

Basic Data Set for Accidental Injuries for In-Patients in Norway

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Injuries in Norway

Persons with injuries are treated in the health sector, which then is an important data source for injuries. The collection of data is an important role of the health sector. It is, however, also necessary to communicate these data to other sectors of the society, the sectors working with or having responsibility for prevention of different groups of injuries.

There are two important purposes for the use of accident and injury data:

- 1) To make statistics and trend analyses, to enable priorities to be set.
- 2) To analyse the data to find preventive measures.

The content of the data used for statistics and for prevention are different. Data for making statistics are general indicators, while data for finding preventive measures are mostly case stories.

To collect data in the health sector is not always an easy task. In Norway, there are no special persons designated in the hospital responsible for data collection. It is the normal personnel who register data in their daily routines: doctors, nurses and receptionist.

Up to now, there has been poor statistics from hospitals in their routine registration, due to too detailed classification (E-code), no personell responsible for the data collection and poor quality control.

In Norway (4,3 million inhabitants), we have on the basis of two important registration systems calculated the number of injuries per 100 000 of the population for the different injury types and severities to be:

Table 1 Number of injuries in Norway by injury type and severities

Injury types	Treated by medical doctor 1)	In-patients 1)	Fatalities 2)
Accidental	ab. 10 500	ab. 1 370	41
Intentional self-harm	ab. 200	ab. 160	14
Assault	ab. 500	ab. 90	1
Total	ab. 11 200	ab. 1 620	56

- 1) National Injury Register at the National Institute for Public Health, a sample register based on special financed registration hospitals and emergency wards in four cities. This give data from ab. 10% of the in- and out- injurypatients treated by a medical doctor in Norway
- 2) Death Register at Statistics Norway. 100% of the fatalities are registered.

Different data sets in the injury registration in the health sector

At the ICE-seminar in Washington in 1994, a working group presented a figure showing different types of datasets and the differences between them (see table 2). According to the working group, we might divide the data sets in three groups:

- 1 A Basic Data Set (BDS). The variables in this BDS ought to be very general case indicators. The purposes for collecting a BDS are for policy setting, for identifying "hot spots", to follow trends on the main accident/injury types locally, regionally and centrally and for international comparisons. For being able to follow trends, the collection of a BDS ought to be as close to 100% as possible in the group and in the area we want to monitor. It should therefore also be collected during the normal routines of the health system, without special economic or personell resources.

A Minimum Basic Data Set (MBDS) is the absolutely minimum of indicators that should be collected from the health system in the daily routines for monitoring. A MBDS should be internationally agreed upon, to enable international comparisions.

- 2 A Standard Data Set (SDS) consists of more detailed indicators, and eventually a free text (case story). The data set collected in most of the existing hospitalbased injury surveillance and registration systems in the world today might be a SDS: NEISS in USA, NOMESCO in the Nordic countries, EHLASS in many European countries, PORS in the Netherlands, HASS in United Kingdom. Mostly extra resources are necessary to enable collection of these data in the health system. All the systems mentioned here are sample registers, as it would be very costly to collect all these data from all injuries treated in the health system.

We might consider the chapters XIX in the ICD-10 also to be a SDS, since the level of information in that chapter is rather detailed. I have to admit that in my country we doubt that it is possible to collect the complete chapter XX in ICD-10 from our hospitals in a routine system, with a quality good enough to enable us to make good and reliable statistics.

Chapter XIX (injury diagnosis - medically terms) is more likely to be collected in a routine system in the health system with reasonable good quality, as diagnosis are well known to the medical profession.

A SDS is collected for defining more detailed "hot spots", to identify some preventive means, and for making some research. However, to really get information which makes it possible to understand why the accident/injury happened, and hence will give us possibilities to propose efficient preventive means, we have to go to the third level of details:

- 3 Expanded Data Set (EDS) contains more or less case stories from the different accidents/injuries. There might be modules or detailed questionnaires created for the accident/injury types you want to investigate, for instance traffic accidents, burns, bicycle accidents, accidents with special products, spinal cord injuries etc. To collect case stories

with enough information for prevention work is quite costly, and is not possible to do in the health system in the day work. Often on-site investigations are required.

Table 2 Different data sets for collecting data on unintentional injuries with regard to the level of detail of the information and the purpose of collecting the data set.

