EU-Injury database

Introduction to the functioning of the Injury Database (IDB)

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**EU-injury database**

Injuries are an important and largely preventable health problem. The European Injury Data Base (IDB) provides users with relevant information for public health and consumer safety policies and actions within the EU (1). The database contains data on accidents and injuries such as home accidents, sports and leisure injuries, workplace and road traffic accidents and on injuries due to violence and self-harm.

Over the past years, the European Commission stimulated several projects with a view to facilitate EU-level exchange of injury data. The latest project, called JAMIE-Joint Action on Monitoring Injuries in Europe, included 26 countries, that collected data on injury patients treated in accident and emergency departments in hospitals (2).

The IDB contains standardised cross-national information on the external causes of injuries treated in emergency departments (EDs) in the EU. This information is collected in accordance with an harmonised methodology and quality assurance programme, in line with the quality principles as defined in the European Statistical Code of Practice (3), and agreed among the participating countries. The IDB-manual (4) describes comprehensively the agreed methodology and the principles for data exchange and access to data provided to the data owners and third parties.

The currently available IDB-data are produced voluntarily by member states. The EU-database is hosted by the European Commission, DG Sanco, in order to provide central access to data delivered by the participating countries.

This brochure on the EU-Injury Database summarises the methodology and principles of EU-level data exchange and access, as documented in the comprehensive IDB-manual (4). This information can be also found at the European Commission’s website: [http://ec.europa.eu/health/data_collection/databases/idb/index_en.htm](http://ec.europa.eu/health/data_collection/databases/idb/index_en.htm), which provides direct access to the database.

**Purpose of IDB**

The purpose of the European Injury Data Base is to facilitate targeted injury prevention policies and programmes at EU- and country level. It provides information on frequency, main causes, circumstances and consequences of non-fatal injuries that are treated in accident and emergency departments across Europe.

IDB covers all unintentional injuries, i.e. those due to home and leisure accidents, accidents at work or in traffic as well as intentional injuries due to violence and self-harm. IDB data are complementary to general fatal injury statistics, hospital discharges statistics and health surveys as well as to dedicated registers on road and workplace accidents.

IDB provides users with the best available information about the magnitude of injuries and their characteristics taking into account age groupings and gender of casualties, type and mechanism of injuries, intent and setting in which they occur (home, school, sport, leisure, work and road).

**Legal base**

The need for enhanced investments in injury surveillance has been recognised in the EU-Council Recommendation on the prevention of injuries and the promotion of safety (5), the EU Regulation on accreditation and market surveillance relating to the marketing of products (6), the EU-Regulation on Community statistics on public health and health and safety at work (7) and in the Parliament’s Initiative Report (8) on the Revision of the General Product Safety Directive and Market Surveillance.

The European Commission together with the member states has defined a coherent list of indicators for monitoring of health: the European Core Health Indicators (ECHI), a shortlist of 88 health indicators. Regarding
home, leisure and school injuries, detailed monitoring in emergency departments of hospitals as well as general capture in the European Health Interview System (EHIS) is recommended and defined in the list as ECHI-29.

Also within the wider European region of the World Health Organisation, injuries have been identified as a major threat to the economic and social development of region: injuries and violence account for 9% of all causes of death in the WHO-European region, with about 800,000 people losing their lives to injury-related causes each year. To support countries in addressing this problem more comprehensively, the WHO-office for the European Region issued Resolution 2005/55 on the Prevention of injuries in the WHO European Region (9), which helps to place violence and injury prevention more firmly on the public health agenda in the wider European region.

**Data source**

The European Injury Data Base (IDB) is based on national injury surveillance efforts, collecting accident and injury data from selected hospitals and their emergency departments (EDs). In some countries the basic IDB data is being collected as a matter of routine in all hospitals. But in the majority of countries this is being done in a limited number of hospitals – more and more through a representative sample of hospitals - nationwide or in one of the regions or provinces.

The combined EU-level sample of injury reporting hospitals includes large as well as middle-size hospitals, urban as well as rural areas. It includes general hospitals as well as specialised hospitals, e.g. children's hospitals. Specialised departments within the selected hospitals, such as paediatric departments, dental departments, ophthalmologic departments and burn units, are also included in the system in order to make sure that all injury patients that are entering a participating hospital are included.

