

NISU

b r i e f i n g

New *External Cause* categories in the third edition of ICD-10-AM

Date: 13 December, 2001 (with minor changes 20 December 2001)

Author: James Harrison

Summary information is recorded at the end of nearly all episodes of inpatient hospital care in Australia. The Australian clinical modification of the tenth revision of the International Classification of Diseases (ICD-10-AM) is used to code diagnoses, external causes of injury and poisoning, and certain other characteristics of these cases.

The External Causes classification (Chapter XX) is particularly important for injury surveillance and control because essentially the only information available on the circumstances of occurrence of injury and poisoning cases is in the form of external cause codes.

ICD-10-AM is produced and published by the National Centre for Classification in Health (NCCH). An updated edition is produced each two years. Updating allows for the addition of categories to the classification to correct deficiencies and to meet new and emerging needs.

The second edition of ICD-10-AM was published early in 2000 and superseded the first edition as the standard for use in Australian hospitals from 1 July 2000. Preparation of the third edition began late in 2000 and was completed by the end of 2001, for publication early in 2002. Introduction of the third edition has been scheduled to occur on 1 July 2002, though this date had not been confirmed at the time of writing. Further information about ICD-10-AM can be obtained from the NCCH web site: www.cchs.usyd.edu.au/ncch/

The External Causes chapter of ICD-10-AM has developed considerably between the second and third editions. The greater specificity will make Australia's hospital statistics more useful for injury prevention and control. This NISU Briefing describes the changes.

AIHW National Injury Surveillance Unit - Research Centre for Injury Studies
Flinders University of South Australia

www.nisu.flinders.edu.au - nisu@flinders.edu.au ñ ph 08 83740970 ñ fax 08 8374 0702
Sir Mark Oliphant Building, Laffer Drive, Bedford Park 5042

NISU briefing

Some major gaps in information are now being filled in. In particular, sports injury and work-related injury are beginning to be described to a level of detail in keeping with the importance of these activities as settings for injury.

Other developments reflect changes in patterns of risk (eg. the emergence of 4-wheel drives as common vehicles on Australian roads), recognition that some useful categories were lost with the change from ICD-9 to ICD-10 (eg. poisoning by motor vehicle exhaust gas); demand for more detail on the circumstances of some common types of hospitalised injury (eg. falls by children from playground equipment); and interest in achieving capacity to distinguish certain case types that attract much interest, though the case frequency may be low (eg. shark attacks).

The changes arose out of a consultation process managed by the National Centre for Classification in Health and reflect views of people concerned with injury prevention and control in Australia about topics and categories that would increase the value of hospital separations data for injury prevention and control. Practicability of implementation was kept in mind, and clinical coders participated in the process of identifying topics and designing new categories.

All of the changes provide more specific categories by splitting existing external cause categories. Thus, data collected according to the new third edition version can be made compatible with data collected according to earlier versions of ICD-10-AM by collapsing the new categories into the broader ones available in previous editions.

The following notes describe the main changes. Additional details are provided in Table 1.

Transport-related injuries.

Not many years ago, 4-wheel drive vehicles were uncommon on Australian roads. They are now common. These vehicles tend to have characteristics that present special risks to their occupants, and to other road users. These characteristics include large mass, high centre of gravity and limited occupant protection. Chapter XX treated these vehicles in a way that was appropriate for uncommon, special purpose vehicles: briefly and somewhat ambiguously. The new edition treats these vehicles as cars (V40-V49) and introduces a 5th digit classification to distinguish several major types, one of which is 'all-terrain four-wheel drive' vehicles. This approach also enables distinction of 'people movers' and the much less common but hazardous 'quad cycles' and related four-wheeled motor cycles.

A related development is enhanced capacity to distinguish types of motorcycle, particularly the types designed for off-road use (eg "dirt bikes") and on farms ("ag bikes").

Some transport-related injuries are recorded as being intentional, or of undetermined intent. To date, there has been essentially no capacity in the ICD to record information about the nature of these events. A 4th character expansion has been provided to enable the "counterpart" (another vehicle, a fixed object, etc.) to be recorded in these cases.