Level of detail of information	Different data sets	The purpose of collecting the data set
General case indicators	<p>Basic data set (BDS) Minimum Basic Data Set (MBDS) the absolutely minimum to be collected, should be internationally agreed upon. Routine registration - 100%</p>	<p>Policy Setting Identify "hot spots" Follow trends International comparisons</p>
More detailed indicators + evt. free text	<p>Standard data set (SDS) ICD - 10, chapter XX NEISS, NOMESCO, EHLASS, HASS, PORS</p> <p>Special registration - often samples</p>	<p>Identify more detailed "hot spots" Identify preventive means (Research, to some extent)</p>
Case stories	<p>Expanded data sets (EDS) Modules on: Traffic, Burns, Falls, Products etc.</p> <p>Special data collections - selected cases</p>	<p>Identify preventive means Research</p>

One very important characteristic with these data sets is that the cost for collecting the information will increase the more downwards to the bottom of the table you get.

Introduction of ICD-10 in Norway and a Basic Data Set for injuries

ICD-10 will be introduced in the health system in Norway from 1997, and for death statistics from 1996. Based on the knowledge that the Chapter XX: " External causes of morbidity and mortality" is too detailed for morbidity registration in Norway, the health authorities decided to make a Basic Data Set (BDS) for injuries, compatible with the ICD-10 Chapter XX. The purpose with this Basic Data Set is to create a running routine registration of injuries for in-patients which can be used as a basic statistical system to serve the different authorities with relevant overview of "their" injury area, and to serve as a base for collecting information from registers for sick-leave, rehabilitation and handicaps by using the personal birth number to connect the information from the different registers. This later proposal, called the SYNPAAS-proposal, comes from a report made by the Norwegian Safety Forum.

A working group was established, and Norwegian Safety Froum was asked to chair it. In the woorking group were members with 10-15 years of experience with colleting a Standard Data Set from hopitals, knowing quite well the problems and possibilities with collecting injury data from norwegian hopitals. The working group has created a BDS with the dataelements as shown below. For some of the dataelements comments are given to give the reason why the dataelement is included.

1. **Demographic data:** Age, sex, residence. Residence (adress) is included to enable calculation of incidences.
2. **Municipality where injury happened.** This is included to enable the authorities to count the accident/injuries which occur within the boundaries of their municipality.
3. **Main injury type:**
 - Accidental
 - Intentional selfharm
 - Assault
 - Legal intervention and operation of war
 - Undetermined intent.

3.1 **Accidental injuries**

For the accidental injuries, or accidents, as they will be called from now on, some special dataelements will be registered. The most important design criteria was to give the different authorities involved in prevention of accidents a number of "their" accidents. Some of these authorities are having registers on accident data based on other sources than the health system. As an example, the traffic safety authorities have a register for traffic accidents based on police reports. Investigations have shown, however, a vast underreporting of traffic accidents compared with registration of traffic accidents in the health system.

This is the main underlying reason for creating this BDS. The health system should be able to give the different authorities information about the number of accidents happening in or on their responsibility areas.

In Norway, we have found the different authorities with responsibility or interests for the different accident types. It is not always that there is so much preventive activities in those authorities, anyhow, the numbers of the accidents occuring in their areas of interest or responsibility should be given them. The list of the main accident types and the relevant authorities in Norway having responsibility or interest is given below.

- Traffic - Directorate of Road and Traffic
- Other accidents on the roads: Directorate of Road and Traffic
- Occupational
 - Landbased (also agricultural)- Directorate of Labour Inspection
 - Off-shore - Directorate of Oil

- Fishing at sea - Directorate of Fisheries
- Seatransport - The Maritim Directorate
- Airtransport - The Aviation Directorate
- In Military service: The Directorate of Defense
- Home - The National Authorities on Buildings
- Educational - The Ministry of Education
- Sports - The Ministry of Culture
- Kindergarten and playgrounds: The Ministry of Children and Family Affairs
- Nursing home, home for sick: The Ministry of Health and Social Affairs

These are the accident types which we want to count through a MBDS. In addition, some other areas turned up during the discussion with the different authorities with wishes to be monitored in a BDS:

- Accident in hospitals
- Accidents in the police, law and order activities.

Based on this division of the accident area, we designed the place of occurrence and the activity of the injured person when injury happened.

4. *Place of occurrence*

- Residential area (exclusive playground)
- Road traffic accident (moving vehicle is included, also single bicycle accident)
- Other accident on street/road
- Kindergarten/playground
- School and schoolyard, highschool etc. (exclusive sportsarea, in and out)
- Hospital, somatic and psychiatric
- Sports and athletics area, in or out, also at school and institution
- Open countryside, sea, lake, river, air
- Other place, as production area, farm, shop, park, restaurant etc.

5. *Activity of the injured person at the time the event occurred*

- Working for income. This is divided in the branch where the injured person worked, to enable the different occupational accidents to be counted:
 - Manufacturing and mining
 - Construction
 - Working off-shore (exclusive sea- and airtransport)
 - Agriculture and forestry
 - Fishing
 - Defense activities (exclusive compulsory enlisted)
 - Police, law and order activities (exclusive prisoner)
 - Other branch: Trade, transport, repair, hotel, restaurant, public and private services etc
 - Branch not known.

