TRAINING FOR THE HEALTH SECTOR

Unintentional Childhood Injuries

Children's Health and the Environment

CHEST Training Package for the Health Sector

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<<NOTE TO USER: Please add details of the date, time, place and sponsorship of the meeting for which you are using this presentation in the space indicated.>>

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LEARNING TOPICS

1. What are childhood injuries?
2. Injuries and their classification
3. The burden of injuries among children – Global and European figures
4. What are child injury “hotspots”
5. Why has so little action been taken
6. The Public health approach to injury prevention and Haddon’s matrix
7. What are effective interventions/measures to prevent unintentional child injury?
8. What can the health sector do?

Injury is the main cause of death and a major cause of ill health and disability in childhood

Towner and Dowswell, 2001

An injury is defined as

"a body lesion at the organic level, resulting from an acute exposure to energy (mechanical, thermal, electrical, chemical or radiant) in amounts that exceed the threshold of physiological tolerance. In some cases (e.g. drowning, strangulation, freezing), the injury results from an insufficiency of a vital element".

Baker SP, O'Neill B, Karpf RS. *The injury fact book*. Lexington, MA, Lexington Books, 1984.

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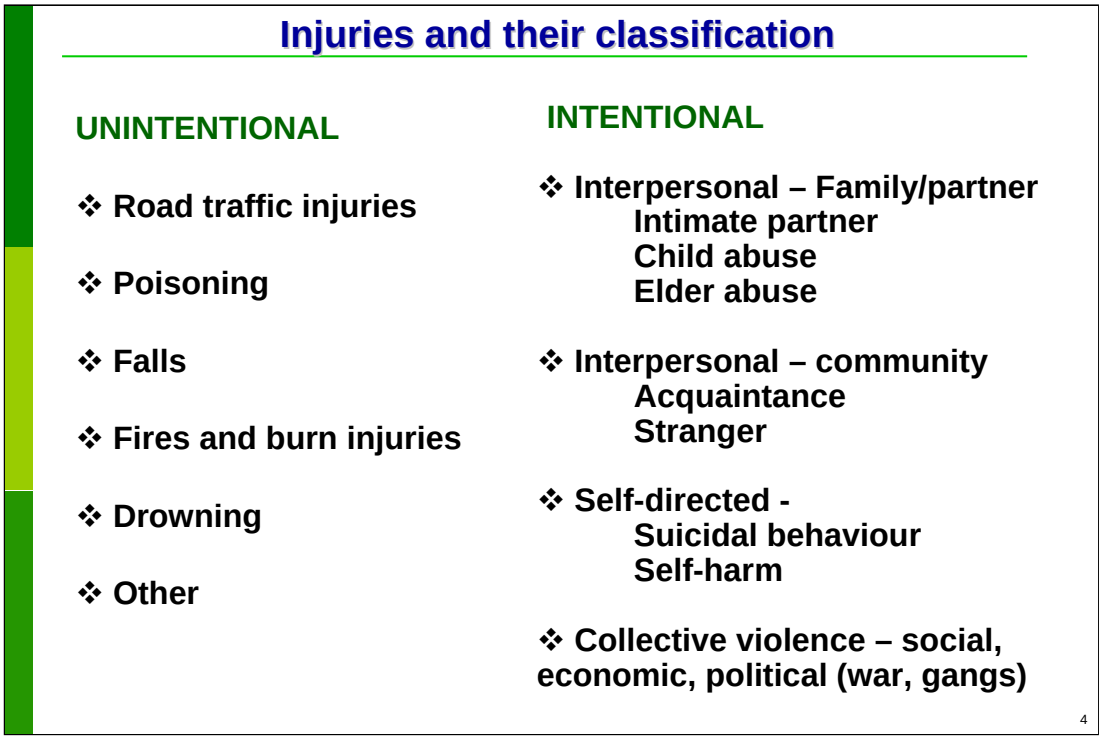
First, it is necessary to provide some basic definitions. 'Injury' is a broad term covering a multitude of types of health problem each of which is associated with different factors and for which different types of interventions are possible. The most basic classification of injuries is according to whether they are intentional or unintentional.



Intentional and unintentional injuries are defined in terms of a series of external cause codes.

Unintentional injuries are typically classified according to the means of their occurrence: poisoning, burns and scalds, drowning, falls and transport-related.

Intentional injuries include homicide and interpersonal violence, wars and other forms of collective violence, and suicide and other forms of self-harm.

Injuries have been traditionally been regarded as random, unavoidable 'accidents'. In the last few decades, a better understanding has changed these attitudes, and injuries - both unintentional and intentional - are now regarded as largely preventable.

When all ages are considered in the European Region the three leading causes account for nearly 50% of all deaths from violence and unintentional injury (800,000 every year) :

- suicide (ca. 164,000 deaths/year);
- road traffic injuries (ca. 127,000 deaths/year); and
- poisoning (ca. 110,000 deaths/year).

In the European Region, the burden of injuries makes up 14% of the total burden of disease. Burden is usually measured in disability-adjusted life years (DALYs), which is a composite measure of the years of life lost and those lived with disability from injuries. Although DALYs measure the physical burden of injuries they do not usually measure the psychological sufferance of victims of sexual violence, abuse and neglect, which disproportionately affects women and children.

We deliberately avoid use of the term ‘accident’. Even when applied to unintentional injury it suggests that injury is in some way random, as illustrated by the saying ‘accidents do happen’, and by inference the resulting injuries are thought to be less amenable to systematic programmes of prevention than is in fact the case. Finally, for most purposes, injuries can be considered as synonymous with the term ‘external causes’ that is used in statistics of mortality, consistent with the terminology used in the International Classification of Diseases.

- Sometimes it is difficult to distinguish unintentional injuries from intentional and it makes interpretation of data more difficult when making cross country comparisons. Sometimes there may be cultural barriers in classifying injuries as intentional e.g. suicide.
- Death data are usually from Vital Registration systems.

Source: The Injury Chart Book, WHO Geneva, 2002.

