# Measuring and Monitoring Injury

Report to the Accidental Injury Task Force
from
The Measuring and Monitoring Injury Working Group

May 2002

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Report of the Measuring and Monitoring Injury Working Group

## Contents

**REPORT FROM THE MEASURING AND MONITORING INJURY WORKING GROUP**

## Summary and Recommendations

This report is to the Accidental Injury Task Force from its Working Group on Measuring and Monitoring Injury. It draws upon the work of:

- Members of the Monitoring and Measuring Injury working group (MMI Group);
- Two Department of Health conferences, *Effective working interventions in injury prevention* (March 2001), and *Translating plans into action* (October 2001);
- Responses to the Department of Health interim report, *Accidental Injury- Strengthening Prevention* (July 2001);
- The Department of Health's *Public Health Information Strategy* (1996); and
- A report on *Injury Prevention* published by the British Medical Association (June 2001)

The Measuring and Monitoring Injury Working Group recognises that collection and dissemination of data is vitally important in the monitoring and evaluation of injury prevention programmes, the development of policy and practice, and assists with the targeting of resources and activity to those identified with the greatest need. The analysis, interpretation and reporting of reliable data are essential elements in the prevention of accidents and subsequent injury.

**National data** are fragmented and not always easy to compare because of different definitions and coding conventions used by different Government Departments and agencies. The levels of national data and indicators of injury occurrence are well developed but gaps and overlaps exist in the coverage of accidents and there is a lack of comparability in the collected information. Comparable indicators of severity of injury are not well developed with different definitions of severity being used by different data collectors. There is also a lack of centrally available data from health service sources such as A&E departments and general practices which have the potential to provide data on injuries resulting from all kinds of accidents.

**Regional data** hardly exist at this aggregate level, except in the road transport area where Government Regional Offices are well established and regional statistics published, and in the fire area, where data are available at the brigade level and can be aggregated to larger, regional areas. The growth of Public Health Observatories provides an opportunity to develop regional surveillance and databases on injury.

**Local data** are fragmented, there is a lack of accessibility, and total numbers of injuries, especially deaths, are too small to enable priority setting and the monitoring and evaluation of local injury prevention programmes to be carried out for individual injury types. However, there are several local injury surveillance systems being set up around the country. This helps people responsible for local injury prevention to work together with synergy to solve local problems. Often these problems have similar underlying causes such as poor housing, lack of knowledge, skills and experience, or poor environmental design. Different administrative boundaries at the local area do

not always coincide which makes it difficult to bring the data together at Local Authority or Primary Care Trust level.

In the field of data and surveillance there are no quick fixes. However, the Working Group recognises the urgency of improving the situation and are recommending a number of measures to tackle these difficulties. There is a great deal of data already collected and the priority is to make better use of what is currently available. The recommendations that follow will need further work and will need to be prioritised and costed to develop a strategy for information on injury prevention.

The recommendations of the Measuring and Monitoring Working Group are presented here and are not listed elsewhere in the report.

## Improving data and surveillance

- **The adoption of a minimum dataset based on the Recommendations of the Public Health Information Strategy**

  The following has been identified to comprise a core minimum data set:
  **accident characteristics:**
  - type of accident;
  - accident location;
  - geographical identifier for location;
  - time of day, day of week, and accident date

  **personal characteristics of each person injured**
  - age;
  - sex;
  - area of residence.

  Adoption of common standards for this core set of items is critical for facilitating greater linkage as these items (when commonly defined) should allow the identification of the same accident across the sources.

- **Information lead for injury at all levels**

  - **National level**

  It is not feasible in the short term to establish a national injury surveillance centre to bring together the core minimum dataset at the national level, but this is needed in the longer term if real progress is to be made. However there is a need for a lead on information at the national level to provide support on information and analytical issues to enable monitoring of progress and to lead developments to improve accidental injury data for the future and its availability to users by liasing with individual information holders at local, regional, and national level. This might be considered in the medium term.

  - **Regional level**

  We recommend that injury surveillance would best be carried out at regional level and Public Health Observatories could play an important role in this, but all parties would need to help to collate, disseminate and analyse data on injuries and their consequences. One major barrier to be overcome is the difference in administrative boundaries between Local and Strategic Health Authorities, and PCTs. However, pump-priming funds may be needed to help the PHOs develop new systems.

**Local level**

We recommend that encouragement should be given to the development of local surveillance systems on a consistent basis at PCT level. We can build on the work of others such as the All Wales Injury Surveillance System, the West Midlands A&E Surveillance Centre and the City of Sunderland Local Accident Data Collection and Collation to establish common protocols for improved data collection and exploration of ways of making this available at local and regional level.

- **A policy lead at all levels**

It is important to have a policy lead on co-ordination of injury prevention at all levels in order to ensure that accidental injury is given the priority it requires. This may be achieved at the regional level when Department of Health sectors of Government Offices for the Regions are fully established as this will be where Regional Directors of Public Health will be based. At the local level the Director of Public Health located within PCTs should have a policy lead on co-ordinating injury prevention.

- **Improved data collection**

A key step to improving understanding of injury at a local level and to the introduction of more targeted interventions is to improve data collected on injury through A&E Departments and General Practice. All nationally collected data should be collected according to the core minimum data set recommendations, already agreed by data collectors during the PHIS (Public Health Information Strategy) consultation phase. This is gradually being implemented by Government Departments as new reviews of data and storage are undertaken. It is recognised that standardisation across databases is only likely to be achieved as an iterative process, however, we recommend that this is adopted across all data sources especially at inpatient level, and also where there is a shortage of usable information from A&E departments and at PCT level (including General Practice).

Injury surveillance and prevention work requires close to complete external cause of injury coding (E-coding). Currently E-coding of hospital inpatient data is far from complete. It is recommended that a new national data quality indicator is introduced that measures the proportion of inpatient injury admissions (i.e. whose principal diagnosis is an injury) that are E-coded. It is further recommended that this indicator be included amongst those for which the Hospital Trust is performance managed.

- **Essential additional information**

Additional information as recommended by the PHIS and Monitoring and Measuring Injury Working Group (MMIWG), including accurate geo-coding of the location of the accident; circumstances or events leading to the accident; socio-economic, ethnicity and other factors; type of activity preceding the accident; nature and severity of injury; and consequences of injury, including level of disability and ability to work. It is recognised that different databases have been set up for different purposes and are more suited to collecting some data items than others.

- **Measuring trends in exposure-specific risks**

We recommend that, where possible and cost-effective, data collectors be encouraged to collect data on exposure to inform injury prevention work about changes in trends in exposure-specific risks. At the local and regional levels relevant data systems need to be developed for the recording of exposure data, as some is already collected, and to allow additional exposure information to be added as and when it becomes available.

- **Coroners database**

The BMA report, *Injury Prevention*, recommends that data from coroners' inquest reports relating to injury should be compiled into an anonymised standardised national database. The MMIWG supports this recommendation and recognises the need for a more systematised data collection system arising out of the investigation of deaths due to injury.

A study is needed to test the feasibility of linking HES and other Government Department data to a dataset of deaths relating to injury.

- **A knowledge base**

We further recommend the development of systems, such as registers, for recording information on the effectiveness of injury prevention interventions. (Such a system exists, MOLASSES, for road engineering interventions). Where possible age-specific coverage of such items as use of cycle helmets and smoke alarms should be extended.

More information to extend the knowledge base could be collected at the primary care level by setting up an accident and patient register to monitor ongoing medical effects and social implications of disability.

- **Assess the burden of injury**

The burden of injury should be assessed on the basis of its occurrence, longer term consequences, and its costs to individuals and society including the health sector. An accurate account should be created of the burden of injury using internationally recognised methods, including Disability Adjusted Life Years (DALYs). This would aid comparison with other major public health threats in England.

## Better integration

We recognise the need for a central register of existing databases covering accidental injury to enable better access to the data and to allow easier ability to combine datasets and we recommend the creation of a website with a gateway to give access to national and regional data in the first instance. The Health Development Agency could undertake this.

## Improved infrastructure

Data Protection, disclosure and confidentiality are issues that need to be resolved at national, regional and local levels. The National Statistics Code of Practice is currently out for public consultation and a National Statistics Data confidentiality disclosure and access protocol is being developed. A protocol for data matching is

also being developed. The MMIWG recommend that these issues are further investigated once the Code of Practice and protocols are published.

### Recommendations for data at the regional and local levels

- A health sector lead should be secured to collate at the local level, high quality data on injuries and their consequences. It would be helpful to develop guidance on how to proceed.
- Regional subsets of national data collected by ONS or government departments need to be made available for Public Health Observatories (and the emerging Regional Observatories/Intelligence Units) to utilise. This should be considered standard practice.
- At the local level it is difficult to obtain data on sports, leisure and play injuries. Other than HASS/LASS, which is a national system, there is no systematic way of collecting, collating or accessing this information. This is an area where geographic identifiers are rather difficult to attach given the nature of open spaces and other play areas. This area of data in particular needs attention if this priority area for children is to be addressed.
- It is difficult for local community groups and others working at community level to have access to the locally collected data relating to injury in ways that are straightforward and meaningful to their objectives. More needs to be known about the consequences of injury at the local level. These are areas that require urgent attention.
- Encouragement should be given to the development of local surveillance systems on a nationally consistent basis. Guidance on how to do this would need to be developed.
- Issues of data protection, confidentiality and disclosure need to be resolved at the regional and local levels where there is greater potential for identifying individuals than at national level.

### The need for Indicators

There is no single measure that is suitable for all levels and types of injury and no measure which is absolutely robust and impervious to changes in external factors over time. As the same can be said for every other medically treated condition, injury monitoring should not be treated any differently and should proceed on a pragmatic basis using the best data we have at present. The search needs to continue for more robust measures, and better and more appropriate data needs to be collected in line with the recommendations of this report.

- **Reductions in injury mortality for all and specific causes.**

Death rates should be included as one overall indicator for injury prevention. To allow comparisons across areas and over time it is best if death rates are directly standardised by age and sex, usually using the World Health Organisation's European Standard Population.

- **Reductions in injury occurrence**.

Some local areas have better data sources than others and should be encouraged to develop local indicators. Local data is a considerable stimulus to local injury prevention initiatives. National and regional success usually depends on local initiatives. Nevertheless, the key to producing meaningful indicators will be the identification of robust case definitions of injury occurrence that can be applied to routinely collected data.

- **Severity of injury**

There is a need for a robust measure of severity to be identified, which should be the basis of a case definition from which sound indicators can be developed. The basis of indicators of non-fatal injury occurrence, pitched at varying levels of severity, could be:

- **Critical injury** – Case ascertainment based on an extension of Trauma Audit and Research Network (TARN) database to the whole country could be the basis of the development of indicators of critical injury.
- **Serious injury** – Currently, none of the definitions of serious injury used by the current data systems, are robust enough to be the basis of a sound indicator. Routinely available data from hospital systems do not include a field for the classification of injury severity, and any derived measures (e.g. length of stay) have exhibited problems. An ICD-10 based severity measure could, in time, be developed from the ICISS
- **Slight** –To produce a minor injury indicator a potential data source/case definition that shows promise is the Health Survey for England minor injury definition. Before use, however, the validity of the measure needs to be investigated for reporting bias.

**Inequalities**:

- There is a lack of data available on health inequalities in relation to accidental injury. The national data sources often provide breakdowns by sex and age but ethnicity, social class and area based information tends to be more rare.
- As part of the work on health inequalities, a basket of indicators is being developed to help track progress towards the achievement of the national health inequalities targets. It will be used to assess whether necessary systems and policies are in place and whether the action being undertaken is sufficient to succeed in reducing health inequalities.

## Filling gaps in our knowledge

- Develop standard definitions which agencies collecting data relevant to accidental injury could work towards adopting.
- Develop an agreed definition of severity of injury that is independent of length of stay in hospital. Research and development are needed to identify practicable ways of capturing severity of injury on routinely collected data systems, assessing the impact on safety work of implementing such changes to current collection systems and evaluating the benefits of change. This should be done in consultation with the HES data quality and classifications advisers.
- A research study is required to identify the feasibility, confidentiality issues and cost-benefit of different ways of linking different data sets using additional pieces of data and also to establish what is sensible to collect in a standardised way from different data sources.
- Research and development are needed to identify practicable ways of capturing injury-related disability. One way of doing this could be through primary care.
- Research and development should be carried out to develop robust all-cause non-fatal indicators of injury occurrence.
- Address the quality of databases and ensure relevant data are identifiable.
- Carry out more controlled trials of interventions.

However imperfect the current system might be in terms of future information needs, we should all work together to use and share the data we have today to take forward and improve our efforts in accident prevention . The priority must now be for us to work towards a more optimal information solution.

# Measuring and Monitoring Injury

## 1. Background

### *1.1 Aims of the Measuring and Monitoring Working Group*

This is a report to the Accidental Injury Task Force (AITF) from its Working Group on Measuring and Monitoring Injury. The membership of the group and its terms of reference are given at Appendix 1.

The aim of this report is:

- to set out what data are currently available at national, regional and local levels that relate to injury occurrence, severity, circumstances of an accident taking into account inequalities in levels of injury and access to services;
- to make recommendations on what data and indicators of injury are needed in the short and longer term to allow adequate monitoring and measurement of the extent of the accidental injury problem in England;
- to highlight issues surrounding identifying potential indicators for monitoring priorities for action for children and older people; and
- to make recommendations where strengthening and further development of current systems is needed, and, where appropriate, advising on new ones to enable assessments to be made of effectiveness of policies and programmes introduced to reduce the occurrence and burden of injury on individuals and society.

### *1.2 Priorities of the Accidental Injury Task Force*

The AITF has identified children and young adults (0-24years), and older people (65 years and over) as the priority areas for action (Department of Health 2002). The MMI working group has tried to identify how best to measure and monitor these priority areas and evaluate policies and interventions.

**Priority Areas for Immediate Action**

The AITF has identified the following areas for immediate action

- young and older pedestrians;
- dwelling fires involving the children and older people;
- injuries to older people from falls and fractures;
- injuries to older car occupants; and
- injuries to children from play and recreation.