Falls

Information about the circumstances in which falls occur is one of the foundations of prevention. The fourth character position has been used to increase the specificity of information about types of recreational conveyances from which falls often occur (W02; one of the new categories is for falls involving the small folding scooters that have become

NISU briefing

common in the past two years), and about types of playground equipment (W09). It will be possible to code "Falls on the same level" (W01) separately according to whether they result from slipping, tripping, or stumbling.

Sports injury

Sports injuries are very common, but the ICD has provided very little information about them. The first step towards rectifying this in national hospital data was taken in the second Australian edition of ICD-9-CM. Item E889 was provided to enable sport-related cases to be identified, and to enable a few major types of sporting activity to be distinguished. A new feature of ICD-10 is the "Activity" classification in the external causes chapter. Originally, this provided the capacity to distinguish injury "while engaged in sports activity" but no further detail. The second edition of ICD-10-AM re-introduced the short list of types of sport distinguished by the 4th digit of E889 (this was made possible by treating the "Activity" item, and the "Place" item, as essentially separate items, rather than as 4th and 5th character expansions of external cause codes). During development of the third edition of ICD-10-AM, there was found to be strong user demand for extension of this list (eg. to distinguish boxing). Technical factors would have prevented any extension of the list of sports under the approach used to include "Activity" codes in the second edition (ie. as a 4th and 5th digit expansion of Y93). The most satisfactory solution was to move the activity classification to the unused range of ICD-10 codes commencing with the letter "U". The list of "types of sport" included there is based on the one in the International Classification of External Causes of Injury (ICECI) version 1.0. That, in turn, was based on one that forms part of the Australian Sports Injury Data Dictionary.

In addition, a 4th character expansion has been added to W21 to improve understanding of circumstances of common types of sports injury. Finally, the existing category "Sports and athletics area" in the "Type of place" classification has been expanded to distinguish several types of venue (ie. outdoor sporting grounds, indoor sporting facilities, swimming centres, racetracks, equestrian facilities, skating rinks and skiing facilities).

The changes in the third edition of ICD-10-AM, combined with the existing high quality information about injury diagnoses, procedures, etc. should greatly enhance understanding of the occurrence of serious sports injury in Australia.

Work-related injury

For many years, an important "blind-spot" of the ICD was work-related injury. Categories were available in ICD-9 to identify a few types of case (eg. involving railway workers) and the "Place" classification gave some clues. However, only with the introduction of the ICD-10 "Activity" classification has there been a category defined in terms familiar to contemporary occupational health and safety (ie. injury "while working for income"). The third edition of ICD-10-AM takes this capability a step further, by providing sub-categories for work-related cases occurring in eight major industry sectors (eg. mining, construction, health services). This will make information based on hospital separations data substantially more useful for purposes of occupational health and safety.

NISU briefing

Intentional self-harm

Motor vehicle exhaust gas is one of the more common means of suicide in Australia. ICD-9 provided a specific category for this external cause (E952.0). In ICD-10, this cause is included in the broader category X67 "Intentional self-poisoning by and exposure to other gases and vapours". A 4th character expansion has been added, chiefly to enable specific identification of motor vehicle exhaust gas cases. For consistency, the same capability is provided for accidental poisoning, assault and poisoning of undetermined intent.

Assault

Some categories in the "Assault" section of the ICD-10 external causes chapter enable the type of perpetrator to be distinguished (ie. Y06 and Y07). In the third edition of ICD-10-AM this approach has been extended to the whole of the assault section. Some categories are "spouse or domestic partner", "parent", "carer" and "person unknown to the victim".

Cutting and stabbing are common modes of assault. Existing categories provide no information on the types of sharp objects used. A 4th character expansion of X99 will enable distinction of some common (eg. knife, glass) and high-interest (eg. hypodermic needle) types. A parallel extension has been provided for self-harm and undetermined intent cases involving a sharp object. (A technical difficulty prevented application of the same change to categories for accidental injuries by sharp objects.)

