Data Needs for Planning
and Monitoring Accident and Injury Prevention

A comparison of the ICD– and the NOMESCO classification systems

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We are very pleased to have this opportunity to present an overview of the most important differences between accident registration systems based on the ICD–10 Classification and the NOMESCO Classification. We consider it as very important to stress: A classification is designed for a certain purpose *and* misuse of the classification for other purposes may obstruct cognition and the scientific process.

ICD–10 and earlier revisions are structured for stratification of fatal accidents, but the stratification of injured treated in hospitals and emergency departments is insufficient. Figure 1 demonstrates that the structure of ICD corresponds to the distribution of E–codes in fatalities, but not in admissions—and it differs substantially from the injured visiting emergency rooms. This reflects the fact that the panel of main contributors in the development of ICD–10 was representatives from central statistical bureaus with responsibility for the important mortality statistics.

It is our allegation that the ICD Classification is primarily structured for fatalities and as a basis for a classical, simple reporting system, i.e., sequential list useful in simple tabulations with subdivision in age and sex (c.f., Figure 2). Coding for place of occurrence and activity is optional. The place of occurrence classification is at a high hierarchical level and is too crude to be useful in injury prevention. Information on occupational accidents can only be obtained if you use the optional activity code. Sports injuries are not specified at all.

Furthermore, the lack of hierarchical structure in ICD inhibits processing on databases constructed on the ICD classification. As an example, traffic accidents are only defined at 4th digit level and in different positions throughout the transport section. Retrieval of traffic accident data demands complicated and time consuming programming and processing.

When considering accident prevention it is important to take a quantitative aspect into account. Figure 3 shows the dimensions of the injured as known to the hospital sector. For every fatal accident we have 40 admitted to a hospital and 300 victims treated at emergency rooms. For those sectors in society which are responsible for injury prevention and accident registration, systems based on fatal accidents are insufficient.

The NOMESCO classification was developed on *initiative* by those sectors in society which are responsible for injury prevention. The ICD based injury classification systems could not fulfil their demands for data on the circumstances of injury. NOMESCO (Nordic Medico–Statistical Committee) set up a specific working group which produced and published a "Classification for Accident Monitoring" in 1989 and a second edition in 1990.

These sectors (c.f., Figure 4) expressed the following list of the most important information needed for injury prevention in ranked order:

- Place of occurrence as specified as possible
- Type of activity of the victim
- Injury mechanism
- Product involved in the accident
- Free text describing the circumstances of the event

These variables have therefore been included in the NOMESCO classification. The classification is developed for use in the emergency rooms, bearing in mind that the emergency rooms are the "gateway" to the hospitals and that you can obtain the most precise information on the circumstances of the accidents in emergency rooms.

We aimed at a multiaxial and hierarchical classification which could facilitate data processing including systematic data retrieval, analyses etc. The classification is contained in the folder which will be distributed at this meeting; the ICD was acknowledged as the instrument for classifying fatal accidents.

Figure 5 demonstrates the reason for contact code, which sorts out diseases from accidents, violence and self harm. Each of these 3 categories of injured are coded separately following the classification's basic module:

- Place of occurrence
- Activity of the victim
- Injury mechanism

Figure 6 demonstrates the classification system. Occupational accidents are coded following the industrial module worked out in collaboration with Nordic occupational health agencies. Traffic accidents are coded following the vehicle module worked out in collaboration with the Nordic Committee on Road Accident Research. Sports codes describe sports accidents by the type of sports. All types of injury may be coded for the product involved in the event. This product classification comprising all types of products was worked out by a Nordic group representing the Nordic Consumers' Agencies.

The increasing interest concerning violence in our countries was followed up by another NOMESCO initiative. Recently, we held a seminar with representatives of police, researchers on violence, criminologists, and forensic medicine. At this seminar we produced a supplementary module for violence aiming at classifying the most important information about circumstances of violence. This information is needed for planning prevention of violence.

The following examples (c.f., Figure 7–9) show the use of the NOMESCO Classification.

The Activity code elicits three major categories of accidents: The place of occurrence code gives further specification of home and leisure accidents among children; use of the vehicle accident module traffic accidents may be further specified for mode of transport. These examples have illustrated the data needed for targeted prevention. As a final example, Figure 10 shows the coding of a case story illustrating the differences between the ICD–10 and NOMESCO with regard to the information kept in the database.

All major injury registration systems in Europe use multiaxial injury classifications: PORS (Netherlands), HASS (U.K.), EHLASS (European Home and Leisure Accident Surveillance System) and they are all compatible with the NOMESCO system. These classifications have proved their efficiency in rendering the information demanded by the sectors responsible for prevention. They are designed for this purpose.