**Priority Areas for Action over the period to 2010**

There were other priorities identified for longer term action: these include

- injuries to young drivers and passengers;
- sports injuries to young adults;
- injuries at work; and
- home and leisure injuries to working age adults.

**Priority injury areas**

- Transport injuries especially;
  - pedestrian injuries;
  - pedal cycle injuries;
  - car occupant injuries;
- dwelling fires and other thermal injuries;
- sport, play and recreation related injuries;
- falls and fractures;
- home and leisure injuries; and
- work related injuries.

**Priority Populations**

- Young males
- Children
- Older people
- Socio-economically disadvantaged people

There are some important cross-cutting issues for which we do not have sufficient information yet. The three most important are:

- assessing inequalities in injury in terms of rates and trends in occurrence, and suitable interventions to address the inequalities gradients;
- costs of interventions, cost effectiveness of interventions to help inform priorities in policy development and resource allocation; and
- assessing the burden of injury on individuals, families and society.

Work in these three areas falls outside the remit of this working group.

### *1.3 Definitions*

What we measure and how we do it depends on how we define the problem. In this section we have set out the definitions that the AITF have used throughout their work

#### *1.3.1 Injury*

**Accidental injury** has been used to describe *injury occurring as a result of an unplanned and unexpected event which occurs at a specific time from an external cause.*

The following definitions and groupings are those used by the Office for National Statistics based on the 9th revision of the International Classification of Diseases (ICD-9) (World Health Organisation 1979). Included are accidental death or injury due to:

- transport - rail, road, air, water;
- poisoning;
- falls;
- fire, flames and smoke;
- natural and environmental factors;
- submersion, suffocation and foreign bodies;
- other accidents.

From 2001, ONS has coded cause of death to ICD-10 (World Health Organisation 1992). There are changes to the classification of injury under ICD-10 (Rooney and Smith 2000) and work is ongoing to explain the differences between ICD-9 and ICD-10 (Rooney, Griffiths, & Cook 2002).
For the purposes of the work of the AITF, intentional **injuries** will be excluded. These encompass:

- self inflicted injury and confirmed suicide;
- homicide and injury purposely inflicted by other persons;
- injury undetermined whether accidentally or purposely inflicted;
- other accidental and violent deaths and injuries.

Also excluded are **chronic exposure-based injuries.**

### *1.3.2 Severity of injury*

Injuries of all severities are considered. It is helpful to define the severity of injury being used here because it is not consistent across all data sources. The section on indicators highlights the difficulties with trying to establish one all embracing definition of severity.

Serious injury has been defined in *Saving Lives: Our Healthier Nation* (Department of Health 1999) as any unintentional injury requiring an in-patient stay of more than three days. This accounted for about 2000 casualties in 1999-2000. However, whilst not currently monitored, some proxy measures could be monitored through Hospital Episodes Statistics. These include fractured neck of femur, head and spinal injuries, burns and scalds.

### *1.3.3 Inequality*

The Department of Health is currently working on a strategy for health inequalities, following the announcement of the two national health inequalities targets on infant mortality and life expectancy in February 2001. The Strategy is being developed in two stages to take account of:

- the points raised in the health inequalities consultation *Tackling Health Inequalities* which ran from August to November 2001 (Department of Health 2001b), and
- the conclusions of the Treasury led Cross Cutting Spending Review on health inequalities. This Review provides the opportunity for all of government to focus on health inequalities and consider how the targets will be achieved.

The first stage will be a report on the responses to the consultation document which will also set out the overall approach for delivering the health inequalities strategy. The second stage will be the publication of the health inequalities strategy after the Cross Cutting Spending Review reports in Summer of 2002.

As part of this work a basket of indicators is being developed to support the national health inequalities targets (see Section 4.3.4).

### *1.3.4 Exposure to the risk of being injured*

The risk of an accident occurring which results in injury depends on the opportunity for such an accident to happen; this opportunity is commonly called exposure. The likelihood of such an accident occurring, given the opportunity, is risk. Risk is usually expressed as an injury rate relative to an amount of exposure such as pedal cyclist injuries per 100 million km cycled, or, for example, it can be expressed in terms of injuries per unit time undertaking an activity. This information is compared with casualty data to give casualty rates, where the casualty data are the numerators and the exposure data the denominators. Thus risks of various types with similar denominators may be compared directly.

# 2. Injury surveillance at the national level

## *2.1 Building blocks for the MMI working group*

Government and other agencies collect large amounts of information on a routine basis and it is stored in national databases where there are differences in collection techniques, definitions and database structure. The information collected is often not easy to share as few people have a comprehensive picture of what is available and fewer still have an in-depth understanding of all the databases involved which would allow a full picture of injury to be built up. Having said this, many databases have been built up over decades by Government Departments and refinements made to their data quality, scope and structure. This means that many data sources are fit for the purposes for which they were collected but are not easily capable of being brought together to provide a coherent picture for injury prevention purposes. Whilst this is neither cost effective nor efficient in public policy terms there may well be major costs of change involved to individual data collectors and analysts if time series data were to be compromised or other changes were required. These need to be assessed.

An important government initiative on data, the Public Health Information Strategy, is outlined below which has had a strong influence on the work of the MMI working group.

### *2.1.1 Public Heath Information Strategy for accident prevention(PHIS)*

In the wake of the publication of the Public Health White Paper; *The Health of the Nation* (Department of Health 1992), the Department of Health needed more information on pubic health information to guide its work in this area. The Public Health Information Strategy (PHIS) project group undertook a study concerned with improving information on accidents for the Department of Health. The report outlined the main elements of an 'Accident Information Structure' (see Appendix 7) for collecting and presenting accident information on:

- the number and distribution of accidents in different population groups;
- the health impact of accidents in terms of the numbers of people injured, the nature and severity of the injury, and the health services used;
- how and why accidental injuries occur and how they might be prevented or mitigated through primary, secondary and tertiary prevention. (Department of Health 1996)

A report was issued in January 1995 to Regional and District Directors of Public Health, local authorities and others involved with accident prevention (Department of Health 1993). The 1995 report outlined the main elements of an 'Accident Information Structure' for collecting and presenting accident information so that:

- sufficient information is captured to aid accident prevention and the main questions are answered e.g. where, why, how and when the accident happened, who it happened to, and what the impact was on the individual and the NHS, in the immediate and longer-term;
- maximum use can be made of existing data collected from different sources;
- a way of describing accidents is developed that avoids ambiguities and the potential for overlaps and double-counting;

- the collection and dissemination of information from health service sources such as Accident and Emergency (A&E) departments and General Practitioners (GPs), can be improved.

The PHIS aimed to identify a common minimum set of data which can uniquely identify both an accident itself and the characteristics of people injured or involved in an accident. This data set should be defined to common standards (at least for analysis of data). Such commonality and common standards should allow greater comparability of data across the different sources and could facilitate linking of data between sources. 'In other words, **not all sources would have to collect all the same information but the items that they have in common should be collected and/or analysed consistently**. Also, the ability to compare or link data across sources would mean that more information is available collectively than is gathered within any one source' (Department of Health 1996).

*Recommendations for a core minimum dataset from the PHIS Report*

There was broad agreement from those consulted (DH and several other Government Departments) on the validity and usefulness of the accident information structure proposed. There was also overall support expressed for greater data linkage and exchange between data sources. Based on consultation and on local examples of data linkage the PHIS group identified the following from the Accident Information Structure as belonging to this core minimum data set:

**a) Accident characteristics**

- **accident location**

Examples of location are:

  - home – in a house or flat - in the kitchen, bedroom, bathroom
  - road – at a junction (type), type of road (Motorway, A, B, unclassified road)
  - industrial or commercial site – factory (shop floor, canteen, work room) – office, building site
  - recreation/sports place – swimming pool, playing field
  - educational establishment – classroom, sports field, laboratory

- **geographical identifier of the location**

Address, postcode, map grid reference of the accident location. Grid reference is the ideal but where inappropriate postcode can be used. This helps to identify accident clusters and aid targeting of prevention.

- **accident type**

This describes the mechanism of injury, examples of accident type are:

  - falls – from one level to another, on the same level, from stairs, from a ladder
  - exposure to fire – cause of fire, source of ignition, item first ignited, material responsible for spread of fire
  - collision – with moving object – with stationary object, with vehicle etc.
  - poisoning – by drugs or medicines, alcohol, household cleaners etc.

- **time of day, day of week and accident date**

**b) Personal characteristics**

- **age and sex**
- **area of residence of injured person**

This core minimum dataset item is necessary to help identify people at risk of injury in particular areas of the country or local authority area.

PHIS recommended that adoption of common standards for this core set of items is critical for facilitating greater linkage as these items (when commonly defined) should allow the identification of the same casualty/accident across the sources. The definitions and standards recommended at the time of the PHIS report can be found in Appendix 7

### *2.1.2 Neighbourhood Statistics Service (NeSS)*

The Government set up a series of Policy Action Teams to recommend actions to enable the development of the National Strategy for Neighbourhood Renewal. One of the fundamental requirements of the strategy is to be able to identify deprived neighbourhoods so as to be able to establish whether government objectives are narrowing the gap between the poorest and the rest.

Data on inequalities have, hitherto, been difficult to collate mainly because of the disparate sources of such information. The Policy Action Team 18 looked at the development of the Neighbourhood Statistics Service (NeSS) to meet the needs of the National Strategy for Neighbourhood Renewal and other area based policies in both central and local government '. . .to facilitate a better understanding of local problems and effective targeting of solutions.' (National Statistics-Neighbourhood Statistics 2001).

At its full implementation NeSS will offer users ready access to a vast range of social and economic aggregate data on a consistent small-area geography and will be supported by a range of powerful analytical tools with which to turn the raw data into relevant and comprehensible information. NeSS, which is centrally managed by ONS will be built up in phases. At present additional datasets from existing sources are being added. NeSS will offer some special services to help others put their own data into a suitable format.

The work of NeSS, when data become more available, will help the MMIWG, the AITF and others working in the accidental injury field to assess national, regional and local patterns of inequalities and map these on to emerging patterns of injury occurrence. For example, DTLR is currently planning to add a fire casualty dataset to NeSS, which will enable the identification of injury 'hotspots' and links between socio-economic indicators and incidence of fire-related injuries at both local and national levels.

## ***2.2 Information we need to monitor accidental injury***

Information is required to develop policies and strategies at the national level. Policy and strategy development are also required at the local level as the basis for implementation of local area programmes. Good data are not only required for policy development but also for targeting population groups or areas for particular attention. Data are also required to detect trends and to evaluate at local and regional levels the success of national, as well as local and regional, initiatives.

Information is required to consider these aspects and includes:

- where, when and how the accident happened;
- who was injured;
- the nature of the injuries and the consequences.

For completeness and comparability between sources, ideally there should be a structured database for accidents where:

- all accidents can be described
- it is hierarchical so that information can be arranged according to an increasing level of detail on the
  - characteristics of the accident;
  - characteristics of the people involved; and
  - consequences for the victims
- it is made up of mutually exclusive categories to avoid overlaps and double counting.

The MMI working group endorsed the need for a common core minimum dataset across all injury types as proposed by the PHIS report and has used the recommendations as the basis of its work.

### *2.2.1 Essential additional information*

In addition to the core minimum dataset, data collectors, wherever possible, should be encouraged to collect further information on personal characteristics and information on the consequences of the accident for each person injured in a consistent manner. This extra information is:

**a) additional accident characteristics**

- **circumstances or events leading to the accident**
  - for the road -lighting conditions, weather and road conditions type of vehicles
  - falls – adequacy of lighting, objects contributing to fall,
  - fires – source of ignition, factors contributing to spread of fire, presence of working smoke alarm

An English language description of the accident and events leading to it should be collected where at all possible.

**b) additional personal characteristics:**

- **socio-economic factors;**

There are several indices that are useful to collect to help target inequalities in injury occurrence and prevention including household type, employment, education, income, car ownership, social class based on occupation. The latter is the most commonly recorded.

- **ethnic group;**

This is difficult to collect but where possible it should be recorded

- **type of activity preceding the accident**

This can be classified along the lines of the following examples while;

  - playing sport - playing football, tennis, skiing
  - resting, eating sleeping
  - cooking (e.g. frying chips),
  - travelling -crossing the road, driving a vehicle,
  - gardening, barbecuing, etc.

- **predisposing factors.**

This relates to personal factors that could contribute to the cause of the accident such as alcohol intake, medications, disabilities or sensory impairment, medical condition

**c) additional consequences**

- **nature of the injury**

The nature of injury, e.g. burn, fracture, choking, and the body part injured, e.g. leg, head, thorax. The most common way of classification of this is through the ICD-10

codes, or English language equivalents used in mortality statistics and hospital episodes statistics.

- **severity**

This is recorded in different ways by different data sources. For difficulties in standardising definitions of severity see Section 1.3.2 and Appendix 5. Most sources distinguish between fatal and non-fatal injuries but few break down the non-fatal into severe and slight.

- **immediate and longer term outcome of the accident for the individuals concerned.**

This is also difficult information to collect but it is helpful in assessing longer term health needs resulting from disability, and for assessing human costs of accidents. An example of data in this category is:

- died
- injured and required medical treatment
  - no disability
  - temporary disability
  - permanent disability (by type and severity)
- no medical treatment required

In order to gain as complete a picture as possible for accident prevention work, there are further pieces of information required which were not considered at the time by the PHIS group. This information is regarded by the MMI as difficult to collect but over time data collecting Departments might try to increase the level of such information collected and available.

- costs of injury;

Information about management of the patient might lead to estimates of cost e.g.

- who sees the patient;
- patient referred and to whom; and
- indicators of follow up
- levels of accuracy;
- measures of exposure;
- wider determinants (such as poverty, unemployment); and
- safety attitudes.