Machinery

Expansion of item W30 at 4th character level will enable major types of agricultural machinery involved in injuries to be identified. Similar expansion of W31 will provide categories for some other major types of injurious machinery. Among other benefits, these categories will enhance the value of the expanded capability to code work-related injuries (described above).

Animal-related injury

Several changes will improve capacity to identify injury cases resulting from contact with animals. The changes allow:

- Biting to be distinguished from other types of harm involving dogs (eg. being knocked over).
- Falls from horses, and falls from other animals, to be distinguished from other events included in category V80.0
- Sharks to be distinguished from other marine animals [W56] and platypus from other specified venomous animals [X27]
- Contact with snakes to be coded according to whether the snake is known to be venomous (in which case categories are provided for several types), or is known to be non-venomous, or is its venomousness is unknown [W59 and X20]. (Previously, there was no satisfactory category for the latter type of case.)
- More specific coding of some noteworthy types of arthropod, where recorded (eg. funnel web and red back spider; jumper ants and fire ants)

NISU briefing

- Identification of some types of venomous marine animals (eg. box jellyfish, stone fish, venomous octopus)

Other changes

Other changes enable:

- Doors to be distinguished from other causes of crushing injury (eg. of fingers) [W23]
- Drowning and immersion in a "spa, Jacuzzi or hot tub" to be distinguished from drowning and immersion in a bath, or in a swimming pool. (This will also resolve a coding ambiguity.)
- Distinctions between injury due to contact with: "hot drink", "hot food" and "hot fat and cooking oil" [X10]; running hot water (eg. from a tap or shower) and "contained hot water" (eg. in a bath) [X11]; and steam from motor vehicle radiators, steam or hot vapours from food, and steam or hot vapours from other sources [X13].
- More specific identification of "Place of occurrence", by further use of the 5th character. New categories: distinguish "driveway" from other parts of the home (vehicles are sometimes reversed over small children); distinguish "roadway" "sidewalk" and "cycleway" as parts of street and highway; and provide categories for several types of residential institution (notably "prison" and "aged care facilities"), sporting facilities (listed above), trade and service areas (eg. "shop and store", "office building", "café, hotel and restaurant"); industrial and construction areas (eg. "construction area", "demolition site", "factory and plant", "mine and quarry"); and other places (eg. "stream of water", "beach", "forest", "parking lot"). Inclusions and terminology are based closely on ICD-10.

NISU briefing

Table 1: Changes to the "External Causes" chapter of ICD-10-AM between the second and third editions

Categories	Changes	Comments
<p>V20 -V29 Motorcycle rider injured in transport accident</p> <p>V40-V49 Car occupant injured in transport accident</p> <p>V86 Occupant of special all-terrain or other motor vehicle designed primarily for off-road use, injured in transport accident</p>	<p>5th character to distinguish types of motorcycle</p> <p>5th character to distinguish types of 'car'.</p> <p>5th character to distinguish number of wheels of "all-terrain or other motor vehicle designed primarily for off-road use" (2, 3, 4 or unspecified)</p>	<p>This set of changes involves categories for Motorcyclists (V2n), "car" occupants (V4n) and occupants of "special all-terrain" and similar vehicles (V86). The changes comprise 5th character classifications further specifying the type of vehicle conveying the injured person.</p> <p>The problems which these changes are designed to resolve are:</p> <ul style="list-style-type: none"> Ambiguity on where to code "4WDs" and inability to distinguish them from other vehicles. Such vehicles have become very common on Australian roads in the past 10 to 15 years. They also pose distinct road safety problems. While they are, to various degrees, designed for off-road use (and this image is prominent in advertising), most such vehicles spend most of the time on-road. The coding change will treat most such vehicles as 'cars' and use a 5th character to distinguish several types of car, one being 4WDs. V86 will be used only for unusual "all-terrain and off-road" vehicles, not normally registrable for use on-road Similar ambiguity and lack of specificity for certain special vehicles now commonly used on farms, and sometimes on roads. "Quad-cycles" are like motorbikes in features relevant to safety, but the number of wheels results in them being grouped with cars in the External Causes classification. The third edition leaves them in the 'cars' section, but provides a distinct category at the 5th character level. Similarly, interest was expressed in better distinguishing types of motorcycle, and in clarifying which (if any) should be coded to V86, rather than to V2n. A 5th character specifying types of motorcycle has been added for use with V2n. The unusual vehicles coded to V86 are further specified in terms of their number of wheels (2, 3 or 4). <p>The change includes associated alterations to inclusion/exclusion notes and definitions.</p>
V80.0 Rider or occupant injured by fall from or being thrown from animal or animal-drawn vehicle in non-collision accident	5 th character to distinguish "fall from horse" from other cases that are in-scope. [A consequential exclusion note has been added to W17.]	In Australia, falls from horses are probably much the commonest type of case in V80.0, and are subject to distinct safety issues. The change enables these cases to be distinguished.
W01 [accidental] Fall on same level from slipping, tripping and stumbling.	4 th character to distinguish falls with the three mechanisms named in the label to W01:	The mechanism of falls has significance for prevention. The category W01 has been used quite frequently in hospital separations data, implying that falls due to a "slip, trip or stumble" can be distinguished from other falls. "Slip" and "trip" are fairly distinct mechanisms, and the change will provide categories that enable them to be distinguished. (A "stumble" is more complex in this context, as it may be the result of a slip or a trip.)
W02 [accidental] Fall involving ice-skates, skis, roller-skates, or skateboards	4 th character to distinguish types of device. Includes 'folding scooter'.	Recreational conveyances are commonly involved in injury events. This expansion will enable better assessment of their relative frequency of involvement. Categories are based on those in ICECI 1.0
W09 [accidental]	4 th character to distinguish types of	Playground equipment is a common external cause for children

