

Epidemiology of injuries

Injuries

Definition of injury - any unintentional or intentional damage to the organism that occurred as a result of acute exposure to thermal, mechanical, electrical or chemical energy and from the lack of vital energy elements or quantities such as oxygen or heat.^[1]

- **Unintentional** – falls, traffic accidents (mostly), drowning, poisoning and injuries as a result of fire;
- **intentional** – murders, suicides, violence and wars.

Injuries are the result of the action of factors of at least 3-4 articles: **the host** , the **etiological agent** , possibly **the vector** , and **the external environment** in which the host, agent, and vector are located.^[2]

Their severity varies with age, sex, area of occurrence and socioeconomic level.

In the Czech Republic, injuries are the third most common cause of death, and among children and adults under 44 the most common (first) . Almost 20 people die as a result of accidents every day. For every dead person there are several thousand injured, who often have **permanent consequences** . Treatment, rehabilitation and social benefits for the disabled are associated with significant **financial costs** .

The problem in monitoring the number of accidents and developing preventive measures is the lack of information - **there is no central register of accidents** , so it is necessary to synthesize data from various sources and statistics.

Statistics for 2010

Mortality due to external causes (injuries and poisoning) – a total of **6,009 people** (of which 4,193 men, 1,812 women, 221 people under 20 years of age) out of a total of 106,844 deaths, which is **5.6%** or **57.1 deaths per 100,000 inhabitants** .

Of these 6009 (100%) persons, 15.1% died **in traffic accidents** (199 women and 708 men) and 25% (257 women and 1245 men) from deliberate **self-harm** (suicide), which are **long-term leading causes of death** in the category of external causes.

The highest proportion of suicides (25%) occurs in the age group of 45 to 54-year-olds for both sexes. The most common method is hanging (56%), and the most frequently identified motive is health problems, mental illness, family conflicts and other personal problems.

In the age group 1-14 years, the percentage representation of deaths due to injuries exceeds 40% of the total mortality in all developed countries of the world. The most common cause of fatal injury was **traffic accidents, drowning and others**, e.g. aspiration of a foreign body .

Suicide is a problem for **adolescents** , other fatal accidents are **accidental falls and drowning** .

The most common causes of fatal injuries in **seniors** were **falls** (57%), intentional self-harm (14%) and traffic accidents (9%). Accidental mortality of seniors (over 65) increases significantly with increasing age.

191,873 people were hospitalized for injuries.

The average length of hospitalization of patients after an injury is directly proportional to age: **the higher the age category, the longer the length of stay in the hospital** .

Age (in years)	0-4	20-24	50-54	75-90
Average length of hospitalization (in days)	1,9	2,3	4,6	8,3

The highest **hospitalization mortality rate** (number of deaths per 1,000 hospitalized persons) from external causes was **drowning** , and from diagnoses **femur fracture** .

1,661,721 people were treated for injuries in ambulances , of which:

- **of children 0-14 years old** – 301,800 (decrease by 16% compared to 2009, but still approximately every 4th child in the Czech Republic), the most injuries are sports 26% (predominantly unorganized – bicycle, skates, skateboard), domestic 20% , school 17%, transport 6%, other 31%,
 - mechanism of injury – **falls, contact with a hot body, cuts, being hit by an object, accidental poisoning** ,
 - the most common injuries in children requiring hospitalization include **intracranial injuries, fractures** ,
- **adolescents** aged 15-19 – 239,574 with sports injuries 28%, domestic injuries 19%, school/work injuries 16% and **traffic injuries 9%** and other 28%,
 - mechanism of injury – falls, traffic accidents, **injury by another person** (intentional or unintentional), animal bite, **self-harm** ,

- **adults aged 20 and over** – 1,120,347, fewer sports accidents 19% and work accidents 13%, on the contrary **more traffic accidents 10%**, domestic accidents 21%, other 37% (open spaces and recreational activities).

Every fourth accident resulted in a fracture .

The number of injuries per capita was highest in the Hradec Králové (214 per 1,000 inhabitants) and South Bohemia (192 per 1,000 inhabitants) regions. The fewest injuries were treated in the Central Bohemian Region (119 per 1,000 inhabitants).

Traffic accidents

In terms of age, children, young drivers and seniors are at the greatest risk of a traffic accident.

Risk factors of traffic accidents:

- **in childhood** ,
 - **time factor** – increased fatigue in the afternoon and evening hours, on weekends,
 - **specificity of psychomotor development** – insufficiently developed binocular, stereoscopic vision, narrower field of vision (by up to 30%), prolonged reaction time,
- **in young drivers** ,
 - **behavioral** – risk-taking, excessive speed, consumption of alcohol or drugs, inexperience,
 - **structural** – often an older car in poor technical condition without modern passive safety features,
- **in seniors** ,
 - **problems with walking and balance** – neurological disorders, disorders of the motor system (arthrosis , etc.), dementia ,
 - **visual and hearing impairments** ,
 - **therapy with substances affecting the CNS** – benzodiazepines , opiates , neuroleptics .



Head injury

Prevention leading to a reduction in the incidence of accidents

- **Passive measures** – legislation (traffic laws, labor code, safety of consumer goods),
- **active measures** - with the aim of changing the behavior, attitude, stereotype of people (educational programs, educational materials - leaflets, audio, video),
- **targeted prevention programs** ,
- **national accident prevention plan** incl. of a unified accident monitoring system and an increase in the level of preventive activities.