### *2.3 Data available at the National Level.*

'There is considerable fragmentation in accident prevention responsibilities leading both to fragmentation and overlaps in data collected, due in part to a lack of a central co-ordinating body. There is a lack of centrally available data from health service sources such as A&E departments (including ambulance data) and general practices, which have the potential to provide data on injuries resulting from all kinds of accident' (Department of Health1996).

In this section, data available at the national level is described. The data from each source is described in Table 1 in terms of the core minimum dataset and the additional information considered necessary by the MMIWG. Where additional information is available, as described above, this is described in Appendix 3, and where there are gaps, these are highlighted. Section 2.4 describes data available on costs of injury and exposure. Information is not collected on wider determinants of injury or on safety attitudes which may influence injury occurrence.

### *2.3.1 Availability of data sources*

**Nationally collected data** A detailed general description of each data source is given at Appendix 2.

- Department of Health - Hospital Episode Statistics (HES), The Health Survey for England, A&E data, and the Trauma Audit and Research Network (TARN)
- Department of Transport Local Government and the Regions - road traffic accident statistics (STATS19); fire statistics (for injuries) (FDR1)
- Department of Trade & Industry - Home and Leisure Accidents, Home Accident Surveillance System (HASS), Home Accident Deaths Database (HADD), and Leisure Accidents Surveillance System (LASS).
- Health & Safety Executive - Work Related Accidents (RIDDOR, Safety Statistics Bulletin);
- Office for National Statistics - Mortality Statistics: Injury and Poisoning; Morbidity Statistics from General Practice.

### *2.3.2 Data available from non-governmental sources*

The Royal Society for the Prevention of Accidents (RoSPA) is co-ordinating the data collected on drowning and near drowning by different agencies such as The Royal National Lifeboat Institution (RNLI), the coastguards (DTLR), HSE, Local Authorities.

### *2.3.3 International data*

DTI participate in EHLASS, providing data from 11 of the 18 HASS hospitals to form part of the EU database of home and leisure accidents currently under construction. This and associated research projects are conducted under the Injury Prevention Programme strand of DG SANCO's Public Health Programme, in which the Department of Health is the UK lead representative.

## *2.4 Improved data collection at the national level*

Additional information as recommended by the PHIS and the MMI working group, included accurate geo-coding of the location of the accident; circumstances or events leading to the accident; socio-economic, ethnicity and other factors; type of activity preceding the accident; nature and severity of injury; and consequences of injury, including level of disability and ability to work. It is recognised that different databases have been set up for different purposes and are more suited to collecting some data items than others. The data sources that already include these items are identified in Table 1 and a description given in Appendix 3.

Table 1: Summary of nationally available data together with items considered essential (see Section 2.2.1) Details of own codes are given in Appendix 3.

| DATA | HES | FIRE STATS | HASS / LASS | RTA STATS | RIDDOR | DEATHS |
|---|---|---|---|---|---|---|
| Accident type(s) covered | All accidents | Accidental fires | Home and leisure accidents | Road traffic accidents | Workplace accidents | All accidents |
| Meaningful regional/ local breakdowns available?* | ✓ | ✓ (non-fatal casualties) | × | ✓ | ✓ (non-fatal injuries) | ✓ |
| **Accident Characteristics:** | | | | | | |
| Location | ✓ ICD codes | ✓ Own codes | ✓ Own codes | ✓ Own codes (for road) | ✓ Own codes | ✓ ICD codes |
| Geographical id of accident (lowest level used) | × | ✓ Fire brigade area can be mapped to LA. Postcode data available for dwelling fire casualties ( robustness of these data requires checking) | ✓ Accidents in own home (the majority) identified by postcode | ✓ (10 digit OS Grid Reference number) | ✓ (County) | × |
| Type | ✓ ICD codes | ✓ Own codes | ✓ Own codes | ✓ Own codes | ✓ Own codes | ✓ ICD codes |
| Date | Date of admission | ✓ (Date of call to fire brigade) | ✓ (Also Date of attendance) | ✓ | ✓ | Date of death |
| Time of Day | × | ✓ (Time of call to fire brigade) | ✓ (Also Time of attendance) | ✓ | × | × |
| Events | × | ✓ Own codes | ✓ Own codes | ✓ Own codes | ✓ Own codes | × |
| **Personal Characteristics:** | | | | | | |
| Age | ✓ Based on date of birth | ✓ Based on estimated age in years | ✓ Based on date of birth or estimated yrs & mths | ✓ Based on age in years | ✓ Based on age in years | ✓ Based on date of birth |
| Sex | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Postcode of residence | ✓ | ✓ For dwelling fires | ✓ | ✓ (from 1999) | × | ✓ |
| Socio-economics | × | × | × | × | Occupation | Occupation |
| Ethnic group | ✓ (from 1/4/95) | × | × | × | × | × |
| | | | | | | |

| DATA | HES | FIRE STATS | HASS / LASS | RTA STATS | RIDDOR | DEATHS |
|---|---|---|---|---|---|---|
| Activity | ✗ | ✓ In most cases this can be inferred from other data | ✓ Own codes | ✓ Own codes | ✓ Own codes | ✗ |
| Pre-disposing factors | ✗ | ✓ Information collected on any other circumstances that led to injury/death, e.g. use of alcohol, disability. | ✗ | Breath test results | ✗ | ✗ |
| **Consequences**: | | | | | | |
| Nature of Injury | ✓ ICD codes | ✓ Own codes | ✓ Own codes | ✗ | ✓ Own codes | ✓ ICD codes |
| Injury severity | ✗ | ✗ | ✓ Inpatient stay length, or combination of type and body part | ✓ (fatal, serious, slight) | ✓ (fatal, major, over 3 day) | ✗ |
| Health Service Impact | ✓ OPCS (surgical) codes | ✗ | ✓ Own codes | ✗ | ✗ | ✗ |
| Outcome (other than death) | ✓ (circumstances of discharge) | ✗ | ✓ of initial visit to A&E | ✗ | ✗ | ✗ |
| **Other information** | | | | | | |
| Costs of injury | ✗ | ✗ | ✓ | ✓ | ✓ | ✓ |
| Exposure data | ✗ | ✗ | ✓ special studies not a data item | ✗ | ✗ | ✗ |
| Safety attitudes | ✗ | ✗/✓ Data collected annually via specially commissioned Fire Safety Attitudes and Behaviour Survey | ✗ | ✗ Some collected on seat belts, drink driving and speeding | ✗ | ✗ |
| Wider determinants | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ |

Amended version of that in PHIS Report (Department of Health1996)

### *2.4.1 Inequalities data*

There is a lack of data available on health inequalities in relation to accidental injury. The national data sources often provide breakdowns by sex and age but ethnicity, social class and area based information tends to be more rare. At Appendix 6, a table sets out what type of health inequality information is available for different national data sources and highlights the main trends in health inequalities for different age groups.

As part of the work on health inequalities, a basket of indicators is being developed to help track progress towards the achievement of the national health inequalities targets. It will be used to assess whether necessary systems and policies are in place and whether the action being undertaken is sufficient to succeed in reducing health inequalities. The basket will need to support the six priorities areas (set out in Section 4.3.4) and cover all major dimensions of inequality e.g. social class, ethnicity, gender, age, geography, groups with particular needs, e.g. people with disabilities, asylum seekers.

### *2.4.2 Measuring trends in exposure –specific risks*

Changes of exposure to risk are a key area for assessment of effectiveness of policies and programmes to reduce the occurrence and severity of accidental injury. Without such measures we do not know whether changes have taken place because of people avoiding the 'hazard' or activity or whether appropriate measures have worked to make such activities safer. The best example of this is the reduction in the number of motorcyclists killed during the 1990s. Much of the reduction could be accounted for by a similar reduction in the amount of motorcycling. Parallels may be seen with the reduction in the number of pedestrian casualties. The exposure data clearly indicates that there has been a decline in walking with a shift to use of the car.

Exposure information for the transport sector is collected in the form of sampled counts for the motorways, main roads and minor roads in urban and rural areas on a routine basis. From these, national estimates are published by the DTLR in the National Travel Survey (Department of Transport Local Government and the Regions 2000), and annually in Transport Statistics Great Britain (Department of Transport Local Government and the Regions 2001c). Local data are collected by Local Highway Authorities (LHAs), however, the coverage of minor roads, pedestrians and cyclists is not as extensive as it could be but is improving with the need to collect this information for Public Service Agreements and Best Value audits.

Not all exposure data are easy to collect. Fire injuries are a good example. Virtually everybody does something every day that exposes them to the risk of fire (smoking, cooking, heating the house etc.) and at present we have no way of knowing how many of these activities translate into fires or, indeed, injuries. In addition the person responsible for smoking or overheating the chip pan may not be the person injured in the fire.

There is no exposure information in the DTI database. It is very difficult to estimate exposure to products and other items in the home or at leisure. The DTI have estimated exposure for some activities, of which sport is one. The 23rd Annual Report (Department of Trade and Industry 2001) gives estimates of relative risk of a fatal accident occurring under different circumstances and also gives estimates for non-

fatal home accidents. One such example is the annual probability of a fall occurring in the home is 1 in 55 compared with a burn at 1 in 600. These are calculated using population statistics and not exposure data. The DTI have published studies into the risk of injury per hour of exposure to consumer products using an interview technique regarding use of common household items which were related to hospital data to provide estimates of risk per hour of use (Hayward 1996). A study of risks of sports injury has also been undertaken (Ball 1998).

Exposure information is not routinely collected by the HSE

### *2.4.3 Coroners' database*

Deaths which may have been due to an accident are referred to the Coroner. Unless the post mortem shows unequivocally that the death was due to natural causes an inquest must be held. After the inquest the coroner certifies the death and provides the Registrar with details of the deceased and the inquest findings as to the cause of death. The form completed by the coroner provides details about the verdict, place of accident if the verdict is accident or misadventure and the details of how the accident happened. It also includes information about the deceased in a motor vehicle incident.

In 2000, 22,804 deaths were certified by the coroner. Data from these deaths can provide valuable information about the circumstances of fatal injury. However, although the descriptive data supplied by the coroner is used to code cause of death, more accurately, its free format makes it less useful for other purposes. The BMA recognised this difficulty and recommended that data from coroners' inquest reports relating to injury should be compiled into an anonymised standardised national database. Currently there is a review of Coroners and this provides a good opportunity to express the need for more systematised data collection as part of the investigation of deaths due to injury.

There is interest in linking data on deaths due to injury to other datasets on injury. As well as the technical difficulty in linking individual records from different datasets there are also data protection and confidentiality issues to be addressed. A feasibility study, covering both the technical and data protection issues, is needed to see how these datasets could be linked together for example by linking a mortality injury dataset to HES.

### *2.4.4 A knowledge base*

The development of systems, such as registers, for recording information on the effectiveness of injury prevention interventions would be very helpful. (Such a system exists, MOLASSES, for road engineering interventions (County Surveyors Society 2001)). Where possible age-specific coverage of such items as use of cycle helmets and smoke alarms should be increased.

More information to extend the knowledge base could be collected at the primary care level by setting up an accident and patient register to monitor ongoing medical effects and social implications of disability.

### *2.4.5 Assessing the burden of injury*

The cost to the NHS of treating people who have been injured in accidents is enormous. There are costs associated with medical treatment, provision of a bed in a

ward, medications and subsequent outpatient clinic costs, not to mention the costs of rehabilitation of people who have suffered some form of disability, no matter how slight. A recent Department of Health estimate puts the cost to the NHS of treating accidental injury and poisoning at £2.2bn per annum. This does not include rehabilitation costs, which are likely to be considerable.

Each year DTLR publishes its Highways Economics Note No. 1, *The valuation of the benefits of prevention of road accidents.* The published figures are the cost–benefit values and represent the benefits that could be obtained by the prevention of road accidents. The method of valuation has been based since 1993 on a consistent willingness to pay approach. It includes all aspect of valuation of casualties including the human cost (pain grief and suffering) and loss of output due to injury, and medical and ambulance costs associated with road traffic injuries (Department of the Environment Transport and the Regions 2000a). The methodology and broad values have been adopted by the following Government Departments in their valuation of the benefits of preventing injury.

In 2000 there were 233,729 **road traffic accidents** in Great Britain involving injury to at least one person (Department of Transport Local Government and the Regions 2001a). The estimated value of preventing these is £12,170m at 2000 prices and values.

The cost to society of **home accidents** in the UK is estimated to be £25,000m at 1994 prices annually (Hopkin & Simpson 1996). During 1999, 3,974 people died as a result of an accident in the home. There were estimated to be 2.8 million accidents in the home and a further 3.1 million leisure accidents (which includes sport), (Department of Trade and Industry2001).

A recent research study (Weiner 2001) estimated that the cost of **dwelling fires to the** economy of England and Wales in 1999 to be £1700m. Deaths and injuries accounted for £750m worth of that figure. In contrast the cost of death and injuries in commercial buildings is estimated to be £50m.

The HSE estimates, using the total loss approach, that the costs to individual workers of **workplace injuries and ill-health** due to reduced income and additional expenditure is £7,000m. The cost to employers is estimated to be between £3,300 and £6,500m. The total costs to society as a whole, including pain grief and suffering, and the individual and employer costs is between £14,500 and £18,100m (2.1-2.2% of GDP). These figures are based on 1995/6 prices with net present value costs in future years included (Health and Safety Executive 1999).

As different methods and base years have been used in calculating these figures they cannot be aggregated to give a total value of preventing injuries using 1999 figures. They are presented here to give an overview of the magnitude of the problem in resource, human and social costs and values.

### *2.4.6 Completeness of reports and levels of accuracy*

Where accuracy and completeness has been assessed by data collectors the information is given but for some datasets such assessments have not been made systematically. Therefore, in this section, a lack of accuracy or completeness

information does not imply that the dataset is without error, rather that the research to quantify it has not yet been carried out.

Not all accidents involving human injury are reported to the police since in some cases this is not a legal requirement. Nearly all fatalities are covered but there is under-reporting. A study in 1990 (Hopkin et al. 1993) in one region found that about 64 percent of all road casualties were involved in accidents that were reported to the police, the remaining 36 percent of casualties were unknown to the police. Moreover, studies show that the police are more likely to underestimate the severity of injury than to overestimate it because of the difficulty of assessing severity of injury at the roadside.