NISU briefing

Fall involving playground equipment	playground equipment.	admitted to hospital due to injuries sustained in a fall. The new categories are based on ICECI 1.0
W15 [accidental] Fall from cliff W17 Other [accidental] fall from one level to another	New inclusion & exclusion notes specify that: fall from mountain, bank, sheer or steep ground should be coded to W15; and falls by riders of horses and other animals should be coded to V80.	The changes are designed to resolve ambiguity on where to code falls from steep ground, etc. and from horses.
W21 [accidental] Striking against/struck by sports equipment	4 th character is used to distinguish collision with bat (or similar equipment), ball (etc), or sports equipment on or near the playing area (eg goal post)	In combination with greater specificity of type of sporting activity when injured (see below), this change will enable substantially more informative description of sport-related injury resulting in admission.
W23 [accidentally] Caught, crushed, jammed, or pinched in or between objects	4 th character to distinguish cases due to doors.	W23 provides too little specificity to be much of a guide to prevention. The change in the third edition distinguishes one more specific sub-type, which is thought to account for a significant number of serious injuries and which is a potential focus for prevention.
X78, X99, Y28 Harm by sharp object [assault, self-harm and undetermined intent]	4 th character is used to distinguish knife (etc.), razor (etc), glass, and hypodermic needle (and syringe), plus other and unspecified sharp objects where intent is "assault", "self-harm", or "undetermined..	The changes were prompted by a wish to distinguish injury due to certain types of sharp objects, namely knife (etc.), razor (etc), and hypodermic needle (and syringe). Several types of sharp object (including glass) were already distinguished in the "unintentional injuries" section of the chapter (eg W25, W26), but the "assault", "self-harm" and "undetermined intent" sections each had only a single general category for cases involving sharp objects. The desired change proved easy to implement for the "assault", "self-harm" and "undetermined intent" sections of the chapter. The equivalent change was difficult to implement in the "unintentional" section because no well-defined set of categories is provided for all cases involving contact with a sharp object. Inclusion of additional types of object within W26 would have broaden the scope of this three-character category, a type of change not permitted by WHO.
W30 [accidental] Contact with agricultural machinery W31 [accidental] Contact with other and unspecified machinery	4 th character categories are used to distinguish between common types of machines.	Machinery is involved in many serious injuries on farms, and in other settings. Specification of types of machinery enables better risk assessment and prevention. Advice from subject specialists and categories in ICD-9-CM, the NOHSC Type of Occurrence classification system and ICECI 1.0 were considered when deciding on the sub-categories for W30.
W54 [accidental] Bitten or struck by dog	4 th character is used to distinguish between 'bitten by' and 'other contact with'.	Bites are of special interest, but W54 has wider scope (ie dogs may also harm people by pushing them over, etc.)
W55 [accidentally] Bitten or struck by other mammals	4 th character is used to distinguish between 'horse' and other mammals included in W55	In combination with the revised W80.0, this will allow specific and fairly complete identification of horse-related injury.
W56 [accidental] Contact with marine animal	4 th character is used to distinguish between 'shark', 'other specified' and 'unspecified'.	Shark-related cases are not common, but attract much interest and concern. Cases should be easily distinguishable.
W59 [accidentally] Bitten or crushed by other reptiles	4 th character is used to distinguish 'snake - known to be non-venomous' from 'snake - unknown whether venomous), and these from other reptiles.	In some cases involving a snake, its venomousness is not known or has not been not recorded. This expansion of W59 provides an unambiguous category for use in these cases, as well as one for use when the snake is known to have been non-venomous.
W65-W68	4 th character is used to distinguish	Interest was expressed in increasing specificity of information

