

Uniform approach to classification of injuries - Research and implementation measures

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Issued by:

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Date:

23.01.2014

1. Background

Road safety improvement has traditionally been measured by the reduction of fatalities to road users. However, severe (non-fatal) injuries also present a major problem. This holds especially true as the reduction of fatalities is not followed by a similar reduction in the number of the seriously injured victims – and sometimes even accompanied by an increase, as demonstrated by accident and hospital statistics in several European countries.

Consequently, the reduction of the number of serious road traffic injuries was one of the strategic objectives set by the European Commission in 2010 in its road safety policy orientations for the period 2011-2020.

1.1 Reporting on serious road traffic injuries

In most European countries road traffic injuries are coded by the police. They collect the data at the scene of accident and during the succeeding investigation. It is the exception rather than the rule to find coordinated nationwide representative police and hospital data collection.

Criteria used in police records and official statistics to classify the severity of a crash vary from country to country. The definitions refer, for example, to length of stay in hospital, long term disability or inability to work.

Due to different definitions and measurement methods, accurate comparisons between countries are not possible and the magnitude of the problem cannot be fully understood and therefore not addressed adequately.

Existing and planned efforts in injury surveillance, prevention and analysis supported by the European Commission like IRTAD, CARE or JAMIE build a solid background for implementing the European objective of reducing the number of serious road traffic injuries. Additionally exceeding European-wide and more target-oriented activities are needed, which e.g. focus on the harmonization of definitions, the quality of measures and implementation strategies. This paper summarises the most relevant activities that are necessary to complete the ongoing efforts.

1.2 The objective of the European Commission

The European Commission formulated three steps that must be taken to build a solid foundation for any subsequent action and to reach the aim of reducing the number of severe injuries¹. Firstly, a common definition of a severe injury is needed, in order to collect internationally comparable data. Secondly, the improvement of data collection is targeted to improve data reliability. Thirdly, an EU-level target for reduction of the number of severe injuries is needed.

The European Commission aims to harmonise the definition of a “*seriously injured road user*” in Europe. In the ongoing discussion a definition referring to injury severity is predominant. In 2013 the

¹ European Commission (2013). Commission staff working document. On the implementation of objective 6 of the European Commission’s policy orientations on road safety 2011-2020 – First milestone towards an injury strategy.

EU High Level Group “Road Safety” confirmed that the Maximum Abbreviated Injury Score (MAIS) should be used. It was agreed to set a threshold (MAIS 3+) to classify seriously injured.

The EU High Level Group describes collection of reliable data as a second step. Member States might choose from three ways to proceed:

- Police data: Continue to use police data but apply a correction coefficient;
- Hospital data: The number of injuries is reported on the base of hospital data using MAIS;
- Link of police and hospital data: The ideal way might be the link of police and hospital data, which leads to a more complete picture of serious injuries.

Each way has its advantages and disadvantages. Every Member State should use the method most appropriate for achieving the goal of assessing the total number of serious injuries in its country.

Resulting from this work the EU Commission has ambitious targets:

- Member States should prepare to use the new definition in 2014;
- Member States should report first data set in 2015;
- Setting a target for reduction of serious road injury (e.g. 2015-2020).

1.3 Conclusion

Identification and registration of serious road traffic injuries is a challenge that is well identified and addressed clearly by the European Commission through encouraging Member States to reduce the number of seriously injured.

Setting a target for reducing the number of seriously injured signifies a remarkable change of policy paradigm for the European Union, as from now on the improvement of road safety is defined no longer only through the absence of fatalities.

Each Member State has to go its own way to achieve the common European goal. Different problems will occur and “tailored” solutions have to be developed. However, communication and cooperation between the countries can ease this way.

2. Steps towards a uniform approach to classification of serious injuries

FERSI established a Working Group (WG) “Severely injured road users in crash statistics” to address the challenges described above.

The main objective of the WG was to produce policy recommendations for the European Commission on the classification of injuries and to promote the introduction of uniform injuries classification in the EU Member States.

With this aim the WG focused on the following topics:

- MAIS assessment in Europe: the current situation
- Identification of appropriate MAIS statistics for setting targets and monitoring progress, including further elaboration of an adequate definition of seriously injured

- Promotion of harmonised injury coding and classification methods in hospitals across Europe
- Examination of the feasibility of the development of standardised software coding tools in order to standardise, support and ease the routinely MAIS classification

FERSI, as the forum of national road safety research institutes, is well positioned to assist the Commission in addressing these topics.

The WG agreed on two tasks that should be accomplished to arrive at a uniform approach to classification of serious injuries.