Global figures

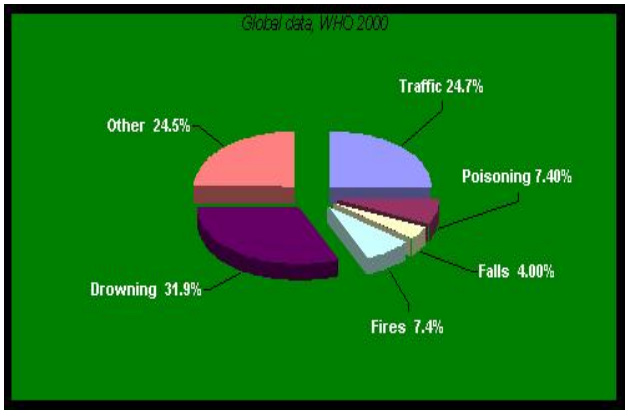
- **An estimated 5 million people of all ages worldwide died from injuries in 2000 (mortality rate of 83.7 per 100 000)**
- **Injuries accounted for 9% of global deaths in 2000 and 1% of global burden of disease**
- **Road traffic injuries are the leading cause of injury-related deaths worldwide**
- **Young people 15-44 years old account for almost 50% of global injury-related mortality**
- **Children younger than 5 years account for almost 25% of drowning deaths and more than 15% of fire-related deaths worldwide**
- **Falls may not be a leading cause of death among children 5-14 years old, but they are a leading cause of burden as measured by disability-adjusted life-years (DALYs)**

Reference: “The Injury Chartbook: A graphical overview of the global burden of injuries, 2002”

INJURIES AND "ACCIDENTS“
Global figures

Unintentional injuries:

400 000 deaths per year globally – most among children
Survivors may remain permanently disabled



Unintentional injuries among children younger than 15 years
WHO, 2001

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Unintentional injuries account for over 400.000 death every year, globally – the majority in children and adolescents

Those who survive may suffer life-long disability which is discussed later.

In Europe, 3 out of 10 deaths in the age group 0-4 are a consequence of injury

Injuries are usually classified on the basis of "intentionality" – as intentional and non-intentional.

The word "accident" should not be used, as it carries the notion of inevitability – whilst in effect accidents should not occur as they are 100% preventable.

The next slide goes into more details

<<NOTE TO USER: Include local data and priority issues>>

The Burden of Injuries among European Children

- 27 900 children aged 0-14 years died from injuries, equivalent to 3 children per hour
- Road traffic injuries are the leading cause of death among children 5-14 years old in Europe
- Drowning is the third leading cause of death among children 5-14 years old in the WHO European Region
- Mortality from road traffic injuries is 3.5 times higher among socially deprived children than those who are not
- Deaths are only the tip of the iceberg – long-term physical and mental disability
- Intentional injuries cause about 3200 deaths (11.4%) and unintentional injuries cause 24 700 deaths (88.6%)
- Costs to society: costs of road traffic injuries (all ages) in the countries of the European Union before 1 May 2004 was 2% of gross domestic product or €180 million

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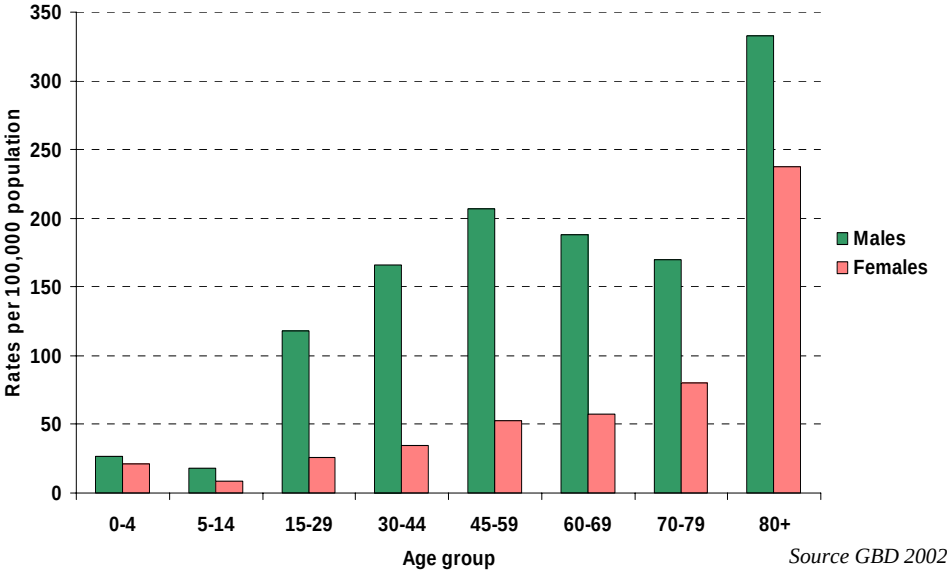
Social deprivation- those children who are born to families who have less education, risk taking behaviour, live in unsafe environments and have less means to reduce their exposure to risk are more vulnerable to injuries than those who do not suffer from these disadvantages.

Data are from Global Burden of Disease Project 2002

Age- and sex-specific mortality rates from all injuries per 100 000 population in WHO European Region, 2002



Source GBD 2002

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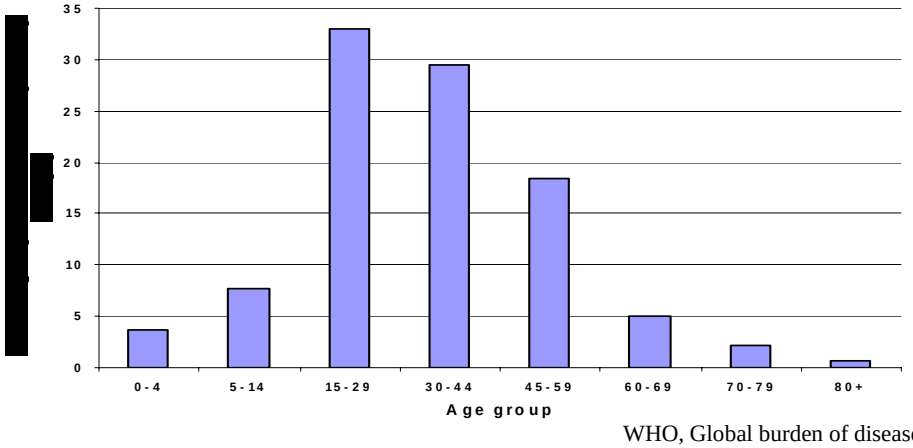
Source: WHO, Global burden of disease, 2002

