. Wrist
13. Hand (incl fingers)
14. Hip
15. Thigh
16. Knee
17. Lower leg
18. Ankle
19. Foot
20. Unspecified body region
21. Multiple injuries (involving >1 body region)
22. Body Region code Not Required

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