2.1 Task 1 – Applying MAIS assessment: investigation of the current situation in the EU Member States

There are substantial differences between Member States and even within particular countries, with regard to injury coding practices and coverage. A clear overview of the state of the art is a prerequisite for implementing a coherent EU injury reduction strategy.

What are the challenges regarding MAIS assessment?

Though the MAIS is already used in local or regional and mostly hospital-based studies, there are only a few countries where AIS-coding is used for nationwide assessment of injuries. Different ways of coordinated nationwide representative (M)AIS-assessment are possible:

- Inside hospitals: integration of AIS-coding in the daily routine of medical professionals;
- Outside hospitals: transformation of hospital data to MAIS (i.e. translation of ICD-codes in AIS-codes).

Further, it has to be asked if hospital data alone is sufficient, or if a link between medical and police data is necessary, to assess the number of serious injuries. Hospital data alone can play an important part in assessing the “real” number of serious road traffic injuries and to observe developments. A link of hospital and police data is essential when new safety measures for certain target-groups shall be developed, for example, based on “typical” crash situations.

Another important challenge lies in establishing and improving cooperation between hospitals, police and possible third parties regarding data transfer. In this context questions regarding data protection are of particular importance.

The eye-catching definition of MAIS 3+ which is announced by the European Commission for the classification of serious injuries has to be verified against other (national) definitions currently used in European Member States (e.g. overlap of MAIS 6 and fatalities).

The assessment of injuries by a dichotomous variable (MAIS 3+: Yes/No) has also to be questioned. The pros and cons of a more detailed assessment (e.g. all MAIS-levels) have to be discussed.

What should be done?

As the current situation in European Member States in respect to MAIS assessment is unclear, activities should be started to:

- Assess the state of the art per Member State with regard to quality and coverage of medical data collection and MAIS assessment, including the identification of stakeholders concerning the ownership of the databases and the restrictions in terms of access and linking.
- Collect information regarding the cooperation and data/information transfer between hospitals, police and third parties (e.g. best-practice-examples, data security regulations, legal requirements, operational processes) to accomplish reporting duty to European Commission in 2015.
- Further elaboration of a definition of seriously injured.

2.2 Task 2 – Promotion of a uniform injury classification in hospitals: development of IT-tools to standardise and facilitate MAIS classification

European-wide injury classification by (M)AIS on the one hand promises uniformity and comparability, but on the other hand necessitates prospective planning and implementation of standardised structures and processes. In this context the various “traditional” processes/algorithms of MAIS-coding that can be used have to be considered.

What are the challenges of harmonising MAIS-coding?

As already stated above MAIS-codes can either be derived directly by assessing AIS-codes by medical professionals or indirectly by using translation algorithms (i.e. translate ICD-codes in AIS-codes by externals). Independently of the assessment method preferred by a country results on the number of seriously injured should be comparable EU-wide.

What should be done?

To overcome isolated national applications, the development and establishment of a harmonised European tool or the deployment of different but coherent (compatible) tools is of primary importance.

A set of IT-tools should be developed to support MAIS-coding

- inside hospitals (direct MAIS-coding by medical professionals) and/or
- outside hospitals (translation of ICD-codes in AIS-codes by externals),

taking into account national circumstances and guaranteeing EU-wide uniformity, comparability and acceptance.

Tests of prototypes, embedded in a profound evaluation process are necessary to guarantee high validity and reliability of the tool. The management and supervision of such activities should be on a European level. Support of such research should have a high priority.

3. Conclusions and policy recommendations

Based on the statements above, the following conclusions and recommendations can be drawn:

- In order to accomplish the reporting duty in 2015, the European Commission will benefit from supporting research aiming at
 - (1) understanding how injury data is actually assessed, stored and manipulated in hospitals,

- (2) collecting data on the current state and methods of MAIS assessment and
- (3) identifying possibilities and hurdles for combining MAIS diagnoses and police accident data or other indicators.

It is advised to implement a study about these topics involving the relevant stakeholders in all European Member States and to evaluate the study results at an expert workshop.

The results of this research are fundamental to interpret the prevalence rates of serious injuries in different European countries.

Detailed knowledge about the assessment methods of the number of serious injuries in a country is required to avoid “comparing apples and oranges” and to set a realistic European target for reduction of the number of serious injuries (e.g. for 2015-2020).

- European IT-tools for assessing MAIS should be developed. The set of tools should as a whole be valid, reliable and highly accepted. Measures to spread the tool(s) all over Europe and their implementation should be supported.
- FERSI is in the unique position to formulate a project concept and to assist the implementation process of this research.