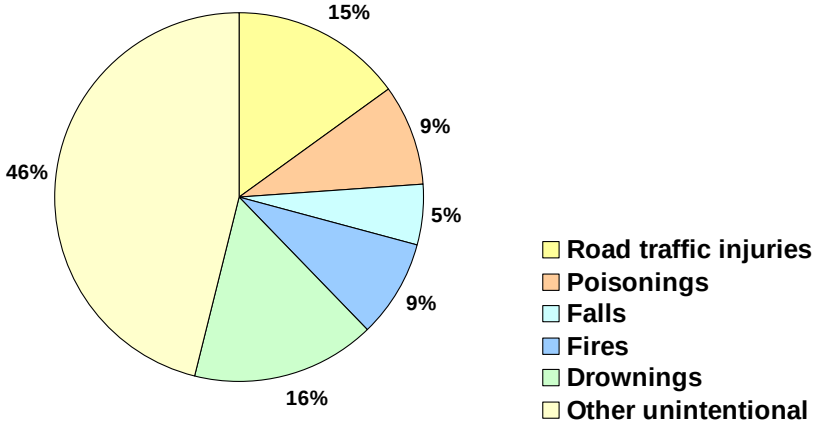
The burden of injuries disproportionately affects younger people



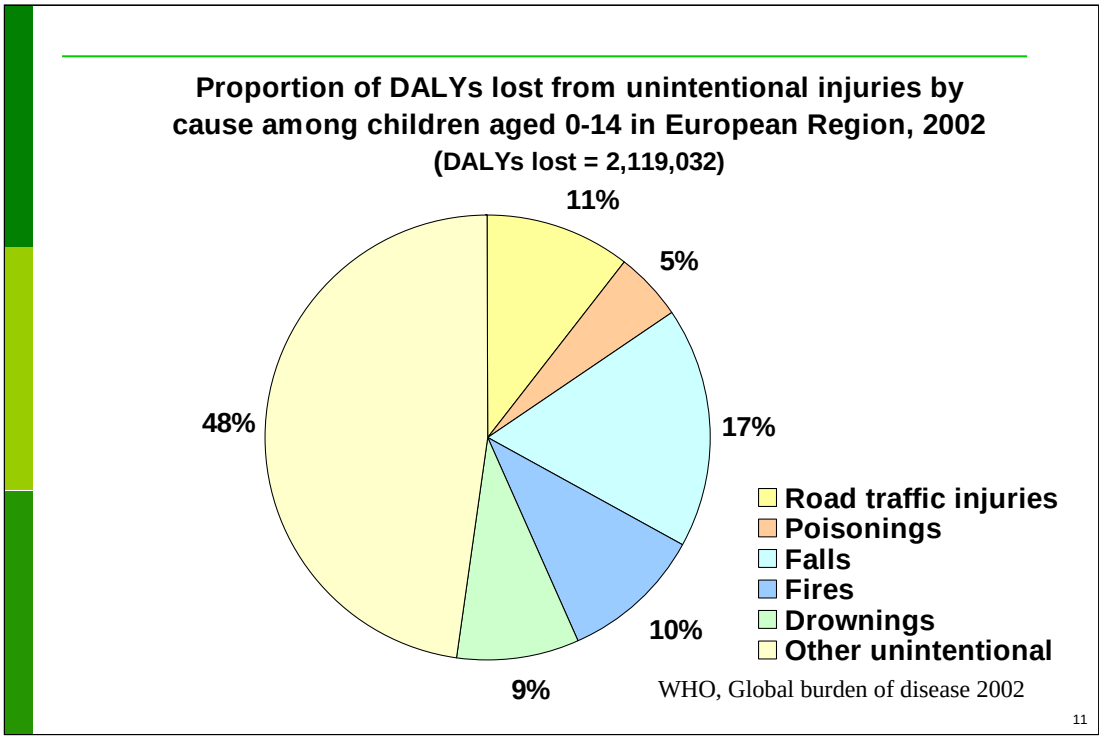
WHO, Global burden of disease 2002

They not only experience premature deaths, but also live longer with disability

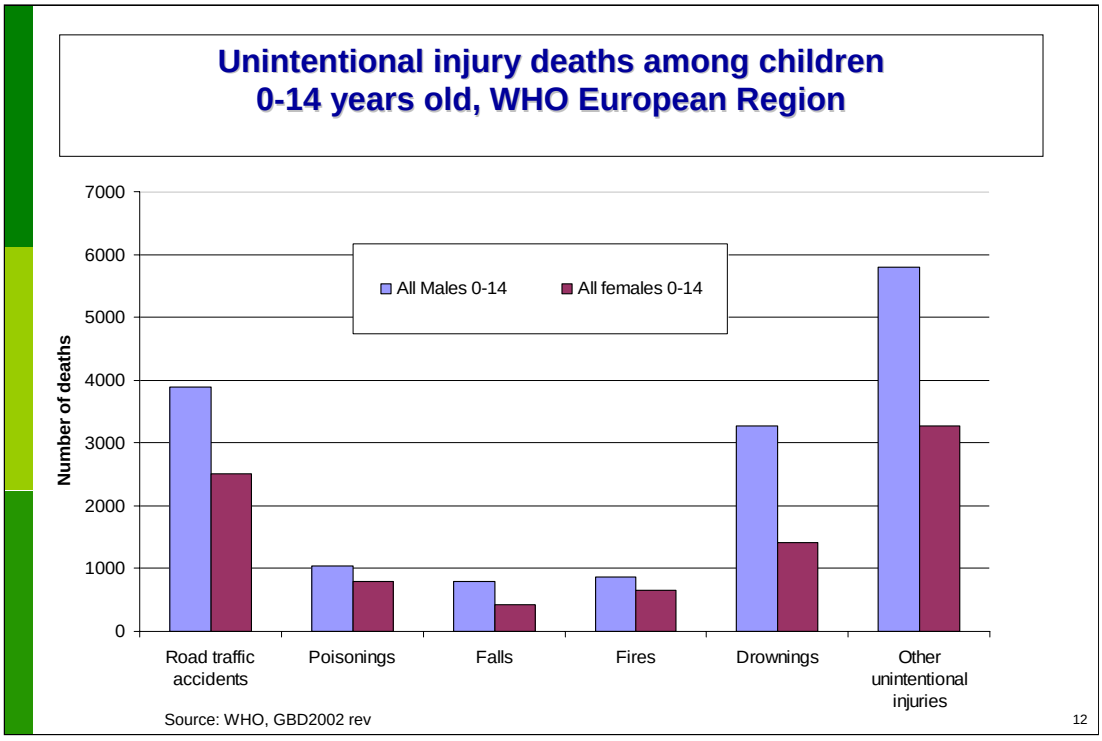
Proportion of deaths from unintentional injuries by cause among children 0-14 years old in WHO European Region, 2002 (Total deaths = 24,719)



WHO, Global burden of disease 2002

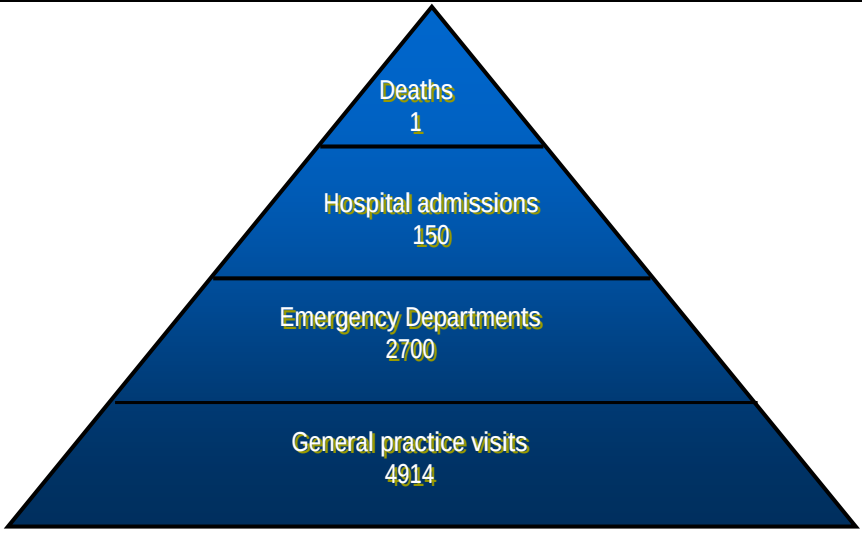


Source: WHO, Global burden of disease, 2002



Source: WHO, Global burden of disease, 2002

The clinical pyramid in Netherlands: people 1-24 years old, unintentional home and leisure injuries