Countries are expected to report cases of acute physical injuries attending EDs for diagnosis or treatment. This means that only visits are included, for which the reason of attendance is related to an injury. Visits related to disease complaints or due to complications of medical/surgical care are excluded from the register. Visits for follow up treatment are not recorded as a new case.

The total number of hospitals in the EU-sample is sufficiently large and representative for deriving incidence rates at EU-level, even for quite specific groups of injuries as selected by age, intent, setting, or type of injury. Around 300,000 cases a year are being collected from over one hundred hospitals in the countries that currently are participating in the EU-level exchange.

**Classification**

The IDB classification is based on the WHO International Classification for External Causes of Injuries (ICECI) and the former EHLASS (European Home and Leisure Accident Surveillance System) coding manual. The IDB classification has been established in 2005 covering all injuries. Over the past few years, two separate Data Dictionaries have been produced for IDB-data collection based on this IDB-classification:

- The Minimum Data Set (MDS), a more limited set of codes (10); and
- The Full Data Set (FDS) which is quite detailed as to the circumstances and the role of products in the causation of injuries (11).

The MDS has been developed for public health policy purposes with the aim to produce accurate incidences and national estimates. In view of that, all countries shall be soon capable of collecting and providing the Minimum Data Set (MDS) in a substantial number of hospitals, if not in all hospitals. These data are publicly accessible.

The FDS has been developed in particular for consumer policy and research purposes. It is envisaged to have each country collecting the Full Data Set in one or more reference hospitals in addition to the MDS-set of data. The FDS will provide more detailed information as to the circumstances and on products that are involved in injury events. Access to these data is restricted to researchers, prevention professionals and authorities responsible for

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Both data sets are fully compatible: FDS-data is collapsible into MDS-level data presentations. In some countries injury surveillance systems existed before the IDB started. Denmark for instance uses a NOMESCO-classification and the Netherlands a national classification related to ICECI. Other countries, e.g. Latvia, use ICD-10 for their injury surveillance system. These countries did not change their system and classification used, but they are able to convert their data into IDB-data that is at least compatible at the level of the MDS.

Core data elements
The core IDB-data elements, i.e. at MDS-level (10), are:

- Recording country - Country that provides the data
- Unique national record number - Number of the emergency department case or record
- Age of patient - Person's age at the time of the injury
- Sex of patient – Gender of person injured
- Country of permanent residence - Person's country of residence at the time of the injury
- Date of injury - The date the injury was sustained
- Time of injury - The time the injury was sustained
- Date of attendance - The date the injured person attended the emergency department
- Time of attendance - The time the injured person attended the emergency department
- Treatment and follow-up - Status of treatment after attendance at the emergency department
- Intent - Whether an injury was accidental or caused by an act carried out on purpose by oneself or by another person(s) with the goal of injuring
- Place of occurrence – Broad categories of places where the injured person was when the injury event occurred
- Mechanism of injury - The way in which the injury was sustained, i.e. how the person was hurt
- Activity when injured - Broad categories of the type of activity the injured person was engaged in when the injury occurred
- Type of injury - Type of injury sustained
- Part of the body injured - Region or part of the body where the injury is located
- Narrative (optional) - Description of the event leading to the injury

For further details on the classification structure and coding, see the IDB MDS Data Dictionary (10). For additional data elements used in the Full Data Set see the IDB FDS Data Dictionary (11).

Hospital selection
Ideally, emergency department based injury statistics should include all hospitals in a country. In this way the statistic is essentially “exact” and the recorded number of cases varies only due to random error. However, for several reasons it may not be possible to record injury information in all hospitals in a given country. This counts in particular for the Full Data Set (FDS), but it may also apply to the Minimum Data Set (MDS). In that case, injury data may be collected in a sample of hospitals.

As a matter of principle, countries with more than one million inhabitants are required to report MDS-level data from at least three hospitals and FDS-data from at least one reference hospital (4). Over time, the selection of hospitals shall become more balanced and the number of hospitals become large enough to ensure sufficient representativeness of the data at national level. This would allow sufficiently accurate national incidence estimates at five year age group level and according to main category of places of occurrence and activity.