There is no evidence of an under-reporting problem which can be quantified with the DTI data because there is no legal requirement to report injuries arising from the use of consumer products. The sample is about 5 percent of all UK home and leisure accidents presenting at A&E in a representative sample of hospitals spread throughout the UK. DTI do not consider extension of the present sample size as likely to be cost-effective in terms of their remit for consumer safety.

The 2000 British Crime Survey (BCS) estimated that fire brigades attend between 13% and 26% of all domestic fires in England and Wales. However, the very low number of injuries in those fires reported in the BCS suggests that brigades probably are called to the majority of 'serious' fires (i.e. those resulting in serious injuries and/or death). Further work needs to be carried out to investigate reporting rates for domestic fires, but fire brigade returns probably do capture the vast majority of serious fire-related injuries and deaths (Aust 2001).

There is evidence that only one-third of non-fatal reportable accidents is actually reported under RIDDOR. The database does not record total length of absence from work once the over-three day criterion has passed (Health and Safety Executive 1995).

The completeness and accuracy of health services data is also an issue. Injury surveillance and prevention work requires close to complete external cause of injury coding (E-coding). Currently E-coding of hospital inpatient data is far from complete. It is recommended that a new national data quality indicator is introduced that measures the proportion of inpatient injury admissions (i.e. whose principal diagnosis is an injury) that are E-coded. It is further recommended that this indicator be included amongst those for which the Hospital Trust is performance managed.

Injury deaths that do not have an inquest tend to have non-specific external cause coding. The location of place of death in most cases is given as the hospital where death was certified rather than the geographic location where the injury was incurred.

### *2.5 Integration*

It is not possible at the moment to link datasets but it is technically feasible to use datasets together where confidentiality issues allow this. The adoption by all data collectors, of the core minimum dataset is essential for identifying, within defined geographic boundaries, injury types, at risk populations and settings through sharing and linking of data.

We recognise the need for a central register of existing databases covering this area to enable better access to the data and allow easier ability to combine datasets. We recommend the creation of a website with a gateway to give access to national and regional data in the first instance. The Health Development Agency could undertake this.

The requirement on those conducting statistical surveys to undertake quality reviews to assess needs of users should be extended to all data collections which should be reviewed on a regular basis to ensure that the data fits the users' needs.

### *2.6 Infrastructure*

There are problems with confidentiality of data that can act as a barrier to sharing data at all levels. There are competing forces in the access of information. There is public demand for accountability particularly in the area of public health and safety, there is also pressure for information flows around Government to be more efficient. On the other hand there is greater concern over privacy, confidentiality and the disclosure of information. There is a need to provide a balance between the opportunity to provide access to information for a wide variety of legitimate interests and maintaining the trust of the public to safeguard information supplied in confidence.

Identifiable patient data cannot be shared without their informed consent unless the use has been given support under Section 60 of the Health and Social Care Act (Department of Health 2001a). This Section makes provision for the Secretary of State to make regulations that allow identifiable patient information to be shared for medical purposes where he considers that this is in the interests of improving patient care or in the public interest. It requires the Secretary of State to set up a Patient Information Advisory Board to advise on applications of support under Section 60.

Disclosure is a real difficulty with injury data. Even at national level numbers can be quite small and any further disaggregation may be disclosive. Data collected on injury is often very detailed but may still be non-disclosive. However if data from different non-disclosive sources are combined the resulting dataset may be disclosive .

Information about injury, which has been collected as part of routine monitoring or as a research project, may not be in the public domain. However effective injury prevention strategies will require action from a wide range of stakeholders. Sharing such data with stakeholders who are not bound by a duty of confidentiality risks the data coming into the public domain.

The National Statistics Code of Practice is currently out for public consultation and a National Statistics Data confidentiality disclosure and access protocol is being developed. A protocol for Data matching is also being developed. The Code of Practice will provide a guidance framework for the integration of injury data .

The Registration of vital events, births, marriages, and deaths, is currently under review and proposals are out for public consultation. It is likely that these proposals will change the information collected at death registration, the way it is collected and the amount information in the public domain.

### *2.7 Gaps in our knowledge*

- Develop standard definitions which agencies collecting data relevant to accidental injury could work towards adopting.
- Develop an agreed definition of severity of injury that is independent of length of stay in hospital. Research and development are needed to identify practicable ways of capturing severity of injury on routinely collected data systems, assessing the impact on safety work of implementing such changes to current collection systems and evaluating the benefits of change. This to be done in consultation with the HES data quality and classifications advisers.
- A research study is required to identify the feasibility, confidentiality issues and cost-benefit of different ways of linking different data sets using additional pieces of data and also to establish what is sensible to collect in a standardised way from different data sources.
- Research and development are needed to identify practicable ways of capturing injury-related disability. One way of doing this is through primary care trusts.
- Research and development should be carried out to develop robust all-cause non-fatal indicators of injury occurrence
- Address the quality of databases and ensure relevant data are identifiable.
- Carry out more controlled trials of interventions.

### *2.8 Recommendations for national level data*

The recommendation of the Measuring and Monitoring Working Group are given in full in the Summary and Recommendations section. However, the main messages about the national data are that it is fragmented and difficult to access across all sources necessary to inform the priorities identified by the working groups. However imperfect the current system might be in terms of future information needs, the first step in improving it will be for data collectors and analysts to work together to use and share the data already available whilst a more optimal solution is being developed.

# 3 Infrastructure for surveillance at regional and local levels

## *3.1 Data at the regional level*

### *3.1.1 What is a region?*

The concept and definition of a Region is not the same for all areas of work. It was only in April 2002 that the health regions covered the same geographic areas as the Government Offices. This was in order to rationalise regional Government departments into single offices to strengthen their function and shift some of the power from the centre to the regions. Also some Government Departments have responsibility only for England whilst others also have responsibility for Wales and/or Scotland. Whilst the Home Countries are not regions in themselves, they too have regional offices and responsibilities which need to be borne in mind.

*Regional level data*

Much of the data collected by Government Departments is collected at the local level and aggregated to the national level. However, not all data can be aggregated to the intermediate, or regional level. Data which is published at the regional level includes the STATS19 road traffic accident data (there are also breakdowns of traffic flows by region). The HES data are also available by region. Fire service data are available at the brigade level, and can be aggregated up to larger, regional levels if required. (Although the problem of a lack of co-terminosity might prevent certain datasets being matched at the regional level.)

*Public Health Observatories in relation to regional data*

Public Health Observatories (PHOs) have been established in each region to;

- monitor health and disease trends,
- identify gaps in health information,
- advise on methods for health and health impact assessment,
- draw together information from different sources, looking ahead to give early warning on particular health issues; and
- evaluate progress made by local agencies in improving health and cutting inequalities.

The growth in importance of Public Health Observatories provides an exciting opportunity to develop regional surveillance and databases on injury, relevant to the populations they serve. They will have an important role to play in measuring and monitoring accidental injury at the regional and local level.

For many types of accidental injury there are too few deaths and serious injuries at the local level to allow coherent strategies and policies to be developed. It is through aggregating to the regional level that trends and patterns start to become apparent. This is an area where PHOs could make an important contribution. These functions require access to a wide variety of different data sources and the ability to combine and link datasets from different sources. A wide range of agencies and organisations at regional level increasingly want access to data that describes local problems i.e. regional and sub-regional analysis.

### *3.2 Data requirements at the local level*

#### *3.2.1 What is local?*

This seems to depend on where you are and what you want to do. From a national or regional perspective local could mean city or town level. A regional perspective might consider Tyne & Wear to be 'local' compared to the national and international scene. Generally, in lay terms, local is used to describe a town or city and its geographical area. However, a community within a city will consider itself local compared to a more 'district-wide' perspective across an entire city or town.

Increasingly however, 'local' is being applied to any area defined within a particular regeneration or health improvement programme. For example, Sure Start, Single Regeneration Budget, and most recently Neighbourhood Renewal Fund. Each of these programmes request 'local' data that can be a small geographical area of the city. At the national level, local usually means the census output area.

#### *3.2.2 Who collects, stores, analyses and uses local data?*

Most data used by government departments are collected locally and then passed to a central point where they are input to a national database. This, however, does not mean that the data are available for local use.

Some data collected by A&E departments is available for local use but GP data are not routinely available at any level. The Hospital Episode Statistics are available at local level but not until all the data have been input to the national database, even though the data was supplied at the local level. In the case of injury prevention, other than use of HES and deaths data, there is some evidence of systematic use of these sources by the health sector for developing policies and programmes for injury prevention. The exception to this is the setting up in a few local areas of surveillance systems. Two examples using A&E data are the All Wales Injury Surveillance System (AWISS) (Lyons et al. 2002), and the West Midlands Accident and Emergency Surveillance Centre (University of Birmingham Department of Pubic Health and Epidemiology 2002). The system in place in the City of Sunderland is described in Section 3.2.4.

The STATS19 road traffic accident data collected by the police is shared with the Local Highway Authority (LHA)who are responsible for road traffic accident prevention and casualty reduction in their area. These data are routinely used by the LHAs in their day to day work and is available in aggregate to those other organisations and members of the public who request it, but sometimes a charge is levied. Road safety plans and reports are regularly published by LHA's but some are more comprehensive than others especially in the details of co-operative working with other local agencies. Tables are published annually by the DTLR in Road Accidents Great Britain (Department of Transport Local Government and the Regions 2001b).

The HSE RIDDOR data are collected locally and some are reported directly to the Local Authority. Local inspectors make use of local data in assessing local employment risks and as part of their statutory duty to investigate and regulate.
The DTI data are collected locally but at a sample of hospitals so is not appropriate for local use. The directly collected A&E data, where this is systematised could be used for similar purposes. In particular at local level it is difficult to obtain data on

sports, leisure and play injuries. Other than HASS/LASS, which is a national system, there is no systematic way of collecting, collating or accessing this information. This is an area where geographic identifiers are rather difficult to attach given the nature of open spaces and other play areas. This area of data in particular needs attention if this priority area for children is to be addressed.

The fire casualty data are collected locally and is used locally by many of the fire brigades who collect it. It helps inform issues of community fire safety and, where geographic identifiers are routinely collected, aids identification of residential areas and properties of higher than average risk.

There are far reaching benefits of systematic, integrated and accurate collection of data at the local level; some of these are listed below as they help in:

- deciding to act: local data can provide the evidence that particular communities face problems of a kind that can be tackled locally
- planning what to do: providing the information needed to work out an effective approach
- assessing relative need: pinpointing local areas which have the greatest need and assessing how other areas compare
- analysing; providing data required for before and after analysis at the local level to monitor change
- monitoring progress: towards objectives and goals set by government and other agencies.

(National Statistics-Neighbourhood Statistics2001)

In time the NeSS will be an important source of information for injury prevention work in local areas, especially where indicators of population, deprivation, access to services etc. are required for local policy and strategy development, for setting priorities, for monitoring purposes to detect changing trends and for evaluation of effectiveness. However, this will not be sufficient information at the local level because whilst injury prevention work has overlapping objectives with the Strategy for Neighbourhood Renewal, it has its own set which requires other data linkages and analyses to be made.

It is difficult for local community groups and others working at community level to have access to the locally collected data relating to injury in ways that are straightforward and meaningful to their objectives. More needs to be known about the consequences of injury at the local level. These are areas that require urgent attention.

### *3.2.3 Examples of local injury surveillance networks*

The collection and dissemination of data is an important tool in the monitoring and evaluation of health programmes, and assists with the targeting of resources and activity to those identified with the greatest need. The use of reliable data at the local level is an essential element in the prevention of accidents and subsequent injury.

Organisations and individuals with a responsibility for, or an interest in, preventing accidents are joining together to improve the collection and dissemination of data at the local level. The establishment of local injury surveillance networks is seen as an important tool in supporting this collaboration. Local accident data can inform

strategies and policies, focus work within the community, and provide a means to monitor health improvement.

The availability of accident data facilitates the inclusion of accidents within local programmes such as HImP's, New Deal for Communities, New Opportunities Funding, Sure Start, and Healthy Living Centres. These policy requirements for data can often provide the motivation for people to work together to solve local information gaps and shortfalls, and can also lead to the provision of funding for programmes of intervention.

An example of a regional network is that being developed within Tyne and Wear, all five districts have joined forces to develop the collection and dissemination of accident data from a whole range of agencies. The City of Sunderland have over a period of years developed a more local network, but which reflects that being developed across Tyne and Wear, and is led by the Sunderland Teaching Primary Care Trust. Examples of the data fields collected and the sources of the data available are given below (City of Sunderland 2000).

An example is given for the City of Sunderland

**The City of Sunderland - Local Accident Data Collection and Collation, provides an example of local accident data**.

The following is a summary of the fields of data used, others are available:

- North East Ambulance Service NHS Trust: Age, sex, date / time, location (map reference and postcode), diagnosis (fall, abdominal pain, head injury, RTA, burn, poisoning, OD).
- Tyne & Wear Fire Brigade: Age, sex, date, location (map reference and postcode), type of property, room of origin, mechanism involved, casualties.
- Northumbria Police (via TADU*): Age, sex, date / time, location (map reference), junction / road type, vehicle, casualty type, severity of injury, road conditions.
- City Hospitals Sunderland – A&E admissions: Age, sex, episode start and end date, duration of stay, postcode of patient, ward admitted to, primary diagnosis (ICD10 code) primary injury (text), cause code, cause of injury (text), place of injury (text).

* TADU – Transport Accident Data Unit administered by Gateshead Council

# 4 Information required for future monitoring of injury occurrence and prevention

### *4.1 Background*

The AITF has identified children and young adults (0-24 years) and older people as priority areas for action (see Section 1.2). It is part of the remit of the MMI working group to advise on issues surrounding identifying potential indicators suitable for measuring and monitoring progress towards reducing deaths and injuries and their consequences to these priority groups in the settings identified. Some of the action will be at national level but most injury prevention programmes will be delivered at the local level. This section discusses possible indicators and the issues surrounding their use.