Information on deaths relatively easy. Important to use more than one data source to capture ALL injuries. Source: EHLASS 2000

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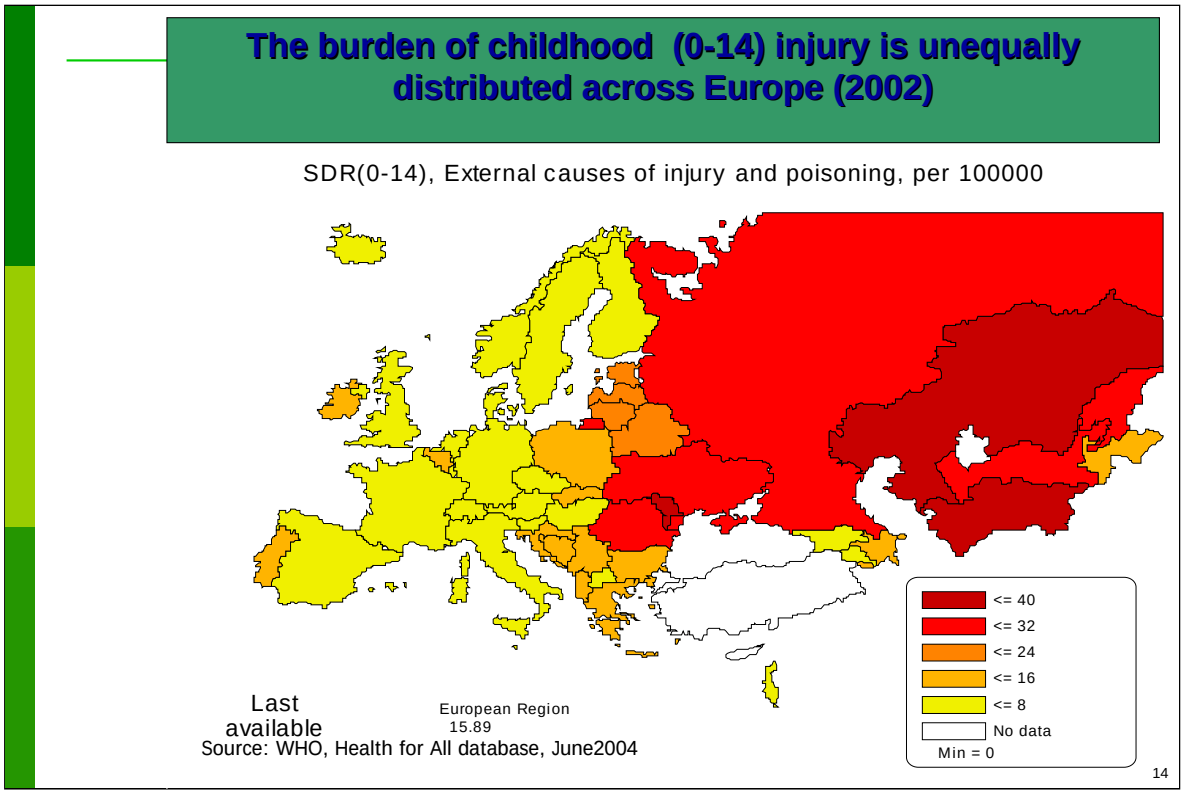
A "clinical"pyramid is presented here for home and leisure injuries, which tend to be less severe than for example road traffic injuries. It is evident that every death is followed by hundred and thousands treated as inpateints or in emergency departments and by general practitioners. This shows that a) for every death - the data that are most readily available- there are many thousands who are disabled, sometimes permanently and b) that the costs to the health service and any out of pocket payments to families are enormous.