In countries where the responsibility for surveillance is devolved to regions, it is accepted that data is being reported from one or two regions only. While the incidence rates generated are actually only valid for the region(s)
involved, such rates could for the time being be taken as “best guess” for the entire country. In the current data set this is for instance the case for Germany.

**National estimates**
The publicly accessible IDB database, which provides only information at MDS-level, allows to retrieve data in three ways: in absolute counts, crude incidence rates per 100,000 persons of the resident population (corrected for age and gender), and national estimates.

The calculation base for the incidence rate is the reference population that is covered by the actual national data samples. If an IDB sample covers e.g. 5% of all hospital treated injuries in a country, the fictive reference population is 5% of the entire national population. For most countries only the share of admissions is known from the hospital discharge statistics, while the share in all ambulatory treatments may be unknown. In this case the sample ratio for admissions is taken as best available estimate for all hospital treated injuries (admissions and ambulatory treatments). National estimates are based on the crude incidence rate and the national population for January 1st as published by EuroStat.

The crude incidence rate of the combined category of ‘unintentional home, leisure, sport and school injuries’ provides also the European Health Indicator-ECHI 29b: ‘Injuries: home, leisure, school: register-based incidence’. This indicator has been developed in the framework of the European Core Health Indicators (ECHI) project (12), which recommends EU-member states to monitor home, leisure and school injuries in emergency departments of hospitals as well as the general capture of such information in the European Health Interview System (EHIS).

All data for the calculation of national estimates (the IDB data sets and the reference population data) are provided by the participating national bodies, who therefore bear the responsibility for the quality of the automatically generated incidence rates and national estimates.

**Representativeness and comparability**
Ideally, the selected IDB hospitals reflect a representative sample of all injury episodes treated in emergency departments in the respective country, enabling national estimates and the calculation of population based injury rates, which in turn should allow for comparisons between IDB countries. As not all participating countries have sufficiently large and comprehensive samples of hospitals country comparison requires great caution.

Moreover, currently the scope of case selection is restricted in some countries: e.g. the Czech Republic collects only child injuries, Lithuania only inpatients, Portugal only home & leisure accidents. National data sets with such exceptions are flagged in the data tables: these "warning flags" make the user aware of restricted comparability of counts, rates, and estimates. The specific characteristics of national data collection systems are described in the IDB-National file information report (13).

Country comparison is further complicated due to significant differences between countries as to health care consumption, clinical practice of treating injuries and in data collection procedures within participating hospitals.

It is therefore recommended to use the entire dataset for analysis, i.e. at the level of all participating countries together, as this represents the best available insight into the injury spectrum in the entire EU-region.

**Quality control and metadata**
Continuous training and supervision of coding staff and on-going feedback on questions related to coding accuracy are a prerequisite for optimising the quality of data that is being provided. Data has also to pass a formal check for completeness of the compulsory data elements, absence of duplications and consistency with the Data Dictionary, before being accepted for upload.
For FDS-data additional quality control measures are implemented by cross-checking the codes entered with the accompanying narrative free-text, a check on inconsistencies between data variables and on-going feedback on issues related to coding accuracy in particular regarding coding of products/substances.

Some countries also carry out validity audits, i.e. regular audits by the national IDB-team of one day's workload of cases which are coded anew and compared with codes used by the local team, resulting in a list of true positives/ false positives/ false negatives and an overall "completeness score".

**Data upload**
Data upload to the EU IDB-database takes place once a year with the assistance of the IDB-coordinator who is responsible for administering data control and preparation of the upload file.
The call for data requests the national data administrators (NDAs) to deliver six files, i.e. three files for the Minimum level Dataset and three files related to the Full level Dataset:
- The IDB MDS-data file, consisting of all cases for one year at MDS level;
- The reference population data related to the data delivered which is the basis for estimating incidence rates;
- The national file information describing methodology, content and quality of the MDS data delivered.
- The IDB FDS-data file, consisting of all cases for one year at FDS level;
- The national file information describing methodology, content and quality of the FDS data delivered; and
- The list of IDB-FDS reference hospitals.