### *4.2 Accidental injury indicators*

There is no single measure that is suitable for all levels and types of injury and no measure which is absolutely robust and impervious to changes in external factors over time. As the same can be said for every other medically treated condition injury monitoring should not be treated any differently and should proceed on a pragmatic basis using the best data we have at present. The search needs to continue for more robust measures, and better and more appropriate data needs to be collected in line with the recommendations of this report. Appendix 5 sets out in more detail the problems that exist with current indicators.

Examples of external factors that influence the collection and coding of data that are the basis of current indicators are:

- access to and utilisation of health services (accident and emergency attendance for most conditions may be strongly influenced by factors such as distance from hospital, and hospital admissions/lengths of stay can be affected by bed availability and changes in medical practice);
- changes in coding and classification of injuries over time (e.g. ICD9-10, ICECI, European MDS for injury surveillance, NOMESCO, EHLASS); and
- variations in data completeness and coding practices

It is important to try to reduce the effects of these extraneous factors. The suitability of indicators and outcome measures also depends on the use to which they are being put and the level of measurement. Indicators for diverse prevention strategies will differ, for example:

- falls involving older people;
- dwelling fires;
- pedestrian injuries; and
- reducing inequalities in injury (which may well differ from those based on absolute reductions in injury).

In certain circumstances proxy or intermediate step indicators such as those based on changes in attitudes, behaviours, and particularly the uptake of preventive and protective equipment may be very valuable surrogate markers for injury reduction. This is why the MMI working group consider it important to collect as much as possible of the additional information described in Section 2.

The indicators in Section 4.2.1 are those that are used currently to measure progress at national regional and local levels. They are the basis of national targets, performance measurement, and public health monitoring,

*4.2.1 National targets and indicators.*

**Department of Health**: Accidental injury was one of four priority areas in *Saving Lives; our healthier nation*(Department of Health1999). The accidental injury targets were to reduce by the year 2010:

- death rates from accidents by at least a fifth
- the rate of serious injury from accidents by at least one tenth

The NHS Plan (Department of Health 2000) made **reducing health inequalities** a priority and promised national targets for the first time ever. These were announced in February 2001 and are:

- Starting with children under one year, by 2010 to reduce by at least 10 per cent the gap in mortality between manual groups and the population as a whole.
- Starting with HAs, by 2010 to reduce by at least 10 per cent the gap between the quintile of areas with the lowest life expectancy at birth and the population as a whole.

**DTLR** – National road safety strategy *Tomorrows roads; safer for everyone*(Department of the Environment Transport and the Regions 2000b): By 2010 the Government wants to achieve:

- a 40% reduction in the number of people killed or seriously injured in road accidents
- a 50% reduction in the number of children killed or seriously injured in road accidents
- a 10% reduction in the slight casualty rate, expressed as the number of people slightly injured per 100 million vehicle kilometres.

**HSE**: The Health and Safety Commission strategic statement (Health and Safety Commission 2001) included targets for health and safety. Those most relevant for accidental injury are – by 2010 to a achieve a reduction of:

- 30% the number of working days lost per 100,000 workers from work related injury and ill health
- 10% the incidence rate of fatal and major injury accidents
- 20% the incidence rate of cases of work related ill health.

**DTLR Fire:** Residential home fire safety targets include:

- a reduction in accidental dwelling fire deaths in England and Wales by 20 percent by the end of March 2004
- a reduction in all building fires in England and Wales by 10 percent by the end of March 2004 (Department of Transport Local Government and the Regions 2002).

**Sure Start**: The objective for improving health is to support parents caring for their children to promote healthy development before and after birth (Sure Start 1999). One target is:

- a 10 per cent reduction in children in the Sure Start area aged 0-3 admitted to hospital as an emergency with gastro-enteritis, a respiratory infection or a severe injury.
- all local programmes to give guidance on breast feeding, hygiene and safety.

**DTI**: Have two **internal** targets for home accidents:
- a 20% reduction in home accidental deaths in the next five years (i.e. by 2007)
- maintain home accidental injuries at 1999 levels despite adverse demographic changes

### *4.3 Proposed indicators*

#### *4.3.1 Reductions in injury mortality for all and specific causes.*

Despite the problems with the collection and classification of deaths data (as identified and described in Appendix 5), death rates should be included as one overall indicator for injury prevention. To allow comparisons across areas and over time it is best if death rates are directly standardised by age and sex, usually using the World Health Organisation's European Standard Population. The following indicators are suggested. They are available annually for national, regional, local areas but local data might require aggregation depending on the population size:
- European standardised mortality rate for all causes related to priority actions
- Standardised mortality rate for selected causes for priority areas

#### *4.3.2 Reductions in injury occurrence.*

Conceptually this is perhaps the easiest indicator to measure but it is difficult to obtain measures which are robust to the inaccuracies and non-standardisation of data collection (for more detail see *Agreeing an Accident Information Strategy* (Department of Health1996)). Data can be collected by a number of methods including surveys, incident reporting systems, and incident contacts with health and other services.

Indicators that depend on contact with services are subject to a variety of biases relating to access and service change over time. Some local areas have better data sources than others and should be encouraged to develop local indicators. Local data is a considerable stimulus to local injury prevention initiatives. National and regional success usually depends on local initiatives. Nevertheless, the key to producing meaningful indicators will be the identification of robust case definitions of injury occurrence that can be applied to routinely collected data.

#### *4.3.3 Severity of injury*

It is likely that a robust case definition will be one that is severity of injury based. For example, fractured femur is a severe injury as defined by the Abbreviated Injury Scale – AIS (Association for the Advancement of Automotive Medicine 1998) and case ascertainment via hospital inpatient data is high. Therefore, one robust indicator of non-fatal injury occurrence could be:
- Standardised hospital discharge rate for fractured neck of femur for people aged 75 and over - National, Regional, Local - available annually for all but Regional and Local will require data aggregation depending on the population size.

The bases of other indicators of non-fatal injury occurrence, pitched at varying levels of severity, could be:

- **Critical injury** – Case ascertainment based on an extension of Trauma Audit and Research Network (TARN) database to the whole country could be the basis of the development of indicators of critical injury (Trauma Audit and Research Network 2001). Some have argued for comprehensive ascertainment of detailed data on these severe injuries with an Injury Severity Score (Baker et al. 1974) of 16 and over for prevention and audit purposes.
- **Serious injury** – Currently, none of the definitions of serious injury used the current data systems, are robust enough to be the basis of a sound indicator. Routinely available data from hospital systems do not include a field for the classification of injury severity, and any derived measures (e.g. length of stay) have exhibited problems. There is a need for a robust measure of severity to be identified, which should be the basis of a case definition from which sound indicators can be developed. The case definition should be such that almost all cases satisfying the case definition can be ascertained from the data source. ICISS (International Classification of disease-based Injury Severity Score) (Osler et al. 1996) is an ICD-9-CM based severity of injury scale (United States National Centre for Health Statistics 1979), which on validation has shown good characteristics as a threat-to-life scale. This could be the basis of development work to produce an ICD-10 based severity measure.
- **Slight** – If one were looking to produce a minor injury indicator (there are arguments for and against this), then a potential data source/case definition that shows promise is the Health Survey for England Minor injury definition. Before use, however, the validity of the measure needs to be investigated for reporting bias.

### *4.3.4 Inequalities indicators*

A basket of indicators is being developed to support the national health inequalities targets. It will be used to assess whether the necessary systems and policies are in place and whether the action being undertaken is sufficient to succeed in reducing inequalities. The basket will be composed of outcome, interventions and progress measures to support the six priority areas set in the consultation document and will cover all major dimensions of inequality e.g. social class, ethnicity, gender, geography, etc The six priority areas are:

- Providing a sure foundation through a healthy pregnancy and early childhood
- Improving opportunity for children and younger people
- Improving NHS primary care services
- Tackling the major killers: coronary heart disease and cancer
- Strengthening disadvantaged communities
- Tackling the wider determinants of health inequalities.

### *4.3.5 Local occurrence of injury*

The production of indicators is dependent on local data sources; but all areas should be expected to have at least one. Indeed, such an initiative might come up with some very good indicators that could serve as markers of best practice. Examples of local measures might include fracture rates (per 1000 population) derived from accident and emergency data or radiological departments, survey data on injury occurrence or

exposure/behaviour, or ambulance, fire or police service data on local injury hotspots. Again there is the problem at the local level of low numbers. A number of local fire brigades are using GIS to build up a better picture of local fire hotspots which is useful for developing and targeting campaigns. The low number of fires and injuries occurring in each hotspot makes the development of robust local indictors very difficult.

**For example,** a typical local authority of 100,000 people will have about 16,500 children aged 0-14 years and a childhood injury death rate of about 1:20,000 children per year. Such an authority, or an individual fire brigade with one or two accidental dwelling fire deaths, would find it difficult to demonstrate a significant impact in the short to medium term and without demonstration of success, funding for preventive initiatives may be lost to more easily measurable initiatives.

4.3.6 Local Performance targets

The Government will expect authorities to set performance targets for a number of the national Best Value Performance Indicators (BVPI). These will indicate to local people how an authority intends to improve its performance in future

For some indicators, the Government is requiring authorities to set targets that are consistent with reaching over five years, the performance level of the top 25% of authorities at the time the targets were set. The aim is to put pressure on those authorities performing poorly and is calculated to narrow the range of performance and to improve performance overall. Those already in the top 25% will be expected to improve.

# 5 Completing the work for the Measuring and Monitoring Working Group

"*Shifting the Balance of Power*" and a major speech in January 2002 by the Secretary of State for Health, announced that NHS front line staff would be given greater responsibility and autonomy. In future healthcare would be delivered by a range of organisations, working within a framework of standards set by Government.

In keeping with this principle of devolved responsibility, the Task Force concluded that its responsibility lay primarily in providing a framework for delivery, rather than attempting to prescribe detailed plans for implementation.

The development of a framework for implementation will include a more detailed assessment of delivery structures. However, the structures required for immediate implementation will include:

- Regional Directors of Public Health working in Government Offices of the Regions;
- Regional Public Health Observatories;
- the Director of Public Health in each Primary Care Trust;
- the Local Strategic Partnership in each community; and
- a named individual to deliver plans.

The initial momentum must be maintained in the medium to long-term, and a stronger infrastructure needs to be created that will be capable of achieving further, sustained reductions. The Task Force believes that this can be done by improving the infrastructure for delivery, and in particular:

- the adoption of a common minimum dataset;
- the use of a central website with a gateway to give access to injury data at national, regional and local level across all sectors;
- the dissemination of examples of good practice;
- structured training for professionals whose duties will include accidental injury prevention; and
- increasing our skills and knowledge base to fill the gaps.

The outstanding terms of reference for the MMI working group are:

- continue work on identifying indicators suitable for measuring changes in number and severity of injuries, including deaths;
- develop procedures for monitoring the implementation plans for children and older people's priority areas;
- develop implementation plan for MMI working group; and
- develop a protocol for assessing how other Government departments existing targets are contributing towards achieving the DH target

How these may be taken forward is a matter for later discussion and decision by the Task Force or its successor.

## 6. Acknowledgements

This report is the result of much hard work by the Measuring and Monitoring Working Group under the chairmanship of Jill Fletcher (for membership of the working group see Appendix 1). Thanks are due to the many people who offered suggestions and contributions to this report. Special thanks go to Heather Ward of University College London, who was the main author of this report, and to Colin Cryer and Ronan Lyons for their contributions to the debate on indicators.

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## Appendix 1: The Measuring and Monitoring Working Group

The task force to advise on the prevention of accidental injuries, announced in the White Paper, Saving Lives: Our Healthier Nation (Department of Health1999), agreed at its second meeting on 26 February to set up three working groups: on children, on older people, and on measuring and monitoring. The terms of reference for the measuring and monitoring group are to:

- identify what we need to measure and monitor now, and in the future, at national, regional, and local levels;
- identify what is available now nationally, regionally, and locally in terms of data and information, and identify the immediate gaps;
- identify the data and information needs for the medium to longer term for improving information systems, including definitions and data linkage;
- develop an implementation plan for the outcomes of the measuring and monitoring working group;
- develop a procedure for monitoring the overall implementation plan for children and young adults, older people, and data and evaluation at national, regional and local levels; and
- develop a protocol for assessing how other Government Department's existing targets are contributing towards achieving the DH target.

## Membership of the Measuring and Monitoring Working Group

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## Appendix 2: Details of national data sources

### *A2.1 Hospital Episode Statistics (HES) – Morbidity*

The Department of Health collects data on around 12 million hospital admissions each year (Hospital Episode Statistics – HES). HES data have been collected since 1989 and cover in-patient care delivered by NHS hospitals in England. Each record has over 70 fields containing personal, medical and administrative details including the patient's age, sex, ethnic group, admission method, waiting time and diagnosis (plus details of accidents and poisoning which resulted in hospitalisation). Diagnosis and external cause are coded using the International Classification of Diseases (ICD). HES have used the current version, ICD-10 since April 1995. Breakdowns are available for NHS Trusts, Health Authorities and GP practices.

### *A2.2 Mortality Statistics: Injury and Poisoning ONS (Office for National Statistics)*

The Office for National Statistics (ONS) compiles mortality statistics based on the details collected when deaths are certified and registered. Most deaths are certified by a medical practitioner using the Medical Certificate of Cause of Death . Usually the death is registered by the Registrar of birth and deaths. In certain circumstances deaths should be referred to the coroner and these include cases where the death may have been due to an accident. However a coroner may only certify a death after a post mortem or an inquest or both. If a post mortem shows unequivocally that the death was due to natural causes then he certifies the death. Otherwise he must open an inquest. Although almost all deaths due to injury are subject to inquest an important exception are falls. This means that there is less detailed information about deaths from falls than from other injuries.