Occupational accident

In the Labor Code, we do not find a definition of the term injury and it is only defined here when an injury is considered to be at work. When looking for a definition, it is therefore necessary to consult the jurisprudence, which considers an injury to be such **a health disorder that is caused by external causes independent of the will of the employee . The causes act suddenly, violently, short-term and unexpectedly, their character is either mechanical or chemical** .^[3]

Prevention of occupational accidents

1. prevent risk;
2. assess unavoidable risks;
3. eliminates risks at the source;
4. introduce technical progress;
5. replace risky with less risky;
6. prevention is better than cure;
7. adapt the work to the individual;
8. the priority of collective protection;
9. give appropriate instructions to workers;
10. check the measures in place.

Legislation

- Act No. 258/2000 Coll., on the protection of public health as amended.
- Act No. 262/2006 Coll., Labor Code.
- Act No. 309/2006 Coll., on ensuring additional conditions of safety and health protection at work.
- Law No. 18/1997, Atomic Law.

Duties of the employee

1. **Participate in** employer-provided training focused on safety and health protection at work, including verification of your knowledge.

2. To undergo occupational medical examinations, examinations or vaccinations stipulated by special legal regulations.
3. **Comply with the legal and other regulations and instructions** of the employer to ensure safety and health protection at work, with which he was properly familiarized and follow the principles of safe behavior at the workplace and the employer's information.
4. **Adhere to specified work procedures, use specified work equipment, means of transport, personal protective work equipment and protective equipment** and do not arbitrarily change or take them out of service.
5. **Not to consume alcoholic beverages and not to abuse other addictive substances** at the employer's workplaces and during working hours even outside these workplaces, not to enter the employer's workplace under their influence and not to smoke at workplaces and in other spaces where non-smokers are also exposed to the effects of smoking. The ban on the consumption of alcoholic beverages does not apply to employees who work in adverse microclimatic conditions, if they consume beer with a reduced alcohol content, and to employees whose consumption of these beverages is part of the performance of work tasks or is usually associated with the performance of these tasks.
6. **Notify** your superior manager of **deficiencies and defects at the workplace** that threaten or could directly and seriously endanger the safety or health of employees at work, in particular the imminent occurrence of an emergency or deficiencies in organizational measures, defects or malfunctions of technical equipment and protective systems designed to prevent them .
7. With regard to the type of work performed by him, to the best of his abilities, participate in the elimination of deficiencies found during inspections by the authorities that are responsible for the performance of inspections according to special legal regulations.
8. Immediately **report your work-related injury to your superior manager** , if your health condition allows it, and the work-related injury of another employee, or the injury of another natural person that you have witnessed, and cooperate in clarifying its causes.
9. Comply with the instruction of an authorized senior employee designated in writing by the employer to determine whether he is under the influence of alcohol or other addictive substances. ^[4]

Links

Reference

1. ČELKO, Alexandr Martin. *Epidemiology of injuries* [lecture for subject Epidemiology, specialization General medicine, the 3rd Faculty of medicine Charles University]. Prague. 12.12.2011.
2. ČELKO, Alexander Martin. Epidemiologie úrazů v České republice. *Postgraduální medicína*. 2004, y. 15, vol. 4, p. 1-2, ISSN 1214-7664.
3. Epravo.cz. *Vymezení pojmu pracovní úraz* [online]. [cit. 2009-03-30]. <<https://www.epravo.cz/top/clanky/vymezeni-pojmu-pracovni-uraz-879.html>>.
4. HAVIT, s.r.o. *Zákon č. 262/2006 Sb., zákoník práce : Část pátá Bezpečnost a ochrana zdraví při práci* [online]. [cit. 2011-10-23]. <<https://business.center.cz/business/pravo/zakony/zakonik-prace/cast5h2.aspx>>.

Sources

- ÚZIS ČR. . *Zdravotnictví České republiky 2010 ve statistických údajích* [online] . 1. edition. Prague : Ústav zdravotnických informací a statistiky ČR, 2011. 96 pp. Available from <<http://www.uzis.cz/system/files/kardcz2010.pdf>>. ISBN 978-80-7280-943-1.
- ÚZIS ČR. . *Hospitalizovaní podle klasifikace DRG v roce 2010* [online] . 1. edition. 2011. 56 pp. Available from <http://www.uzis.cz/system/files/hospitalizovani_drg_2010.pdf>. ISBN 978-80-7280-971-4.
- ÚZIS ČR. . *Zdravotnická ročenka České republiky 2010* [online] . 1. edition. Prague : Ústav zdravotnických informací a statistiky ČR, 2011. 268 pp. Available from <<http://www.uzis.cz/system/files/zdrroccz2010.pdf>>. ISBN 978-80-7280-966-0.
- ÚZIS ČR. . *Sebevraždy 2002 = Suicides 2002* [online] . 1. edition. Prague : Ústav zdravotnických informací a statistiky České republiky, 2003. Available from <<http://www.uzis.cz/system/files/sebev2002.pdf>>. ISBN 80-7280-219-4.
- SRB, Tomáš. *Činnost chirurgických oborů v ambulantní péči v roce 2010* [online]. Ústav zdravotnických informací a statistiky ČR, ©2011. [cit. 2012-01-04]. <<http://www.uzis.cz/rychle-informace/cinnost-chirurgickych-oboru-ambulantni-peci-roce-2010>>.
- SRB, Tomáš. *Úrazovost dětí a mladistvých do roku 2009* [online]. Ústav zdravotnických informací a statistiky ČR, ©2011. [cit. 2012-01-04]. <<http://www.uzis.cz/rychle-informace/urazovost-deti-mladistvych-roku-2009>>.
- ÚZIS ČR. . *Zemřelí 2010* [online] . 1. edition. Prague : Ústav zdravotnických informací a statistiky ČR, 2011. Available from <<http://www.uzis.cz/system/files/demozem2010.pdf>>. ISBN 978-80-7280-925-7.