It is important to use more than one data source for injuries- for example police data notoriously under record road traffic injuries, especially those that are minor and in some settings, those that involve pedestrians.



NOTE: Belgium, Denmark and France are in darker color because:

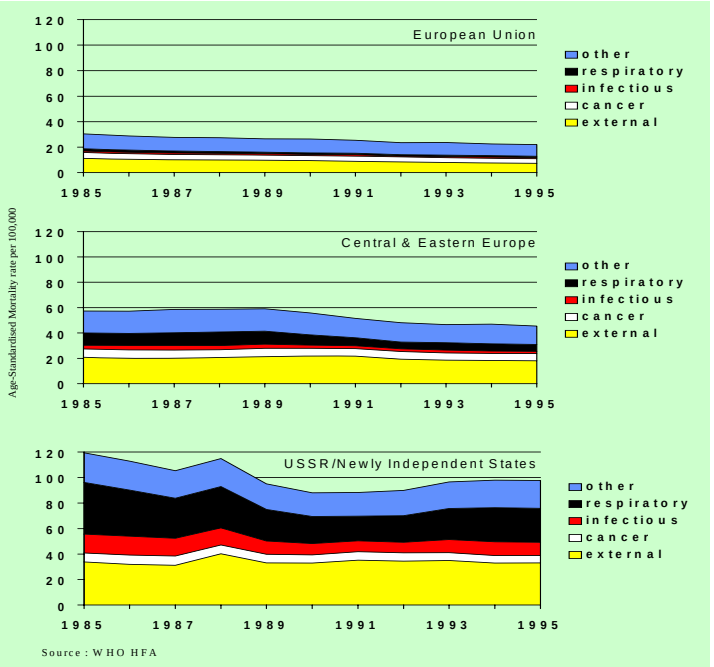
1) last available years are not as recent as for other countries;

2) mortality rate are slightly above the cut-off point of 50 deaths/100,000

	Last Available	Rate/100,000
Belgium	1997	54
Denmark	1999	52
France	2000	56
Czech	2002	60
Hungary	2002	82
Poland	2002	67

Source: WHO European health for all database, June 2004

Composition of total mortality among children 1-14 years old by cause of death 1970-95 by subregion: decrease in injury not as great as for other disease



Koupilova 2002

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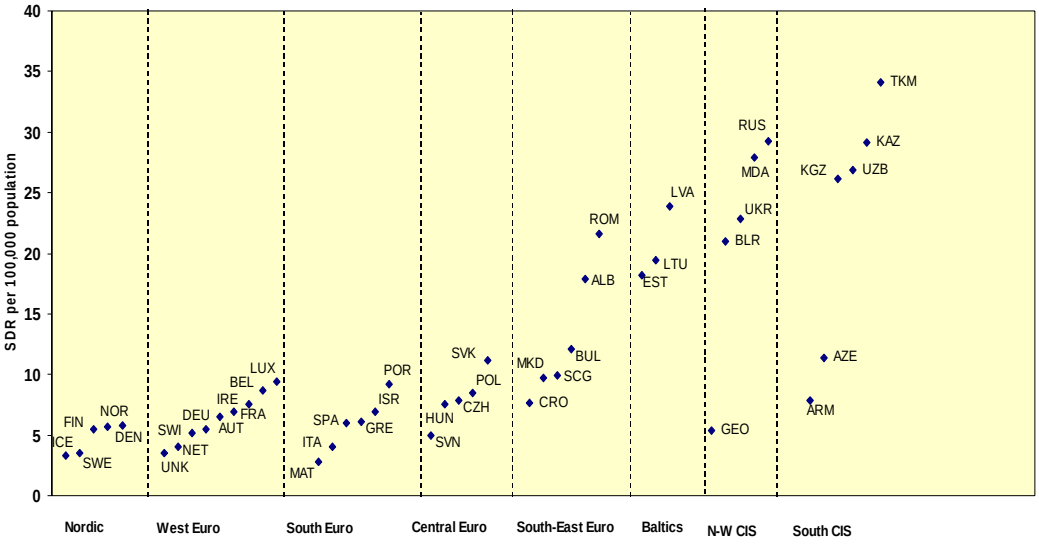
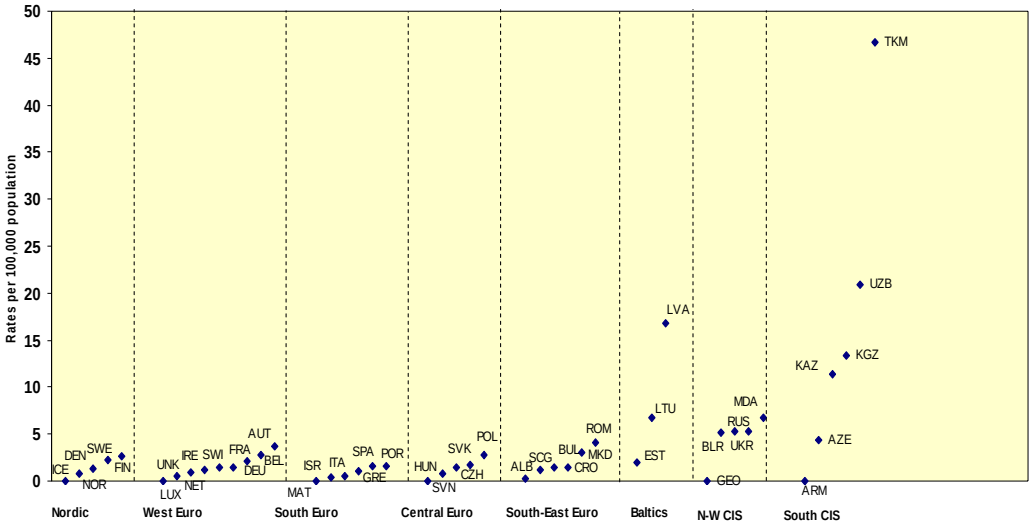
Source: WHO European health for all database, June 2004