NISU briefing

[accidental] Drowning and submersion	events involving "hot tub, Jacuzzi, or spa" from bath-tubs and swimming pools.	about the types of water-filled devices in which drowning and immersion may occur. In particular, the change enables drowning or immersion in a "spa, jacuzzi or hot tub" to be distinguished from drowning and immersion in a bath, or in a swimming pool.
X71, X92, Y21 Drowning and submersion [assault, self-harm and undetermined intent]	4 th character is used to distinguish drowning and submersion in bath-tubs, swimming-pools and 'natural water'.	Previously, no information was provided on the type of body of water in which intentional drowning and submersion cases occur.
W92 [accidental] Exposure to excessive heat of man-made origin	Exclusion note to clarify use of W92 in relation to X00 to X19	
X10 [accidental] Contact with hot drinks, food, fats and cooking oils.	4 th character is used to distinguish the types of hot substance named in the label to X10.	The expansion will enable identification of the type of hot substance involved (ie hot drink, hot food or hot cooking oil/fat).
X11 [accidental] Contact with hot tap-water	4 th character is used to distinguish "running" from "contained" hot tap-water.	X11 left ambiguity about the meaning of "hot tap-water": was it restricted to water flowing from a tap, or does it include water from a tap in a container (such as a bath or a bucket) and still hot? The expansion includes both, and distinguishes them.
X12 [accidental] Contact with other hot fluids	Exclusion note, to sharpen distinction from X10.	
X13 [accidental] Contact with steam and hot vapours	4 th character is used to distinguish several sources of steam/vapour.	The sources distinguished are: motor vehicle radiator, food, other and unspecified.
X20 [accidental] Contact with venomous snake/lizard	4 th character is used to distinguish 'snake' from 'lizard' 5 th character is used to distinguish several types of venomous snake found in Australia according to applicable type of anti-venom.	Identification of type of venomous snake often enables better choice of type of antivenom treatment, and the new categories reflect venom type categories. The patterns of types of snake may also inform prevention. The applicability of these new categories is more specific to Australia than is the case for most other new categories. (This also applies to X21, and X25 to X27.)
X21 Contact with venomous spiders	4 th character is used to distinguish several types of venomous spider found in Australia.	Categories are provided for 'funnel web', 'red back', 'white-tailed and other necrotising spider', other, and unspecified spiders.
X25 Contact with other specified venomous arthropods	4 th character is used to distinguish several common types of arthropod) 5 th character is used to distinguish several types of venomous ant found in Australia.	The types of venomous arthropod distinguished at the 4 th character level are venomous ant, venomous tick, venomous and urticating caterpillar, other, and unspecified. The types of venomous ant distinguished are 'jumper and bull ant', 'fire ant', 'green ant', other and unspecified.
X26 Contact with venomous marine animals and plants	4 th character is used to distinguish several common types of venomous marine life. 5 th character is used to further distinguish types of jellyfish and stinging fish found in Australia	The types of venomous marine animals and plants distinguished at the 4 th character level are 'jellyfish', 'stinging fish', 'venomous octopus', 'stingray', other and unspecified. The 5 th character is used to distinguish some types of jellyfish (box, Irukandji, Portuguese man-o-war/bluebottle) and one type of stinging fish (stone fish).
X27 Contact with other specified venomous animals	4 th character is used to distinguish platypus.	
X47 X67 Y17 Poisoning by and exposure to other	4 th character is used to distinguish several types of "exposure to other gases and vapours", including	The categories restore useful specificity lost with the change from ICD-9-CM. The source of gas is relevant to prevention. The same change has been made to categories for use when cases are