Cause coding of deaths certified after an inquest is carried out manually to ensure a consistent handling of these cases. Deaths have been coded to ICD-9 from 1979-2000 and to ICD-10 since 2001. The deaths are analysed by age, sex, cause and place of occurrence for each of the main types of accident for the reference year, in England and Wales. Geographical coverage of the data includes Government Office Regions, counties (in England and Wales), health authorities, local authority districts, wards and postcode sectors.

### *A2.3 Road traffic accidents – Road Accidents Great Britain*

Information is collected on road accidents involving vehicles on public highways (including footways, and byways open to all traffic) that result in human injury or death and which are reported to police within 30 days of their occurrence. The data collected consists of details of the location and circumstances of the accident, the vehicles involved and their movements and the consequent casualties. Casualties are grouped into three severity levels; fatal, serious and slight. The information is passed to DTLR and local government for use in road safety work. The figures are linked to additional information from death registrations, coroners' reports and traffic and vehicle registration data to compile the annual road accident statistics reports.

### *A2.4 Home and leisure accidents*

Home Accident Surveillance System (HASS) and Leisure Accidents Surveillance System (LASS) are databases maintained by DTI which hold information on home and leisure accidents of sufficient severity for people to visit a hospital.

Data are collected by DTI from 18 A&E departments in the UK (15 in England), representing around 5% of all UK attendances for home and leisure injuries. The hospitals in the sample are those with A&E departments which handle more than 10,000 attendances in total a year, operate on a 24-hour basis and take ambulance cases. Dedicated HASS clerks are employed by NHS Trusts in A&E departments. They are trained by DTI's agents and DTI reimburses the Trusts for data collection costs.

The clerks interview patients waiting for treatment using a standard questionnaire and data from the questionnaire is supplemented by information from medical records. If the injured person cannot be interviewed the HASS/LASS record is derived from the medical record alone. HASS/LASS uses its own detailed coding system which can also be translated to the EHLASS (European Home and Leisure Accident Surveillance System) coding standard to allow participation in EU programmes. In 1999, 324,151 cases were recorded in HASS/LASS from the 18 hospitals in the HASS/LASS UK sample. From these cases, national estimates (e.g. approximately 6 million home and leisure accidents presenting at A&Es annually across the UK) are derived with associated confidence intervals. The data are not available at the local level since the data are designed to be valid and representative only at the national level to support consumer safety policy making.

Data are collected on all cases of accidental injury except road traffic accidents and accidents in the workplace. Information is gathered on the immediate circumstances of the accident, accident mechanism (e.g. fall), location (including within home), activity at the time (e.g. DIY), type of injury and body part injured, outcome of initial A&E visit, duration of inpatient stay if any, and details of the products involved.

*Home Accident Deaths Database (HADD)*

As relatively few accidental deaths occur during or after A&E treatment, the DTI set up HADD in 1982 to discover the part played by consumer goods in fatal accidents. Source data from ONS is recoded to the HASS/LASS system in order to compare data on fatal and non-fatal accidents.

Changes in recording and processing procedures within OPCS (now ONS) affected the reliability of figures for 1993-95. Since then, DTI have relied solely on data from ONS for accidental deaths. DTI are currently conducting a pilot project on 1999 data to assess the viability of adding product involvement and other data from Coroners to the ONS database on home and leisure fatalities.

### *A2.5 Fire statistics – DTLR (Formerly Home Office)*

The Fire Service now comes under the auspices of the DTLR – it was formerly part of the Home Office. Local fire brigades collect information on fires which is used to develop local and national policies on fire safety and prevention. Fire statistics (for injuries) are compiled from reports (FDR1) submitted to the Fire Statistics and Research Section which collates and analyses data for use at national and brigade

levels. Information is also available to local fire brigades, many of whom maintain their own databases. Records of fire deaths submitted by fire brigades are checked against death certificates from ONS meaning that all deaths recorded are attributable to fire and deaths are included where they occurred weeks or months after the fire.

### *A2.6 Work related accidents (RIDDOR, Safety Statistics Bulletin)*

There are two main sources of statistics of accidents at work; the flow of report forms made by employers and others under the reporting regulations, RIDDOR (Reporting of Injuries, Diseases and Dangerous Occurrences Regulations) and the results of HSE's questions in the Labour Force Survey (LFS).

The main statistics from these sources are published regularly in an annual Bulletin, Health and Safety Statistics with HSE's Annual Report, and in various factsheets on the Internet. The annual Bulletin on Safety Statistics presents the latest statistics on reports to HSE and local authorities in Great Britain. It includes summary information of workplace injuries to workers, employees, self-employed and members of the public.

Information is collected on details of all incidents legally reported under RIDDOR 1995. These include fatalities, defined major injuries and other injuries involving more than three days absence form work. Employers send details of legally reportable accidents to HSE inspectorate or to local authorities, depending on the type of workplace. These forms are then coded and interpreted locally and the local data are sent to the central HSE database. Further information may be gathered following detailed investigation of accidents.

ONS administers the LFS that goes to about 60,000 households each quarter. HSE commissions just four accident questions in the winter quarter. The results of the LFS provides estimates of the incidence rate of reportable injury (leading to more than four days absence from work) and hence to rates of workplace injury.

# Appendix 3: Details of codes used by Government Departments in their databases

### *A3.1 STATS19 Road traffic accidents*

**Accident characteristics:**

- *Accident location:*
  Described as at a junction, not at a junction, at a pedestrian crossing, at a refuge, etc.
- *Geographic-identifier:*
  The STATS19 form gives a ten digit ordnance survey reference for the location. There is an English language description of location on the Police/Local Highway Authority version but not on the national DTLR database
- *Accident Type*:
  Recorded as pedestrian, pedal cyclist, car driver or passenger, motorcycle rider or passenger, bus driver or passenger, heavy goods vehicle driver or passenger.
- *Date and time:*
  Date and time of accident are recorded
- *Circumstances or events:*
  There is an English language description of the accident on the Police/LA version but not on the national database. An example would be; 'car went through red light and struck pedestrian on pelican crossing'. Other details are recorded such as weather, number of vehicles involved, road defects etc. Some police forces collect contributory factor information such as whether the driver was speeding. This does not routinely appear on the national database but is sometimes used at the local level.

**Personal characteristics**

- *Age and sex*: Data recorded for each driver and casualty
- *Postcode or residence:* Postcode collected.
- *Socio-economic indicators*: Not collected
- *Ethnicity:* Not collected
- *Activity at time of accident*:
  Manoeuvres made by each vehicle e.g. overtaking, going round a left or right bend; whether child on a school journey, whether pedestrian on or near a crossing; passenger in a bus alighting or boarding, sitting or standing; whether car passenger in front or rear seat.
- *Predisposing factors:*
  Whether a breath test is required and taken, and whether the driver refused, is recorded and the outcome. Pedal cycles and pedestrians are not required to give a sample.

**Accident consequences**

- *Nature of injury and location:* Not collected
- *Severity*
  STATS19 records include the severity of injury of all casualties involved in a road traffic accident. The severity of an accident is defined by the severity of the most severely injured casualty.
  A *fatal* casualty is one where the person dies *within 30 days of the accident* (this is an internationally recognised standard). This excludes death by natural causes before the accident or from suicide, as defined by the coroner.

A *serious* casualty is one where, for example, there is a fracture or internal injury, severe cuts, crushing, burns, detention in hospital as an in-patient (immediately or later), concussion or severe shock requiring hospital treatment.

A *slight* casualty is one where there is, for example, slight cuts and/or bruising, slight shock requiring roadside attention, sprains including whiplash injuries.

These injury severities are judges by the police officer at the scene, or on subsequent visits to hospital to interview casualties, or by notification by the hospital, which usually only arises on death in hospital.

- *Outcome and long term consequences;* Not collected

### *A3.2 Home and Leisure Accidents*

**Accident characteristics:**

- *Accident location:*

  For home injuries the location in the home is recorded, e.g. in the bathroom, bedroom, kitchen, attic/loft, greenhouse/shed etc. For leisure accidents that take place outside the home, the location is coded according to location type, e.g. pub, restaurant, shopping centre, school/college sports field, park, woodland etc.
- *Geographic-identifier*: Not collected (but as the majority of home accidents are in own home the postcode is collected.
- *Accident Type:*

  The questionnaire includes an English language description of the accident including whether one of the following was involved: fall on the level, fall from a height, being struck, pinching/crushing, sting/bite, foreign body, suffocation, poisoning, chemical effect, thermal effect, electric/radiation.
- *Date and time:*

  These are recorded for the accident and for admissions, to calculate length of stay.
  - *Circumstances or events*: not collected per se but may be mentioned in free text accident description.

**Personal characteristics**

- *Age and sex:*

  Data available, age bands used for analysis are 0-4, 5-14, 15-44, 45-64, 65-74 and 75+, but any age banding can be used for analysis.
- *Postcode or residence:* Data available
- *Socio-economic indicators:*

  Employment status is recorded and DTI have started to look at social inequalities using the residential postcode of accident victims. Data was supplemented by ONS census data about social class and income make-up of areas for this special study.
- *Ethnicity*: Not collected
- *Activity at time of accident:*

  There is an extensive activity coding which includes such items as, household activity (food preparation, cleaning etc.), DIY/maintenance, shopping, education/training, sport, play/hobby/leisure, basic needs (eating, drinking, washing, walking etc.) travelling/touring, Each category is further sub-divided. Consumer articles involved are also coded such as door, window, barbecue, saw, knife, toaster etc.
- *Predisposing factors*: Not collected

**Accident consequences**

- *Nature of injury and location*
  The interviewer in some detail records the nature of the injury and body part. Categories include, for example, superficial injury, open wound, burn, bruise/contusion, concussion, bone injury, joint/tendon injury, chemical injury, systemic. Body parts include, head, neck/throat, thorax/chest/lower trunk, arm/upper limb, leg/lower limb, surface area, Within each of these injury and body part categories there are sub-categories.
- *Severity* not specifically collected; inpatient stay length or definition by injury type and body part is usually used to identify serious accidents.
- *Outcome and long term consequences:*
  Number of bed days is recorded so is whether GP follow up is required. There is no information on long-term consequences and rehabilitation.

### *A3.3 Fire statistics*

**Accident characteristics:**

- *Accident location:*

Address and postcode are recorded for the location where the fire started for dwelling fires. Type of location is also recorded, house, other premises, caravan, car etc.

- *Geographic-identifier:*

There are plans to improve the geo-referencing of fire incidents. At present, postcode data are available for dwelling fires involving casualties, although further investigation is required to determine the accuracy of these data. Robust data regarding fires not involving casualties are only available at brigade level at present.

***Accident Type***: For each fire, detailed information is collected on the underlying cause of the fire (e.g. carelessness, faulty equipment), the source of ignition and the development of the fire.

- *Date and time:* Date and time of first call to fire brigade
- *Circumstances or events*:

The DTLR fire statistics database holds a great deal of data on behaviours, environment and contributory factors leading to accidental fire related deaths and injuries.

**Personal characteristics**

- *Age and sex*: Data available
- *Postcode or residence*: For casualties in dwelling fires
- *Socio-economic indicators:* Not collected
- *Ethnicity:* Not collected
- *Activity at time of accident:*

Inferences on a victim's activity at the time of the fire can be made from information on the cause and source of ignition of fires. Data are also collected on the circumstances in which victims of fire are killed or injured (e.g. in attempting to fight the fire, as a result of becoming trapped).

- *Predisposing factors:* Information is collected on other factors that may have contributed to death or injury, such as impairment due to alcohol use or disability.

**Accident consequences**

- *Nature of injury and location*

Information is collected on the nature of injury from fire (e.g. burns, overcome by gas or smoke, physical injuries, shock, precautionary check ups)

- *Severity*

At present no measure of severity exists other than the distinction between fatal and the rest. Distinctions are made based on the type of injury. Burns and smoke inhalation injuries are generally regarded as 'serious'.

- *Outcome and long term consequences:* Date of death is recorded, but no other data

### *A3.4 Work accidents RIDDOR*

**Accident characteristics:**

- *Accident location*:

  The address, including postcode of the premises where the accident happened is collected together with more specific information about the location on the premises.
- *Geographic-identifier*; Not added
- *Accident Type*:

  Recorded as handling, lifting or carrying; slipping, tripping, or falling; contact with machinery; hit by moving, flying or falling object; hit by moving vehicle (on premises), drowning, asphyxiation; exposure to fire, explosion or harmful substance; injured by an animal, physical assault.
- *Date and time:* Date and time incident happened is recorded
- *Circumstances or events*:

  An English language description of the accident is recorded on the form including substances involved, type of machinery, events leading to accident and part played by people.

**Personal characteristics**

- *Age and sex*: Data available
- *Postcode or residence:* Data available for each casualty
- *Socio-economic indicators:* Not collected directly but can be inferred from occupation which is stated on form, except members of the public for whom there is no information of this kind.
- *Ethnicity:* Not collected
- *Activity at time of accident:* Not recorded as a specific item but can be extracted from English language description
- *Predisposing factors:* Not collected

**Accident consequences**

- *Nature of injury and location* Not collected
- *Severity*

  RIDDOR has its own definitions of what is reportable, the groups are

  A *fatality.*

  A *major injury* which includes fractures (other than to fingers, thumbs or toes); amputation; dislocation of shoulder, hip, knee or spine; loss of sight (including temporary); chemical or hot metal burn to eye or penetration of eye; injury form electric shock or burn resulting in unconsciousness, requiring resuscitation or admittance to hospital for more than 24 hours; any injury leading to hypothermia, heat induced illness or unconsciousness.

  An over *three day injury* is one which causes incapacity for normal work for more than three days
- *Outcome and long term consequences*; not collected

### *A3.5: Office for National Statistics Mortality Statistics: Injury and Poisoning*

**Accident characteristics:**

- *Accident location:*

Recorded if coroner's verdict is accident or misadventure Home, Farm, Mine or Quarry, Industrial place or premises, Place of recreation or sport, Street or highway, Public building Resident institution, Other specified place, Place not known.