Standardized mortality rates from injury among children 1-14 years old by subregions, last available three years (from 2003, WHOSIS)



The highest rates are in Southern Commonwealth of Independent States and Baltic countries

Child (1-4) mortality rate per 100,000 population from drowning by country and sub-regions in European Region (2002)



The highest rates are in southern and north-western countries in the Commonwealth of Independent States and the Baltic countries (source HFA-M)

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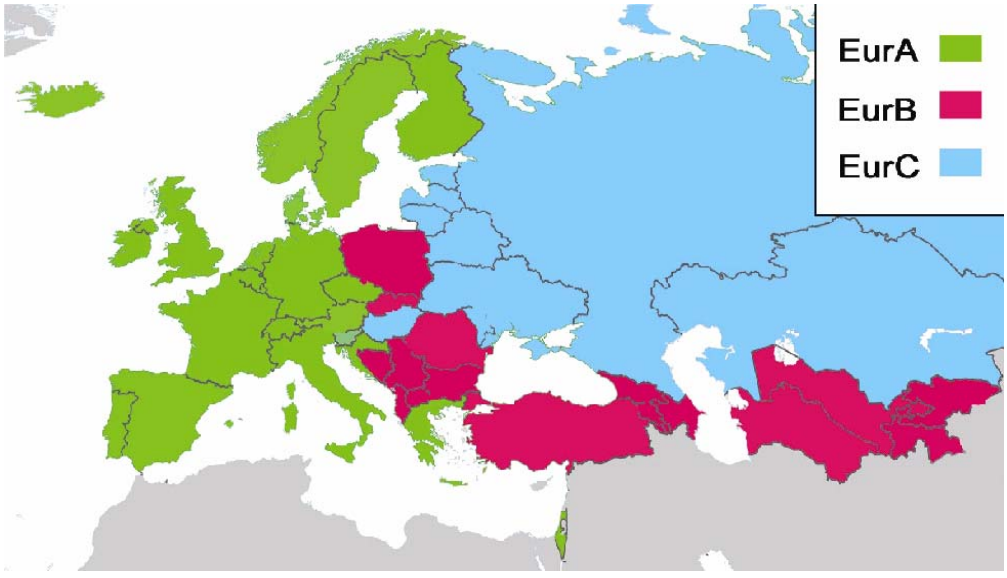
Drowning is a leading cause of death in this age group, especially in countries of the Southern and North-west of the Commonwealth of Independent States and the Baltic countries.

Analyses were performed separately for three European subregions according to a classification used by WHO



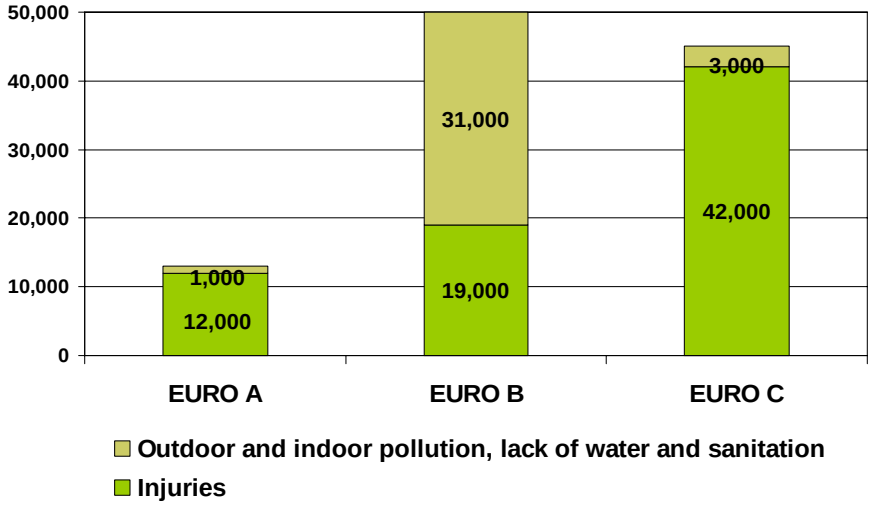
The WHO European sub-regions

EUR-A (very low child mortality, very low adult mortality)	EUR-B (low child mortality , low adult mortality)	EUR-C (low child mortality, high adult mortality)
ANDORRA, AUSTRIA, BELGIUM, CROATIA, CZECH REPUBLIC, DENMARK, FINLAND, FRANCE, GERMANY, GREECE, ICELAND, IRELAND, ISRAEL, ITALY, LUXEMBOURG, MALTA, MONACO, NETHERLANDS NORWAY, PORTUGAL, SAN MARINO, SLOVENIA SPAIN, SWEDEN, SWITZERLAND, UK	ALBANIA, ARMENIA, AZERBAIJAN, BOSNIA & HERZEGOVINA, BULGARIA, GEORGIA, KYRGYZSTAN, POLAND, ROMANIA, SERBIA & MONTENEGRO, SLOVAKIA, TAJIKISTAN, THE FORMER YUGOSLAV REPUBLIC OF MACEDONIA, TURKEY, TURKMENISTAN, UZBEKISTAN	BELARUS, ESTONIA, HUNGARY, KAZAKHSTAN, LATVIA, LITHUANIA, REPUBLIC OF MOLDOVA, RUSSIAN FEDERATION, UKRAINE

This table lists the countries belonging to the different sub-Regions, which have been defined on the basis of mortality rates from all cause mortality.