We propose a collaborative effort on developing an *international classification of external causes of injuries* for use in emergency departments.

References

1.   International Statistical Classification of Diseases and Related Health Problems. Tenth Revision. WHO Geneva 1992.

2.   Classification for Accident Monitoring. 2nd revised edition. Nordic Medico–Statistical Committee (NOMESCO). Copenhagen 1990.

3.   Classification of External Causes of Injuries in the Arctic. Trial version. NOMESCO 1993.

4.   Surveillance Systems on Home and Leisure Accidents in Europe. Consumer Safety Institute. Amsterdam 1992.

5.   The Role of Accident Data. In designing, monitoring and evaluating measures aiming at improving consumer safety in Europe. European Consumer Safety Association (ECOSA). Amsterdam 1993.

6.   Prevention of Accidents. A Basic Data Set and guidelines for its use. WHO/Regional Office for Europe. EUR/ICP/APR 113. Copenhagen.
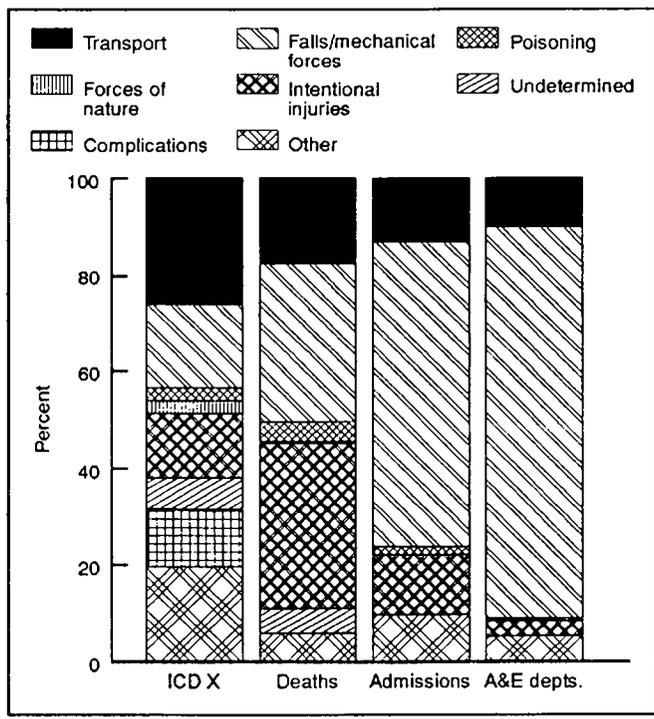
Figure 1. Use and misue of the ICD
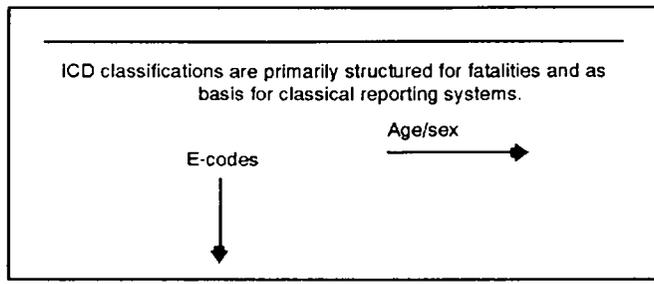
Figure 2.
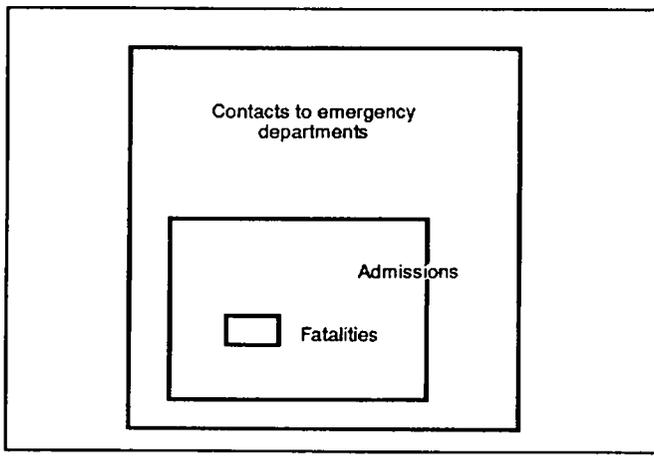
Figure 3. Casualties known to the hospital sector