- Education, as pupil, student
- Compulsory enlisted
- Athletics, sports, exercise in education
- Other athletics, sports and exercise
- Other activity as unpaid work, vital activity, play and other leisure activity.

6. *Transport accident, transport role for the injured*

In a transport accident at least one vehicle (bike, car, tractor, horse, snowscooter, train, tram etc.), vessel or other transportmean must be included.

- Pedestrian, (incl. on sleigh, ski, tricycle, rollerskates, etc.) i contact with/pressed by vehicle, animal, person
- Bicycle, driver/passenger
- Motorcycle, driver/passenger
- Moped, driver/passenger
- Car, taxi etc. driver/passenger
- Van, combicar, pick-up truck, driver/passenger
- Heavy transport vehicle, driver/passenger
- Bus, driver/passenger
- Rider, animaldrawn vehicle, driver/passenger
- Train, tram, driver/passenger
- Driver/passenger in other vehicle, as: in industry, in agriculture, (tractor)

- Vehicleaccident, unknown transportrole for the injured
- Seatransport, inclusive leisure time
- Airtransport, inclusive leisure time
- Other transport as lift in building, cableway, skilift, etc.

7. *Other external cause of accidental injury*

- Falls, all types
- Struck, hit by object (no machine, tool, animal, person)
- Caught, crushed, jammed in or between objects (no machine, tool, animal, person)
- Cut, hit, caught, jammed by machine, tool, weapon, explosion), incl. cut by glas
- High-pressure jet, vibration, noise
- Foreign body in eye, orifice, skin
- Bit, struck, kicked, bitten by person, animal, plant
- Drowning and neardrowning, suffocation and nearsuffocation
- Electricity, radiation, air pressure
- Smoke, fire, flames
- Hot liquid, gas, surface
- Venomous plant/animal/insect, ext. contact
- Natural heat, cold, natural forces
- Poisoning, noxious substances
- Overexertion, lack of food and water

Other factor

How to use this BDS in Norway

A combination of "Place", "Activity" and "Transport" (4, 5 and 6 above) will give the 13 different national authorities (mentioned before) and the local authorities involved in accident prevention a number of "their" accidents, and some of the external factors involved (from 7 above). The traffic and transport authorities will get some more details about "their" accidents (from 6 above).

When utilising the National Injury Register at the National institute for Public Health (10 % sample) in addition to this BDS, more details of these accidenta can be obtained on a national level. These two registers will also act as qualitycontrol-registers for each other, as the in-patients will be registered by both of these two registers at four hospitals.

A one-page form is developed to be filled in by personell in ambulances and in the reception at the hospitals (enclosed). In addition, the doctors will register the diagnosis (Ch. XIX, ICD-10). This BDS is accepted by the Norwegian health authorities, and will be made obligatory for all injured in-patients in hospitals all around Norway from 1.1.97, instead of the more detailed Chapter XX in ICD-10.

It will be essential for the success of the implementation of this BDS for in-patients in Norwegian hospitals, if there will be given resources to training of hospital personell in the coding of the injuries and accidents, and that there will be established a system for statistics production and quality control.

A MBDS to be collected in Norway and internationally?

The BDS shown above it a data set which has been constructed for a system with registration resources and tradition at a certain level. It has also been constructed to be compatible with ICD-10. It could be that also this Norwegian BDS might be difficult to register.

If we should design a data set as the absolutely minimum to enable the relevant preventive authorities to monitor the developmenmt of "their" accident, following MBDS would have been proposed for implementation:

Item 1, 2 and 3 as above.

4. Place of occurence

- Residential area (ex. playground)
- Road traffic accident (moving vehicle is included, also single bicycle accident)
- Other accident on street/road
- Kindergarten/playground
- School and schoolyard, highscool etc. (ex. sportsarea, in and out)

- Sports and athletics area, in or out, also at school and institution
- Sea transport accident in sea, lake, river, inclusive leisure time
- Air transport accident (inclusive leisure time)
- Other accident in open countryside, sea, lake, river, air
- Other place, as production area, farm, shop, park, restaurant etc.

5. *Activity of the injured person at the time the event occurred*

Working for income.

- Manufacturing and mining
 - Construction
 - Working off-shore (ex. sea- and airtransport)
 - Agriculture and forestry
 - Fishing
 - Defense activities (ex. compulsory enlisted)
 - Police, law and order activities (ex prisoner)
 - Other branch: Trade, transport, repair, hotel, restaurant, public and private services etc.
 - Branch not known.
- Education, as pupil, student
 - Compulsory enlisted
 - Athletics, sports, exercise in education and as compulsory enlisted
 - Other athletics, sports and exercise
 - Other activity as unpaid work, vital activity, play and other leisure activity.