Reference: “Burden of disease attributable to selected environmental factors and injuries among Europe's children and adolescents”

Both the magnitude and the composition of the environmental burden of disease differ substantially across the three subregions: environmental burden of disease study age 0–19 years



Reference: “Burden of disease attributable to selected environmental factors and injuries among Europe's children and adolescents”

Top 10 causes of death among children 0-4 years old by WHO European subregion

Rank	Euro A	Euro B	Euro C
1	Birth asphyxia/trauma 3512	Lower respiratory infections 27770	Low birth weight 5296
2	Low birth weight 3143	Low birth weight 18267	Congenital heart anomalies 4152
3	Congenital heart anomalies 2637	Birth asphyxia/trauma 13320	Lower respiratory infections 3808
4	Endocrine disorders 583	Diarrhoeal diseases 10928	Birth asphyxia/trauma 3417
5	Meningitis 425	Meningitis 8187	Upper respiratory infections 1207
6	Road traffic injuries 392	Congenital heart anomalies 6432	Diarrhoeal diseases 795
7	Lower respiratory infections 392	Childhood-cluster disease 4878	Poisonings 749
8	Drownings 244	Upper respiratory infections 1276	Meningitis 702
9	Leukaemia 215	Drownings 922	Drownings 651
10/13	10 Down syndrome 188	10 Road traffic injuries 885	13 Road traffic injuries 420
11/14	11 Inflammatory heart disease 176	11 Cereberovascular disease 708	14 Fires 387
12/15	12 Violence 150	12 Fires 488	15 Violence 322

The source of these data are the Global Burden of Disease project 2002. A large proprtion of children of the 0 to 1 age group die from causes such as birth asphyxia, low birth weight, congenital heart anamolies. By inluding this age group in the 0-4 year group, then the effect is to lower the ranking of injuries. Also it should be noted that the various injury causes have been broken out and if combined again would show a differnce in the rank order of injury as a health issue for children.

Top 10 causes of death among children 5-14 years old by WHO European subregion

Rank	Euro A	Euro B	Euro C
1	**Road traffic injuries 1173**	Lower respiratory infections 3385	**Road traffic injuries 1902**
2	Leukemia 465	**Road traffic injuries 1616**	**Drownings 1854**
3	Endocrine disorders 258	**Drownings 851**	**Self-inflicted injuries 728**
4	Congenital heart anomalies 184	Childhood-cluster diseases 838	**Poisonings 544**
5	**Drownings 158**	Leukemia 821	Leukemia 480
6	**Self-inflicted injuries 130**	**Self-inflicted injuries 739**	**Violence 475**
7	Epilepsy 116	Cerebrovascular disease 669	Congenital heart anomalies 322
8	Lower respiratory infections 111	Epilepsy 392	Lower respiratory infections 297
9	**Violence 110**	HIV/AIDS 349	**Fires 289**
10	Cerebrovascular disease 96	Meningitis 345	**Falls 272**

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Shows rank & number of deaths - Injuries are among the leading 10 causes

Again it may be pointed out if you total the injury causes together that injuries as a total changes the rank.

Why has action been so limited?

- Injuries are perceived as ‘accidents’ - unpredictable and inevitable
- Data are hidden by location, age and sex
- Lack of acknowledgement of what can be done
- Lack of ownership
- Multisectoral complexity
- Limited capacity to make the problem more visible
- Civil society organisations
- Loss of state regulation and enforcement after transition
- Donor priorities

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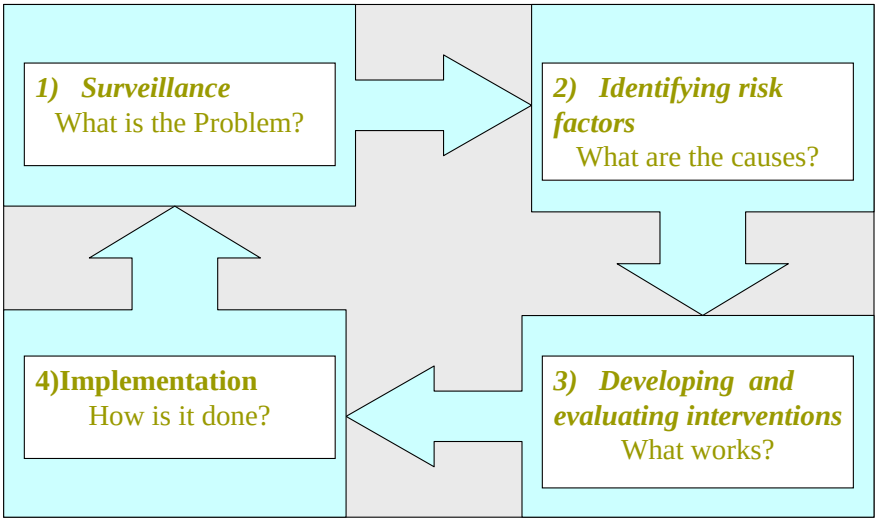
Not only are data hiden bplace of occurence, age and sex if these data are not collected and not disaggregated, but there are differences inf data availabilty at a European, Regional, National, or even local level.