**Confidentiality**
IDB is fully in line with the standards of the European Data Protection Directive (14) and the Regulation on the processing of single case data by Community institutions (15). Physical and technological provisions are in place to protect the security and integrity of statistical databases and to protect the privacy rights of individuals. Only anonymised records are provided by the countries, wherein personal identifiers and hospital identifiers are removed. Moreover, statistics and figures from IDB are made available only at aggregated level.

For reasons of data protection the IDB Public Access does not:
- provide any single case information;
- contain any details of date or time;
- provide a narrative description of the course of the accidents;
- show the age only aggregated into 5-years age groups; nor
- display the number of cases if inferior to 5 in the database.

**Access to IDB data**
The IDB is publicly accessible through the EU web-gate which allows for an interactive definition of tables through filters on each of the following MDS data elements:
- Recording country
- Year of attendance
- Age group and sex of patient
- Treatment and follow up
- Intent and Mechanism of injury
- Location of occurrence
- Activity when injured
- Type of the injury
- Body part injured

The IDB Public Access data elements are further defined and specified in the MDS-Data Dictionary (10). If older data has been coded in the previous formats these data have been transcoded into IDB-MDS. Additionally, the
selection of ECHI 29- cases (i.e. all home, leisure, sport and school accidents grouped together) can be made in one click.

As a result of the selected query, the following information will be presented:

- "Cases (sample)", this represents the number of injuries actually recorded.
- "Cases (country)", this represents the number of cases extrapolated at national level.
- "Incidence Rate", this represents the number of accidents per 1000 inhabitants.

As to the presentation format, the user can choose between table, bar chart, pie chart, and map chart, or download the tables for further analyses.

In case of questions as to the use of the public access tool please do not hesitate to contact the IDB Helpdesk in DG SANCO [Sanco-idd@ec.europa.eu]. For all other questions you may contact the Clearinghouse assistant Ms S. Turner [s.turner@swansea.ac.uk].

Access to IDB for research purposes
A number of hospitals are able to collect more extensive information about the circumstances and causes of injuries, including narratives on the injury event and details on products that may be involved. For that purpose a more comprehensive classification has been made available, the IDB Full Data Set (FDS) Data Dictionary (11). The FDS contains more details than the MDS, in particular regarding to:

- Place (setting) of occurrence
- Activity when injured
- Sport injuries (e.g. sport practiced)
- Product/substance involved in starting the incidence
- Product/substance causing the injury
- Product/substance amplifying the risk (e.g. alcohol consumption)
- Acts of interpersonal violence (e.g. relation perpetrator-victim)
- Acts of self-harm (e.g. reason for self-harm)
- Transport injuries (e.g. involved vehicle)
- Treatment (e.g. days of hospital care)

The “Restricted Access” application contains anonymised single case data on accidents and injuries coded in accordance with the FDS Data Dictionary. Restricted access can be granted to researchers and injury prevention professionals upon request explaining the purpose of their research and the reasons for requesting access to the individual data. Each single request for disclosure needs approval from the data supplying countries, i.e. the National Data Administrators (NDAs).

Access will be given only if the applicant formally signs to be agreeing with the terms of use (16). Access will be granted only temporarily and will be automatically suppressed as soon as the user permission expires.

Researchers, who want to consult the database that contains data at FDS-level shall complete the form “request for research access” (17) and send it together with the signed form “agreement with the terms of use” to Ms S. Turner [s.turner@swansea.ac.uk].

According to the Regulation on the protection of individuals with regard to the processing of single case data by the Community institutions, access will be only given under the following conditions:
- Single-record data is to be used for internal purposes only. The user may not give access single-record data to a third party.
- Single-record data shall not be published or disseminated to the public, neither to a third party.
- The user may use the data only for the purpose of enhancing safety policies and programmes safety and for the prevention of injuries.

Clearinghouse service
The IDB database delivers information that is crucial to the development of effective injury prevention and safety promotion and provides an immense opportunity for research and analysis. Information is of important relevance to organisations and agencies, including state and local government departments, health and injury prevention organisations, business and industry, education institutes, research groups and media. Organisations use the information for instance to underpin injury prevention policies, to stimulate research and to develop and evaluate prevention strategies and measures. These measures include community awareness initiatives and education, legislative and regulatory changes and safety-related environmental and product design improvements.