If deceased person aged 16 and over whether injury was received when deceased was on the way to or from work at work or elsewhere

- *Geographic indicator*

  None
- *Accident Type*:

  Recorded. If motor vehicle motor vehicle accident whether deceased Driver of motor vehicle other than motor cycle, Passenger of motor vehicle other than motor cycle, Motorcyclist, Passenger on motor cycle, Occupant of tram car Rider of animal, Occupant of animal drawn vehicle, Pedal cyclist, Pedestrian Other specified person, Not known
- *Date and time:*

  Date and time may be recorded in the English Language 'details of how accident happened'
- *Circumstances or events:*

  There is an English language description of 'details of how the accident happened'.

**Personal characteristics**

- *Age and sex*: Data recorded
- *Socio-economic indicators*: occupation recorded
- *Ethnicity:* Not collected
- *Activity at time of accident*: May be recorded as 'details of how the accident happened'
- *Predisposing factors:* May be recorded as 'details of how the accident happened'

**Accident consequences**

- *Nature of injury and location:* recorded
- *Severity:* fatal only
- *Outcome and long term consequences:* Death only

## Appendix 4: ONS Neighbourhood Statistics Service; PAT18 domain definitions

Those most relevant to accidental injury are given in this table. For a complete listing see the PAT18 report (2000)

| PAT 18 Domain | National Statistics Theme(s) | Domain Description |
|---|---|---|
| A. Access to Services | Education and training<br>Social and Welfare<br>Transport, travel and tourism | Accessibility of key services, including:<br>GPs, hospitals, other health care facilities<br>Leisure facilities<br>Post Offices<br>Schools<br>Shops |
| B. Community Well-being/Social Environment | Health and care<br>Social and Welfare<br>Population and migration | Caring responsibilities<br>Participation in community organisations<br>Perception of neighbourhood and service provision |
| C. Crime | Crime and Justice | |
| D. Economic Deprivation | Social and welfare | Dynamic measures of low income<br>Indebtedness<br>Low income |
| E. Education, Skills and Training | Education and training | Absenteeism<br>Number achieving qualifications<br>Number without qualifications<br>Pre-school provision<br>School exclusions<br>Special needs in schools<br>'Staying on' in education<br>Young people not in education, work or training |
| F. Health | Health and care<br>Social and welfare | Accident and Emergency statistics<br>Disability<br>Drug and alcohol misuse<br>Maternal, infant and early child health<br>Mortality<br>Physical and mental health |
| G. Housing | Natural and built environment<br>Population and migration<br>Social and welfare | Affordability, including house prices and rents<br>Composition of dwelling stock<br>Homelessness<br>Houses in multiple occupation<br>Overcrowding |
| H. Physical Environment | Natural and built environment<br>Transport, travel and tourism | Land use, including dereliction<br>Traffic volume and speed |
| I. Work Deprivation | Labour Market<br>Social and welfare<br>Economy | Availability of child care<br>Employment<br>Measures of workless ness, including:<br>Registered unemployed<br>Inability to work due to sickness/disability<br>Workless households |
| J.Indices of Deprivation | Population and migration<br>Social and welfare<br>Health and care<br>Education | This is not an original PAT 18 domain. It has been added for the benefit of the website only |
| K.Population and Vital Statistics | Population and migration | This is not an original PAT 18 domain. It has been added for the benefit of the website only |

# Appendix 5: Accidental injury indicators

### *A5.1 Problems and gaps arising from an analysis of current indicators*

The main themes relating to problems and gaps are as follows:

- **most current indicators focus on accidental injury occurrence; there are few that address other dimensions of interest**

Other dimensions of interest include:

  - the 'burden' that results from the occurrence of injury
  - exposures to hazards that can result in injury
  - attributes relating to the implementation of methods of prevention
  - safety attitudes and behaviours.

- **many indicators used to measure injury occurrence are not stable**
  - the probability of death can be influenced by service factors that change from place to place and over time.
  - there is evidence that deaths are not always classified consistently over time and place.
  - changes in coding and classification of injuries over time (e.g. ICD9-10, ICECI, European MDS for injury surveillance, NOMESCO, EHLASS) can affect the stability of indicators.
  - indicators based on health service use are not stable over time due to trends and changes in the provision of health services. When using health service data to measure injury occurrence, case definition is crucial.
- **identifying the right focus for our measurement (e.g. YLL rather than death rate)**
  - deaths are the tip of the injury iceberg, are usually numerically small in comparison with morbidity, and cannot reflect the quality of life of the victims before death.
  - death is important - but we all have to die of something. Some who live to a grand age have poor quality of life, and so quality of life as well as death should be the focus. Quality adjusted life could be used alongside other measures.
- **counts of people using health services can be misleading and include biases**
  - there is convincing evidence that accident and emergency attendance for most conditions is strongly influenced by factors such as distance, and hospital admissions/lengths of stay are effected by bed availability and changes in medical practice.
  - if hospital data are used, then many countries are experiencing / have experienced major changes in the number of people treated as day cases. In some hospitals / countries this is recorded, sometimes inconsistently, as an admission to hospital with zero days stay; in others it is recorded as an outpatient episode. Special treatment is often required of such cases to achieve comparable rates.
- **reporting systems can have biases and be incomplete**
  - Reporting rates to the police have been found to vary with the following: age, with younger and older people more likely to report than those aged 25-64; type of road user, with lower rates for cyclists; injury severity, with reduced rates amongst people with less severe injuries. James' (1991) review estimates

that 100% of fatalities were reported to the police, 76% of casualties with 'Serious' injury, and 62% of casualties with 'Slight' injury.
    - The low number of injuries consistently found in the BCS (British Crime Survey) suggest that, although brigades are only called to around 20% of domestic fires, they are actually called to the 'majority of 'serious' fires (i.e. those resulting in serious injuries). Further work probably needs to be carried out to investigate reporting rates but FDR1 Reports probably do capture the vast majority of serious fire related injuries.
    - Records of fire deaths submitted by fire brigades are checked against death certificates from ONS which results in all deaths recoded as being attributable to fire are included even if death occurred weeks or months after the fire.
- **completeness and accuracy of data**
    - The lack of accuracy and completeness of hospital inpatient data limits its usefulness. Information on the accuracy of clinical and external cause coding is particularly important. Improvement in the percentage of accidental injury cases with external cause of injury codes (E-codes) is imperative. Making the completion rate for E-codes part of the national quality indicator would be helpful.
- **inherent problems when dealing with geographic differences or trends**
    - if numbers rather than rates are used, then the indicator will be sensitive to the size of the population that generated the cases.
    - if age-standardisation is used, the high rates of injury occurrence amongst older people, combined with the increasing number of older people, means that it is advisable for rates above age 85 to be disaggregated. This can be illustrated by referring to current targets for the reduction in fire deaths which are numbers based. The DTLR is aware that changing demographics will affect the numbers of fire-related deaths as the population ages and their next indicators might well be based on age specific injury rates.
- **appropriate denominators** (see also Sections 1.3.4 and 2.4.2 on exposure measures).
    - if the indicator is a rate, the appropriate denominator for the rate should be the population at risk or the level of exposure to that risk if it exists.
        - for example, the rates of injury to child pedal cyclists show different trends if the rates are expressed as rates per 1,000 children rather than rates per 10,000 hours riding their cycle.
    - exposure measures should be used where they exist but in many circumstances the appropriate exposure information is not collected routinely.

### *A 5.2 Data needs for development of indicators*

- For the specification of stable indicators of non-fatal injury occurrence, an important first step may be the development of explicit case definition of injury occurrence that can underpin such indicators. Research and development work is likely to be necessary to identify and test case definitions that can be the basis of stable indicators of injury occurrence.
- In order to use hospital inpatient data as the basis of an indicator of injury occurrence, we need to know which injury diagnoses are well represented by that data source (i.e. 95+% admitted), and which poorly represented.
- The limited range of data collected in many data sources can be a problem for the development of relevant indicators. For example, to investigate trends in social inequalities, data needs to be collected to permit appropriate breakdowns.

- Current routinely collected data are such that we do not know whether rates of non-fatal accidental injury are increasing or decreasing. Development work is needed to address this problem.
- A means to develop indicators of disability needs to be developed.
- The need for information that permits the use of relevant denominators that measure exposure (e.g. levels of cycle riding – to relate to the occurrence of cycle–related injury). Some exposure data exists for some activities but much more needs to be developed.
- The collection of A&E data is variable, and little emphasis has been place on data quality. Steps need to be taken to improve completeness, quality and standardisation of data collected if this is to be a reliable source for data for injury indicators.
- The extension of the DTI HASS/LASS system to all major hospitals in the UK would open the way for local A&E-based indicators. However, this is a costly option and would only address home or leisure accidents and only represent those collected at A&E departments. DTI suggest that as a possible way forward we look more closely at the system of Minimum Data Sets on Injuries being developed by the Netherlands within the EU Injury Prevention Programme.
- The development of indicators relating to settings (e.g. schools) and activity (e.g. sport) could be facilitated if place of occurrence, and activity immediately before the accident was recorded and coded routinely within hospital admissions data systems. However, there may be some difficulty for open spaces and play areas.
- Potential process and impact measures / indicators should be identified by an expert group for each part priority area identified by the AITF. This should also be translated, by the expert group(s), into a set of research and development needs for the construction of each indicator and the collection of data that are the basis of these indicators.

# Appendix 6: Health inequalities

| Source | Breakdowns available | Time period | Trends show |
|---|---|---|---|
| ONS Mortality Figures (covers all types of accident – classified by ICD9 external cause codes to 1979-2000; ICD-10 2001 onwards) | Age | 1959 (computerised files) to 2000 (publishes) | (based on 1999 figures)<br>YOUNG PEOPLE<br>• Drowning: all person death rate for under 5 is 1.6 times rate for all ages<br>OLDER PEOPLE<br>• All accidents: all person death rate for 65+ is over 3 times rate for all ages<br>• Falls: all person death rate for 65+ is over 5 times rate for all ages<br>• Fire: all person death rate for 65+ is 2.7 times rate for all ages<br>• Drowning: all person death rate for 65+ is 1.3 times rate for all ages<br>WORKING AGE<br>• Poisoning: all person death rate for 25-64 is 1.5 times rate for all ages |
| | Sex | 1959 (computerised files) to 1999 | (based on 1999 figures)<br>• Poisoning: for all ages, male death rate is 2.7 time female rate<br>OLDER PEOPLE<br>• Falls: for 65+, death rate for females is 1.5 times male rate<br>WORKING AGE<br>• All accidents: for 15-24, 25-64, death rate for males is over 3 times rate for females (for all ages, male rate is 1.4 times female rate)<br>• Fire: for 15-24, male death rate is 3.5 times female rate; for 25-64, male rate is 2.4 times female rate<br>• Drowning: for 15-24, male death rate is 16 times female rate (for all ages, male rate is 3.7 times female rate) |
| | Geographical area of residence (postcode[+]) | 1959 (computerised files) to 1999 | (based on 1997-99 pooled data)<br>• All accidents: about 55% of HAs have a directly age-standardised death rate less than the England rate; for most of the other HAs, the death rate is less than 1.2 times the England rate; 7 HAs have a rate between 1.2 and 1.3 times the England rate; 6 HAs have a rate between 1.3 and 1.5 times the England rate; 1 HA has a rate 1.7 times the England rate |
| | Social class (limited analyses done from death registration data, also using ONS Longitudinal Study from 1971) | Analyses of mortality by social class published in ONS decennial supplements (around Census years) | (based on 1979-80, 1982-83 data)<br>YOUNG PEOPLE<br>• All accidents: for males aged 1-15, the standardised mortality ratio (SMR) for social class IV and V combined is 128, compared with 58 for social class I and II<br>• All accidents: for females aged 1-15, SMR for social class IV and V combined is 124, compared with 58 for social class I and II<br>(based on 1991-93 data)<br>WORKING AGE<br>• All accidents: for males aged 20-64, directly age-standardised death rate for social class V (unskilled) is 4 times rate for social class I (professional) |
| DH Hospital Episode Statistics (covers all types of accident – classified by ICD10 external cause codes) | Age | 1988/89 to 1999/00 | (based on 1999/00 data)<br>OLDER PEOPLE<br>• All accidents: all person serious injury rate for 65+ is 4 times rate for all ages<br>• Falls: all person serious injury rate for 65+ is 4.9 times rate for all ages<br>• Poisoning: all person serious injury rate for 65+ is 2 times rate for all ages<br>• Fire: all person serious injury rate for 65+ is 1.8 times rate for all ages |
| | Sex | 1988/89 to 1999/00 | (based on 1999/00 data)<br>YOUNG PEOPLE<br>• Poisoning: for under 15, female serious injury rate is 1.8 times male rate<br>WORKING AGE<br>• All accidents: for 15-24, male rate is 2.6 times female rate |