The MBDS might also be used by general practitioners in Norway, to broaden the picture of the accidental injuries treated by medical doctors in Norway. Then comparisons between the different municipalities and counties could be done.

This MBDS is designed to give the relevant authorities in Norway a number of "their " accidents treated in the health system. The list above contains some accident types which are used in many countries. It might be possible to agree on a list which could be used internationally, and to establish definitions of the different main accident types. If that was done, international comparisons could be made with a higher level of accuracy than to day.

Also, a MBDS could be proposed for use in areas where there are very small registration resources, and where a BDS. The challenge is to define a MBDS for international comparisons. It should be a task for World Health Organisation.

Injury record

Check one code in item 3-7, only one in each

1. Name/identification of the injured:		2. Municipality where injury happened:	
3. Injurytype (check one):			
Accidental (fill in 4 - 5, and 6 or 7)		Y1n	Undetermined intent (fill in 4 and 5)
←(write code from 6 or 7)			
X6n	Intentional selfharm (fill in 4)	Y3n	Legal intervention and operation of war (fill in 4)
X8n	Assault (fill in 4 og 5)		
4. Place of occurrence (check one):			
a	Residential area (ex. playground)	f	Hospital, somatic and psychiatric
b	Roadtraffaccident (moving vehicle is included, also single bicycle-acc.)	g	Nursing home, home for sick
c	Other accident on street/road	h	Sports and athletics area, in or out, also at school and institution
d	Kindergarten/playground	i	Open countryside, sea, lake, river
e	School, -yard, highschool, etc. (ex. sportsarea, in and out)	x	Other place as production area, farm, shop, park, restaurant etc. _____
5. Activity/branch/business of the injured person when injury happened (check one):			
<i>If injury happened when injured person worked for income, mark the branch where he/she worked:</i>			
a	Manufacturing and mining	f	Defence activities (ex compulsory enlisted)
b	Construction	g	Police, law and order activites (ex prisoner)
c	Working offshore (ex. sea-/airtransp.)	h	Other branch: Trade, transport, repair, hotel, restaurant, public/priv. service, etc.: _____
d	Agriculture and forestry	i	Branch/business not known
e	Fishing		
<i>If injury happened when the injured did not work for income, mark one of the alternatives below:</i>			
j	Education (as pupil, student etc)	m	Other athletics, sports, exercise
k	Compulsory enlisted	x	Other activity as unpaid work, vital activity play and ind other leisure act.: _____
l	Athletics, sports, exercise in education		
<i>If injury happens during transport (in work and leisure time), only 6 to be checked. In a transport accident at least one vehicle (bike, car, tractor, horse, snowscooter, train, tram etc.), vessel or other transportmean must be included. If the event is no transport accident, only 7 to be checked. The code from 6 or 7 to be transferred to open space in item 3: Injurytype</i>			
6. If transportaccident the role of the injured (check one):		7. If other accident than transportacc., contributing factors (check one):	
V0n	Pedestrian, (incl. on sleigh, ski, tricycle, rollerskates, etc.)	W0n	Falls, all types
	i contact with/pressed by vehicle	W2a	Struck, hit by object (no machine, tool, animal, person)
V1n	Bicycle, driver/passenger	W23	Caught, crushed, jammed in or between objects (no machine, tool, animal, person)
V2a	Motorcycle, driver/passenger	W2b	Cut, hit, caught, jammed by machine, tool, weapon, explosion), incl. cut by glas
V2b	Moped, driver/passenger	W4a	High-pressure jet, vibration, noise
V4n	Car, taxi etc. driver/passenger	W4b	Foreign body in eye, orifice, skin
V5n	Van, combicar, pick-up truck, d/pass.	W5a	Hit, struck, kicked, bitten by person, animal, plant (Venomous plant, animal, insect: X2n)
V6n	Heavy transport vehicle, driver/pass.	W6a	Drowning and neardrowning, suffocation and nearsuffocation
V7n	Bus, driver/passenger	W8a	Electricity, radiation, air pressure
V80	Rider, animaldrawn vehicle d/pass.	X0n	Smoke, fire, flames
V8a	Train, tram, driver/passenger	X1n	Hot liquid, gas, surface
V8b	Driver/passenger in other vehicle, as: in industry, in agriculture, (tractor)	X2n	Venomous plant/animal/insect, ext. contact
V89	Vehicleaccident, unknown transport- role for the injured	X3n	Natural heat, cold, natural forces
V9a	Seatransport, incl. leisure time	X4n	Poisoning, noxious substances
V9b	Airtransport, incl. leisure time	X5a	Overexertion, lack og food and water
V98	Other transport as lift in building cableway, skilift, etc: _____	X5b	Other factor: _____