For assessing specific risks, e.g. related to products that are involved in injuries, the analysis of FDS-data through the restricted access application might be necessary. For that purpose the EU Data clearinghouse services is available.

For analyses and data requests a cost-recovery fee of 80 euro per hour (plus VAT) is being charged. If you are interested in more detailed injury information, please submit your query by filling in the request form (18) and send this to Ms S. Turner, [s.turner@swansea.ac.uk].

IDB network
Almost all member states’ governments, i.e. their Ministries of Health, have designated an internal unit or an affiliated agency with the task to explore the possibilities of enhanced national injury surveillance efforts and to participate in EU level exchange. These designated centres (19) are the data owners and represent their country in the EU-Network of National Data Administrators (NDAs) for the IDB-exchange.

The IDB is under control of this network of National Data Administrators (NDAs). It operates under a set of house rules and decides on standards related to the data exchange such as revision of classification and quality control.
requirements and conditions for data access.

Currently, the European Association for Injury Prevention (EuroSafe) coordinates the network in collaboration with the IDB Advisory Board (Austrian Road Safety Board, Brandenburg authority of Environment, Health and Consumer protection, Danish Institute of Public Health, Dutch Consumer Safety Institute, Centre de Recherche Public de la Santé Luxembourg and Centre for E-Health Research at Swansea University). The IDB-Network brings together 26 member states and their competent authorities, signed up for a joint commitment to enhance injury surveillance efforts.

The Network coordinating consortium:
- Functions as secretariat of the network and representative towards the Commission services;
- Assists IDB-NDAs in implementing and maintaining comparable national systems;
- Collects and checks data for upload at European level;
- Develops and maintain standards and tools of the system, e.g. the IDB- Manual, the Coding Manual and software support tools;
- Organizes network meetings and training events; and
- Promotes the use of the database at European level.

References

(1) European Commission website, European Injury Data Base, accessed April 2015

(2) Rogmans W., Joint action on monitoring injuries in Europe (JAMIE), Archives of Public Health 2012, 70:19
http://www.archpublichealth.com/content/70/1/19


(5) EU-Council Recommendation on the prevention of injuries and the promotion of safety (2007/C164),

(6) EU-Regulation on Accreditation and market surveillance relating to the marketing of Products (2008/ L218)

(7) EU-Regulation on Community statistics on public health and health and safety at work (2008/ L354)

(9) WHO-EURO Resolution Prevention of injuries in the WHO European Region, 15 Sept 2005

(10) EuroSafe, IDB-Minimum Data Set (MDS) Data Dictionary, Amsterdam October 2013

(11) EuroSafe, IDB-Full Data Set (FDS) Data Dictionary, Amsterdam, November 2013

http://www.healthindicators.eu/healthindicators/object_document/o6088n29136.html


(14) European Data Protection Directive 95/46/EC on the protection of individuals with regard to the processing of personal data and on the free movement of such data

(15) Regulation 45/2001 on the protection of individuals with regard to the processing of personal data by the Community institutions and bodies and on the free movement of such data

(16) EUROPEAN INJURY DATABASE / NETWORK OF DATA SUPPLIERS, TERMS OF USE of single case IDB data via the password restricted access at EU webgate

(17) EUROPEAN INJURY DATABASE / NETWORK OF DATA SUPPLIERS, REQUEST FOR RESEARCH ACCESS to the single case IDB data via the password restricted access at EU-webgate

(18) EUROPEAN INJURY DATABASE / NETWORK OF DATA SUPPLIERS, EU Injury Data & Reporting Services, Injury Report Request Form

(19) List of IDB-data suppliers, EuroSafe 2015
For further information see also:

EuroSafe, Frequently Asked Questions on Accident and Injury Data background document to the Joint Call for a pan-European accident and injury data system, Amsterdam, March 2013

EuroSafe, ED-based injury surveillance in countries in Europe - Status report, Amsterdam March 2013

EuroSafe, Injury data collection: An effective tool for helping to cut the societal costs of Injuries - A summary of available evidence, Amsterdam July 2013

For the Network of IDB-National Data Administrators see:

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