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┌─────────────────────────────────────────────────────────────┐
│                                                               │
│                          Ministries                           │
│         (Industry, Education, Traffic, Environment etc.)      │
│                                                               │
│                           Agencies                            │
│  (Consumers, Environmental, Constructions, Health, Housing etc.) │
│                                                               │
│                      Occupational health                      │
│                                                               │
│                       Sports associations                     │
│                      (and other organizations)                │
│                                                               │
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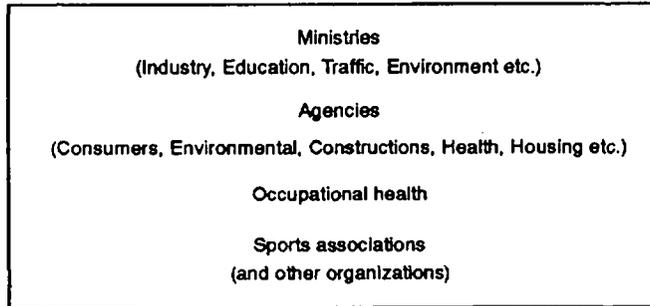
Figure 4. Sectors responsible for accident prevention

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┌──────────────────────────────────────────────────────────────┐
│                                                                │
│  ┌──────────────┐      ┌──────────────┐      ┌──────────────┐ │
│  │ All contacts │ ──▶  │  Reason for  │ ──▶  │   Diseases   │ │
│  │              │      │ contact code │      │              │ │
│  └──────────────┘      └──────┬───────┘      └──────────────┘ │
│                               │                                │
│                               ▼                                │
│                        ┌──────────────┐                        │
│                        │   Accident   │                        │
│                        │              │                        │
│                        │   Violence   │                        │
│                        │              │                        │
│                        │  Intentional │                        │
│                        │   self harm  │                        │
│                        └──────────────┘                        │
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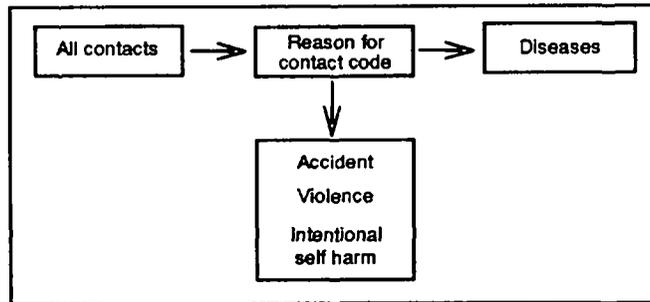
Figure 5. NOMESCO reason for contact code