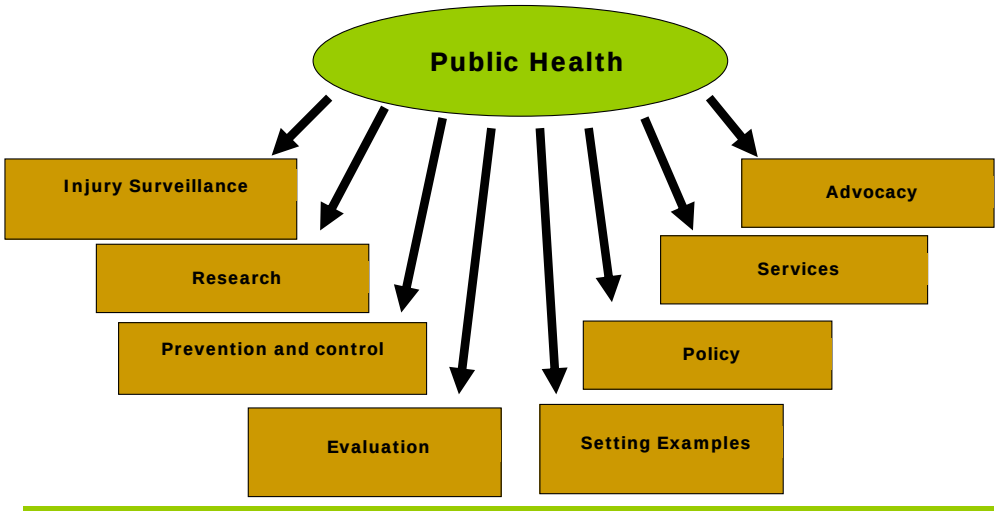
There is a lack of acknowledgement of what can be done becuase many policy workers and practitioners do not realise that injuries can be prevented through a public health approach, as is being advocated here. also may need to have some interpretation to clarify what is to be said around this point.

To rectify this relative neglect, yhere is a need for government committments and priority setting based on evidenced good practice.

The Public Health Approach to preventing injuries

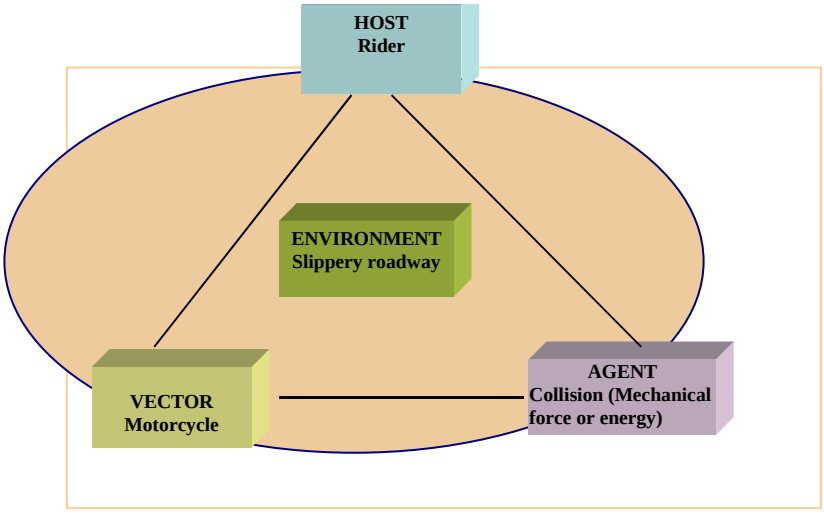


The role of the health sector in preventing and caring for injuries



The health sector has a broader contribution to make, in addition to pre-hospital care, hospital care and rehabilitation

EPIDEMIOLOGICAL MODEL OF INJURY IN ROAD CRASHES



Haddon's matrix, fire and scalds and prevention

	Person	*Agent*	*Environment*
Pre-event	**Parental education**	**Very hot bath water House fire**	**Thermostat, Legislation Smoke alarm**
Event	**Child supervision and education**	**Cold water, wet blanket**	**Enforcement**
Post-event	**Age, other illness**	**Cold water**	**Emergency medical service, hospital burns unit, rehabilitation**

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Strategies of injury intervention

- Environmental, engineering designs
- Enforcement, legislative mandates
- Education, behaviour
- Economic incentives, equity
- Empowerment
- Evaluation

Strategies of injury intervention

Cost-benefit analysis has shown that preventing injuries provides value for money:

€ 1 spent on smoke alarms saves € 69;

€ 1 on child safety seats saves € 32;

€ 1 spent on bicycle helmets saves € 29;

€ 1 spent on prevention counselling by paediatricians saves € 10

WHO Regional Committee for Europe
EUR/RC55/Conf.Doc./6

1. Urges Member States to:

- **give higher priority to injury prevention by developing national action plans;**
- **develop injury surveillance;**
- **strengthen capacity to address injuries;**
- **promote evidence-based approaches for prevention and care;**
- **support the network of national focal points for violence and injury prevention.**

WHO Regional Committee for Europe
EUR/RC55/Conf.Doc./6

2. REQUESTS the Regional Director to:

- **support Member States;**
- **facilitate the identification and sharing of good practices;**
- **support the network of national focal points;**
- **assist in building capacity for national response to injuries;**
- **provide assistance to improve care for victims;**
- **promote the development of partnerships with the European Union and other international organizations; and**
- **report back to the Regional Committee in 2008.**

Conclusions and the way forward

- Children's mortality from injury is unequal in the European Region – several times higher in Eur-C than in Eur-A
- Better surveillance is needed to make the problems and risks more visible
- Prevention in various settings needs to be part of overall injury prevention plans with involvement of multiple sectors
- Evidence shows that injuries in the home can be prevented by legislation, home visitation, childproof closures and safer home environments such as the use of window bars, balcony guards, stair gates, smoke alarms and thermostats on water heaters
- The transfer of lessons from western Europe to eastern Europe needs to be context specific
- Multisectoral working and civil society action are needed
- Policy priorities vary –injury prevention plans are needed
- Injury prevention needs to be mainstreamed into the policies of other sectors
- The time for action is now to reduce the relentless daily loss of children's lives

This slide can also be split into toe slides, depending how much detail the trainer wants to discuss.

Points for discussion

- What data sources could you use to determine the injury burden in your country?
- What sectors would you involve in setting up a injury prevention plan?
- Is Haddon's matrix useful in developing prevention programmes?
- What role does civil society have to play and how could you help them get involved?