[+] level at which data are collected – data may only be made available at higher levels

| Source | Breakdowns available | Time period | Trends show |
|---|---|---|---|
| | | | • Falls: for 15-24, male rate is 2.7 times female rate<br>• Fire: for 15-24, male serious injury rate is 4 times female rate; for 25-64, male rate is 2.7 times female rate (for all ages, male rate is 2 times female rate)<br>OLDER PEOPLE<br>• All accidents: for 65+, female serious injury rate is 2 times male rate<br>• Falls: for 65+, female serious injury rate is 2.5 times male rate |
| | Ethnic group (limited) | From 1995/96 | |
| | Geographical area of residence (postcode[+]) | 1988/89 to 1999/00 | (based on 1998/99 data)<br>• All accidents: about 50% of HAs have a directly age-standardised serious injury rate less than the England rate; for most of the other HAs, the serious injury rate is less than 1.2 times the England rate; there are 9 HAs with rates over 1.2 times the England rate, the worst being 1.4 times the England rate |
| | Geographical area of treatment (NHS hospital provider[+]) | From 1991/92 to 1999/00 (Hospital provider) (1988/99 to 1990/92 DHA of treatment) | |
| DETR Road Accidents GB | Age | 1979 (current database) to 1999 | (based on 1999 data)<br>YOUNG PEOPLE<br>• For pedestrians: the casualty rate (killed or seriously injured) for 0-15 is 1.7 times the rate for all ages<br>OLDER PEOPLE<br>• For pedestrians: the casualty rate (killed or seriously injured) for 70+ is 1.3 times the rate for all ages<br>WORKING AGE<br>• For all road users: the casualty rate (killed or seriously injured) for 16-29 is 1.8 times the rate for all ages |
| | Sex | 1979 (current database) to 1999 | |
| | Geographical area of residence (postcode) | From 1999 | |
| | Geographical area of accident (OS grid ref no.) | 1979 (current database) to 1999 | |
| DTLR Fire Statistics | Age | 1981 (computerised files) to 2000 | (based on 2000 data for injuries comprising burns and/or overcome by gas and smoke, in dwelling fires)<br>WORKING AGE<br>• Serious injury rate for 18-24 years olds is 1.3 times rate for all ages<br>• Fatality rate for 18-24 year olds is less than half the fatality rate for all ages.<br>OLDER people<br>•<br>• Serious injury rate for over 65s is 1.3 times rate for all ages<br>• Fatality rate for over 65s is 2.8 times rate for all ages. |
| | Sex | 1981 (computerised files) to 2000 | (based on 2000 data for injuries comprising burns and/or overcome by gas and smoke, in dwelling fires)<br>ALL AGES<br>• Serious injury rate for males is 1.4 times rate for females.<br>• Fatality rate for males is 1.3 times rate for females<br>WORKING AGE (18-64)<br>• Serious injury rates for males are 1.5 times rate for females.<br>• Fatality rate for males is 1.7 times rate for females.<br>OLDER PEOPLE<br>• Serious injury rate for males is 1.3 times rate for females<br>• Fatality rate for males is 1.3 times rate for females<br>CHILDREN (Under 18)<br>• Serious injury and fatality rates are equal for males and females |
| | Geographical area of accident (fire brigade area) | 1981 (computerised files) to 2000 | In general fires per dwelling and casualty rates tend to be higher in the Metropolitan brigades and in the North of England. |

[+] level at which data are collected – data may only be made available at higher levels

| Source | Breakdowns available | Time period | Trends show |
|---|---|---|---|
| DTLR Fires in the Home (based on British Crime Survey) | Social class | Questions on household fires included in the British Crime Survey in 1988, 1992, 1996, 2000 | (Results from the 2000 British Crime Survey). Multivariate analysis has identified the following factors to be independently associated with increased risk of domestic fire:<br>• Household getting into financial difficulty<br>• Respondent has a limiting disability<br>• Smoking household<br>• Lone parenthood<br>• Low income<br>• Social renting |
| | Ethnic group | Questions on household fires included in the British Crime Survey in 1988, 1992, 1996, 2000 | Results from the 2000 British Crime Survey)<br>• Overall risk: 4.4 fires per 100 households<br>• Whites: 4.4 fires per 100 households<br>• Afro-Caribbean: 4.3 fires per 100 households<br>• Asian: 3.7 fires per 100 household<br>Multivariate analysis suggests ethnicity is not directly linked to any increased (or decreased) risk of fires |
| DH Health Survey for England (self-reported accidents) | Age | 1995, 1996, 1997 (children only), 1999 | (based on data for 1995 and 1996 combined, adults 16 and over)<br>OLDER PEOPLE<br>• All accidents, Women: for 75+, major accident rate is 1.3 times rate for all ages<br>• Major falls, Men: for 75+, major accident rate is 1.6 times rate for all ages<br>• Major falls, Women: for 75+, major accident rate is over 2 times rate for all ages<br>WORKING AGE<br>• All accidents, Men: for 16-24, major accident rate is 2 times rate for all ages<br>• All accidents, Women: for 16-24, major accident rate is 1.5 times rate for all ages<br>• Major falls, Men: for 16-24, major accident rate is 1.6 times rate for all ages<br>• Sporting accidents, Men: for 16-24, major accident rate is 2.8 times rate for all ages<br>• Sporting accidents, Women: for 16-24, major accident rate is 2 times rate for all ages<br>• Accidents involving a moving vehicle, Men: for 16-24, major accident rate is over 3 times rate for all ages<br>• Accidents caused by a tool or implement, Men: for 16-24, major accident rate is 2 times rate for all ages<br>• Work accidents, Men and Women: for 16-24, major accident rate is over 2 times rate for all working ages |
| | Sex | 1995, 1996, 1997 (children only), 1999 | (based on data for 1995 and 1996 combined, adults 16 and over)<br>• All accidents: The all ages major accident rate for men is 1.4 times the rate for women<br>• Sporting accidents: For all ages, the major accident rate for men is over 2 times the rate for women<br>• Accidents caused by a tool or other implement: For all ages, the major accident rate for men is 5 times the rate for women<br>• Work accidents: For all ages, the major accident rate for men is about 2 times the rate for women<br>OLDER PEOPLE<br>• All accidents: For 75+, the major accident rate for women is 1.7 times the rate for men<br>• Falls: For 75+, the major accident rate for women is nearly 2 times the rate for men<br>WORKING AGE<br>• All accidents: For 16-24 and 25-34, the major accident rate for men is about 2 times the rate for women<br>• Accidents involving a moving vehicle: For 16-24, the major accident rate for men is about 3 times the rate for women<br>• |
| | Ethnic group | 1999 survey | (based on data for 1999)<br>• Accident rates are mostly lower in ethnic minority groups than in the general population, the lowest rates being for Bangladeshi and Chinese ethnic groups, the highest rates (but still lower than general population) being for Black Caribbean and Irish ethnic groups<br>• All accidents, Men: major accident rates for Black Caribbean and Irish are over 2 times rates for Bangladeshi and Chinese<br>• All accidents, Women: major accident rates for Black Caribbean and Irish are over 4 times rate for Bangladeshi |
| | Social class | 1995,1996, 1997 | (based on data for 1995 and 1996 combined, adults 16 and over) |

| Source | Breakdowns available | Time period | Trends show |
|---|---|---|---|
| | | (children only), 1999 | • All accidents, Men: major accident rate for manual social class is about 1.5 times rate for non-manual social class<br>• All accidents, Women: major accident rate for manual social class is about the same as rate for non-manual social class<br>• Accidents caused by a tool or other implement, Men: major accident rate for manual social class is about 2 times rate for non-manual social class<br>• Accidents caused by a tool or other implement, Women: major accident rate for manual social class is about the same as rate for non-manual social class<br>• Work accidents, Men: major accident rate for manual social class is about 3 times rate for non-manual social class<br>• Work accidents, Women: major accident rate for manual social class is about 2 times rate for non-manual social class |
| | Geographical area of residence (postcode of individuals in survey sample) | 1995, 1996, 1997 (children only), 1999 | |
| DTI HASS/LASS data (covers all types of home and leisure accidents) | Age | 1977 to 1999 (HASS); 1988 to 1999 (LASS) | (based on England national estimates derived from 1998 data)<br>YOUNG PEOPLE<br>• All home accidents: A&E attendance rate for 0-4 is over 3 times rate for all ages<br>• Falls at home: A&E attendance rate for 0-4 is over 3 times rate for all ages<br>• Poisonings at home: A&E attendance rate for 0-4 is 13 times rate for all ages<br>• Thermal effect home accidents: A&E attendance rate for 0-4 is 5.5 times rate for all ages<br>• Suffocations at home: A&E attendance rate for 0-4 is 2.8 times rate for all ages<br>• All leisure accidents: A&E attendance rate for 5-14 is 2.6 times rate for all ages<br>• Poisoning leisure accidents: A&E attendance rate for 0-4 is 5.9 times rate for all ages<br>• Thermal effect leisure accidents: A&E attendance rate for 0-4 is over 2 times rate for all ages<br>OLDER PEOPLE<br>• All home accidents: A&E attendance rate for 75+ is 1.5 times rate for all ages<br>• Falls at home: A&E attendance rate for 75+ is 2.7 times rate for all ages |
| | Sex | 1977 to 1999 (HASS); 1988 to 1999 (LASS) | (based on England national estimates derived from 1998 data)<br>• Thermal effect leisure accidents: for all ages, A&E attendance rate for males is 2 times female rate<br>YOUNG PEOPLE<br>• All home accidents: for 0-4, A&E attendance rate for males is 1.3 times female rate<br>• Falls at home: for 0-4, A&E attendance rate for males is 1.3 times female rate<br>• Thermal effect home accidents: for 0-4, A&E attendance rate for males is 1.3 times female rate<br>• Falls (leisure accidents): for 5-14, A&E attendance rate for males is 1.4 times female rate<br>OLDER PEOPLE<br>• All home accidents: for 75+, A&E attendance rate for females is 1.7 times male rate<br>• Falls at home: for 75+, A&E attendance rate for females is 1.9 times male rate<br>• Poisonings at home: for 75+, A&E attendance rate for males is 2.5 times female rate<br>• All leisure accidents: for 65-74, A&E attendance rate for females is 1.7 times male rate<br>• Falls (leisure accidents): for 65-74, A&E attendance rate for females is 2 times male rate<br>• Poisoning leisure accidents: for 75+, A&E attendance rate for males is 3.6 times female rate<br>WORKING AGE<br>• Thermal effect home accidents: for 15-64, A&E attendance rate for females is 1.4 times male rate<br>• All leisure accidents: for 15-64, A&E attendance rate for males is 1.9 times female rate |
| HSE RIDDOR data | Age | | (based on 1999/2000 data, provisional figures) |

| Source | Breakdowns available | Time period | Trends show |
|---|---|---|---|
| (workplace accidents) | | | WORKING AGE<br>• The most common age of male employees who sustained non-fatal major injuries is 30-34 (2890 injuries, 15% of injuries to all male employees)<br>• The most common age of female employees who sustained non-fatal major injuries is 50-54 (930 injuries, 15% of injuries to all female employees) |
| | Sex | | (based on 1999/2000 data, provisional figures)<br>• 76% of all non-fatal major injuries to employees are to males |
| | Geographical area of accident (workplace address[+]) | | |

[+] level at which data are collected – data may only be made available at higher levels

## Appendix 7: Agreed and recommended PHIS standards for core database items

This table recommends that the Read clinical coding system be extended to include codes for: accident location, circumstances, activity, predisposing factors and individual health outcomes. **This work must take account of existing coding systems within the key agencies (and of other development work already being conducted) and must satisfy the needs of all of the key agencies, not just the health services.** This should ensure that the codes developed are widely applicable and thus able to provide a common standard. In practice, certain parts/levels of detail of the codes may only be relevant for certain agencies. Nevertheless, inclusion of such codes within an overall framework ensures that information at the highest level is comparable across the different key agencies.

| DATA | STANDARD RECOMMENDED | OTHER COMMENTS |
|---|---|---|
| **Accident Characteristics:** | | |
| Accident Location | ICD for describing high-level categories. These categories need to be expanded to further levels of detail. **Development of Read codes is the easiest way to achieve this**. The development of Read codes needs to take account of the work on development and piloting of codes currently being undertaken in HSE and in Hull Royal Infirmary.<br><br>For road accidents, the lower level expansion should incorporate the road characteristics and codes currently defined in STATS19 for road class, carriageway type/markings, speed limit, junction details, pedestrian crossing facilities. | A necessary item for characterising an accident and hence useful for achieving data linkage between sources. |
| Geographical identifier for location | Street number and name, postcode<br>Grid reference<br>Road number, postcode | A necessary item for characterising an accident and hence useful for achieving data linkage between sources.<br><br>A common standard is not practical for all settings. Hence, mapping between the major standards (i.e. postcode and grid reference) **should be used where required**. |
| Accident Type | Read or ICD for describing high-level categories. | A necessary item for characterising an accident and hence useful for achieving data linkage between sources.<br><br>A common standard is not practical for all settings e.g. the health service requires use of detailed ICD or Read codes whereas other settings (e.g. HSE) require only a smaller and simpler set of codes. Hence, mapping between these codes to Read/ICD should be used where required. |
| Circumstances | Time, day, date. Standard for describing circumstances needs to be developed (e.g. based on the work being done by HSE, European Community, Merseyside Accident Information Model). **Development of Read codes is an appropriate way to achieve this**. | Time, day and date are necessary for characterising an accident and hence useful for achieving data linkage between sources. |

| DATA | STANDARD RECOMMENDED | OTHER COMMENTS |
|---|---|---|
| **Personal Characteristics:** | | |
| Age | To be recorded as Date of Birth where known. | A necessary item for characterising a person involved in an accident and hence useful for achieving data linkage between sources. |
| Sex | Male, female, unknown | A necessary item for characterising a person involved in an accident and hence useful for achieving data linkage between sources. |
| Area of Residence | Postcode of residence | A necessary item for characterising a person involved in an accident and hence useful for achieving data linkage between sources. |
| Socio-economic circumstances | OPCS Census definitions | This is not currently collected in many sources. Unlikely to be routinely available. |
| Ethnic Group | OPCS Census definitions | This is not currently collected in many sources. Unlikely to be routinely available. |
| Activity at the time of the accident | ICD for describing high-level categories. These categories need to be expanded to further levels of detail. **Development of Read codes is the easiest way to achieve this**. The development of Read codes needs to take account of the work on development and piloting of codes currently being undertaken in HSE and in Hull Royal Infirmary. | |
| Predisposing Factors | List of factors and appropriate standards needs to be developed. **Development of Read codes is an appropriate way to achieve this**. This will need to take into account work being done in Holland on linking pre-disposing factors to home and leisure accidents. | |
| **Accident Consequences:** | | |
| Nature of the Injury | ICD or Read codes | Only relevant within health service sources. Others outside the health service (e.g. HSE) use less detailed codes which should be able to be mapped to Read/ICD. |
| Injury Severity | ICD or Read codes | Only relevant within health service sources. Others outside the health service use less detailed codes which should be able to map to Read/ICD. |
| Health Service Impact | ICD or Read codes | Only relevant within health service sources. |
| Individual Health Outcomes | To be developed. **Development of Read codes is an appropriate way to achieve this.** | Only relevant within health service sources. |

Source: PHIS (DH 1996)