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┌──────────────────────────────────────────────────────────────┐
│                                                                │
│                      ┌──────────────┐                          │
│                      │ Unintentional│                          │
│                      │ and intentional│                        │
│                      │   injuries   │                          │
│                      └──────┬───────┘                          │
│                             ▼                                  │
│                      ┌──────────────┐                          │
│                      │Place of occurrence│                     │
│                      │ Activity of victim│                     │
│                      │ Injury mechanism │                      │
│                      └──────────────┘                          │
│         ┌──────────┬──────────┬──────────┐                     │
│      ┌──────┐  ┌──────┐  ┌──────┐  ┌──────┐                   │
│      │Industrial│ │Vehicle│ │Sports│ │Violence│               │
│      │ codes │  │accidents│ │codes│  │      │                 │
│      └──────┘  └──────┘  └──────┘  └──────┘                   │
│      ┌──────────────────────────────────────┐                 │
│      │        Product classification          │                │
│      └──────────────────────────────────────┘                 │
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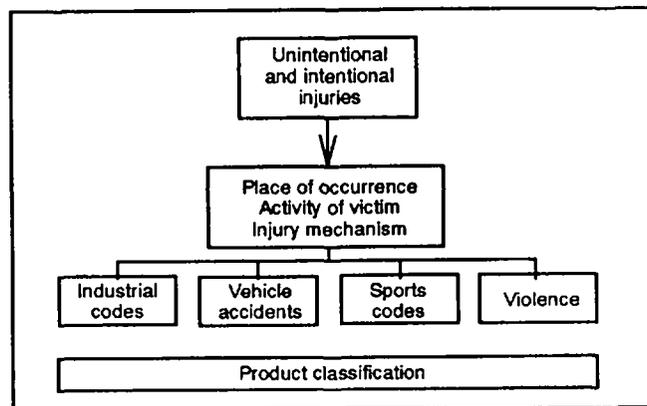
Figure 6. NOMESCO: the structure of the classification
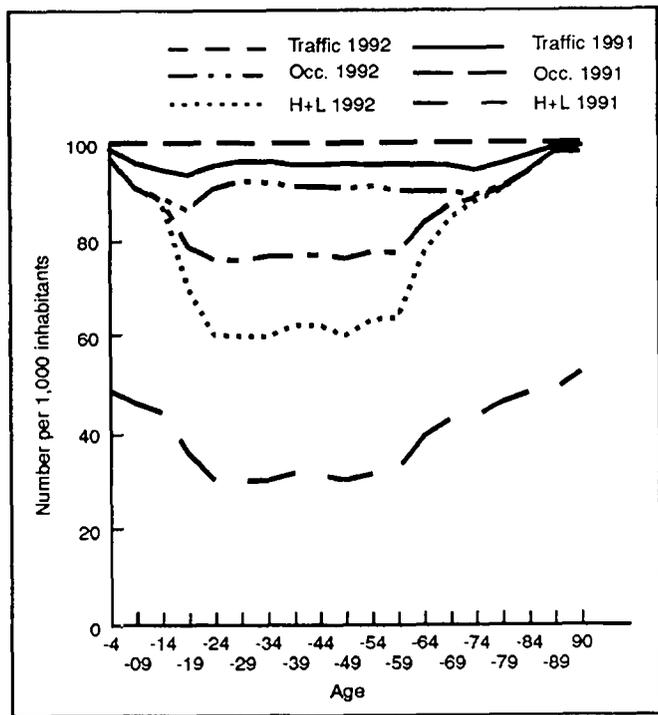
Figure 7. Emergency room contacts activity code 1991 and 1992
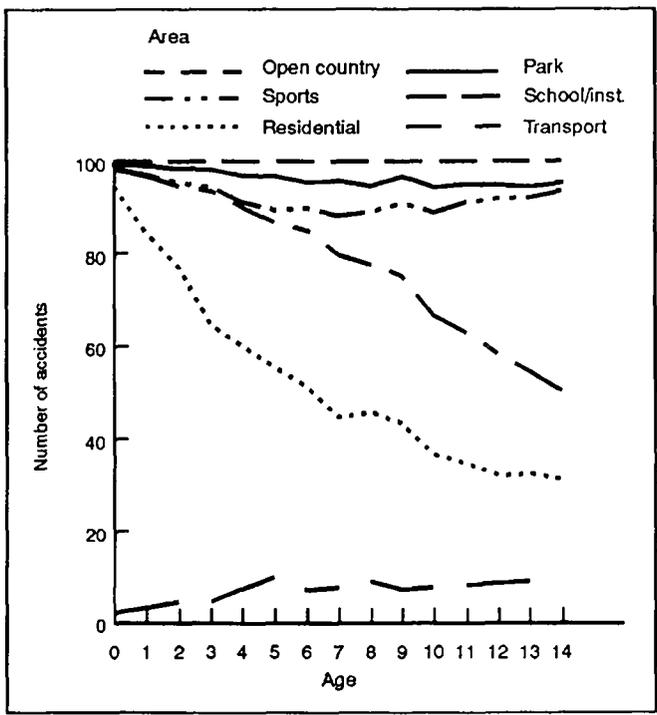
Figure 8. Home and leisure accidents children 0-14 years place of occurrence

23–6
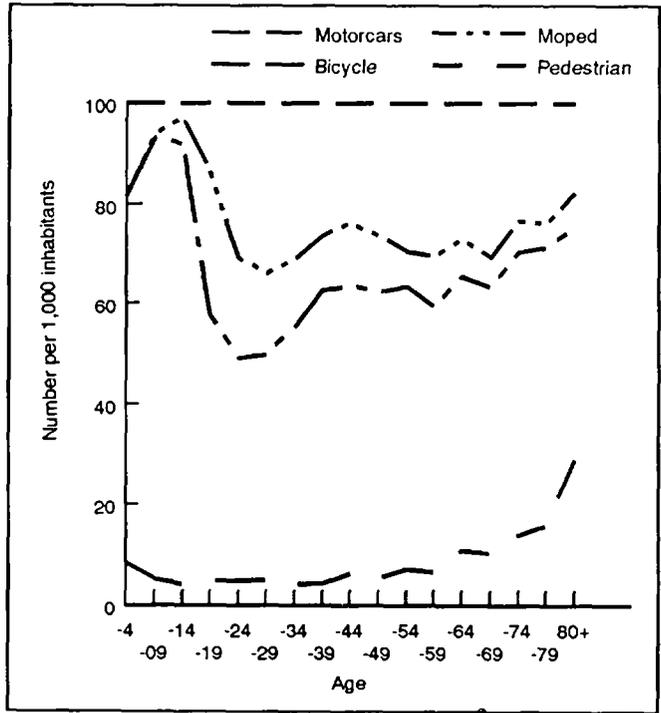
Figure 9. Emergency room contacts vehicle accidents

	Girl, 3 years, *fell* off mother's *bicycle* or *path* in residential area	
	ICD-10	NOMESCO
V18	Pedal cyclist injured in noncollision transport accident	Residential area (path – nontraffic)
V18.1	Passenger injured in nontraffic accident	Fall
		Bicycle
		Single accident
		Passenger

Figure 10. Case story