NISU briefing

gases and vapours [accidental, self-harm; undetermined intent]	"motor vehicle exhaust."	unintentional, intentional self-poisoning and of undetermined intent.
X82, Y03, Y32 Harm by crashing of motor vehicle [self-harm; assault undetermined intent]	4 th character is used to distinguish type of 'counterpart' and whether in traffic.	Motor-vehicles are sometimes used to cause intentional injury. ICD-10 provides only a single "crashing of motor vehicle" category for each of the intent groups "self-harm", assault, and undetermined. While these are not very common types of case (though there is some concern that they might be under-identified) they are of policy interest, and are little studied. The approach adopted here is to further specify them according to the 'counterpart' vehicle or object, and whether they occur in traffic.
X85-Y09	5 th character is used to distinguish relationship (if any) between victim and perpetrator of assault.	Type of perpetrator is an important factor for understanding and responding to injury due to assault. Type of perpetrator has been recorded for two categories in this range (Y06 and Y07). The change extends the approach to the whole range.
Y92	Further use has been made of the 5 th character to specify types of place of occurrence. Note: the following 5 th character expansion was added to the second edition of ICD-10-AM, and is retained in the third edition: <u>Y92.2 School, other institution and public administrative area</u> : school; health service area; other.	Information about place is an important guide to injury prevention. New 5 th character categories have been added to existing 4 th character place categories as follows: <u>Y92.0 Home</u> : driveway; other <u>Y92.1 Residential institution</u> : prison; juvenile detention centre; military camp; orphanage; aged care facility; other <u>Y92.3 Sports and athletics area</u> : outdoor facility; sporting hall (indoor); swimming centre; racetrack/course; equestrian facility; skating rink; skiing area; other. <u>Y92.4 Street and highway</u> : roadway; sidewalk/footpath; cycleway; other <u>Y92.5 Trade and service area</u> : shop/store; commercial garage; office building; café/hotel/restaurant; other <u>Y92.6 Industrial and construction area</u> : construction area; demolition site; factory/plant; mine/quarry; oil/gas extraction facility; shipyard; power station; other <u>Y92.8 Other specified place</u> : still water (eg pond); stream; expanse of water (eg sea); beach; forest; desert; other countryside; parking lot/area; other. The scope of the 5 th character categories follow ICD-10 inclusion notes, as does the naming of many of them.
U50 to U73 Activity when injured	Movement of Type of Activity classification from Y93 to the range U50 to U73 Expansion of Activity types Sport and Working for Income.	<u>Type of Activity</u> when injured is now located in a previously unused range of categories beginning at U50. Y93 is not used. <u>Sport and leisure</u> activities account for a large number of hospitalised injuries, but most of these were not identifiable before the introduction of ICD-10-AM. Information on type of sport is important for meaningful analysis and for guiding preventive efforts. The one-digit list of types of sport, etc provided in the second Australian edition of ICD-9-CM and the second edition of ICD-10-AM has been replaced by an extensive hierarchical classification of types of sport and leisure activity, based on an item in ICECI 1.0 which was based on one in the Australian Sports Injury Data Dictionary. Activity type <u>While working for Income</u> (U73.0) has been further specified by 5 th character division into 8 categories according to industry sector (plus other and unspecified). This will enable data on work-related hospitalised injuries to be analysed and reported in ways likely to be more useful for priority setting and prevention.

Note: residual categories ("other specified" and "unspecified") are provided for many of the 4th and 5th character expansions.