



SFCNS Swiss Brain Health Plan

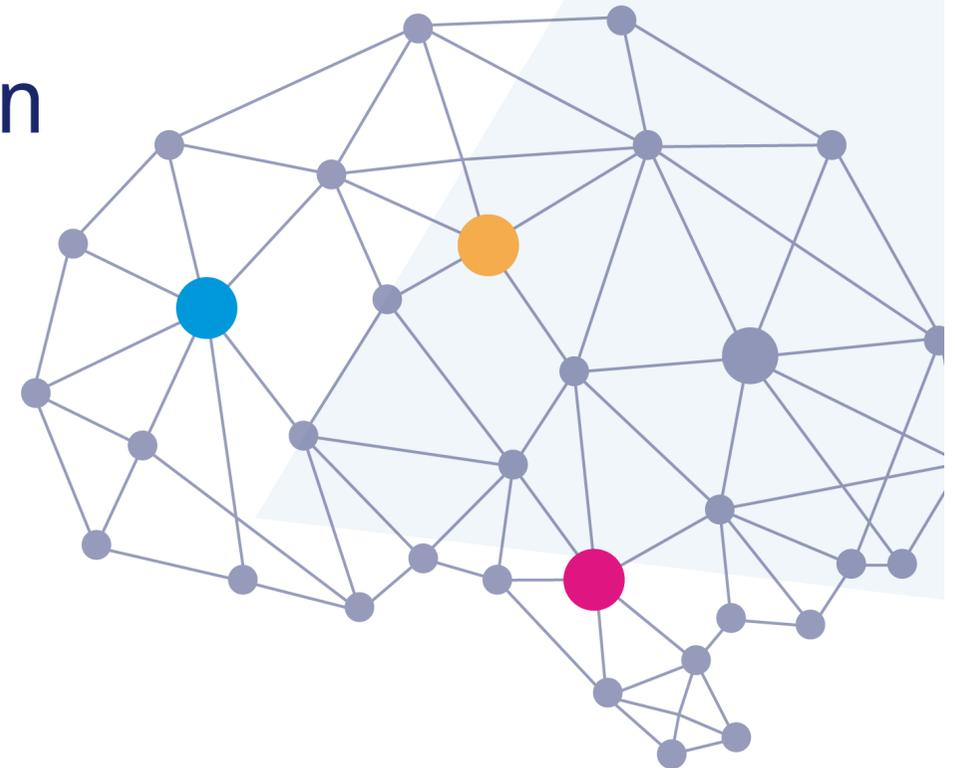
Kick-off Stakeholder Meeting

22 November 2023

13:00-18:00

Kunsthaus Zurich

swiss-brainhealth.congress-imk.ch

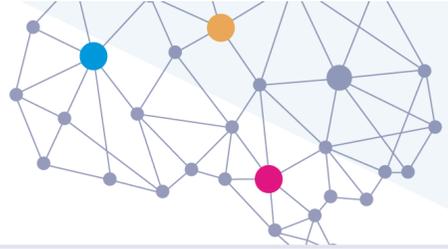


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Concussion and TBI in children and adults

Prof. Raphael Guzman, MD
Department of Neurosurgery
University Hospital Basel

Vice President SFCNS
Past President SGNC



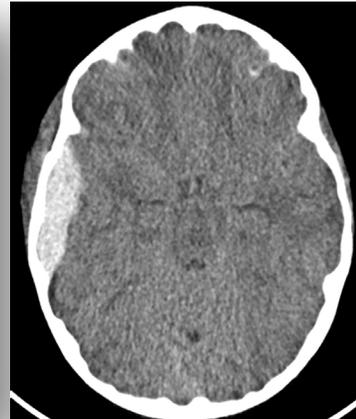
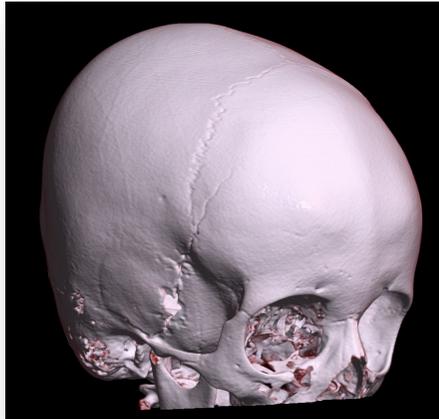


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1. Case

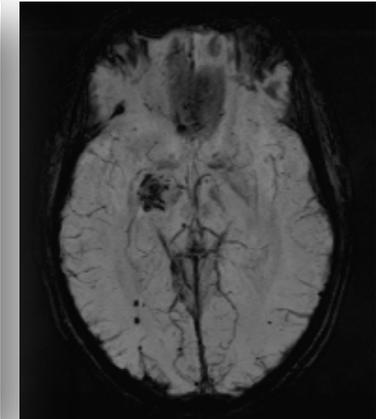
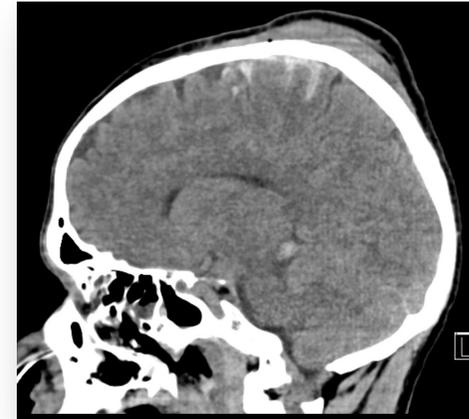


TIMON, 6 year old with TBI

Timon drives to soccer training on his e-Scooter

GCS 8

Emergency surgery for epidural hematoma



ROBERT, 48 year old with TBI

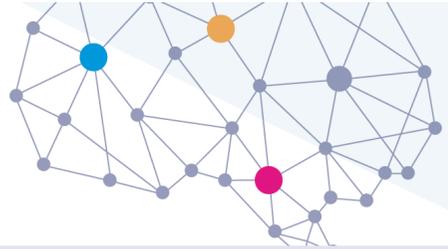
Robert drives to work on his e-Bike

GCS 6

Intensive Care management



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2. Clinical features

Concussion: A mild brain injury caused by a blow to the head or a violent shaking of the head and body.

Traumatic Brain Injury: Disruption in the normal function of the brain that can be caused by a bump, blow, or jolt to the head, or penetrating head injury.

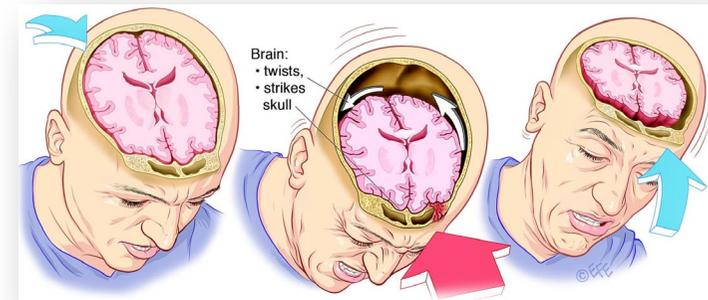
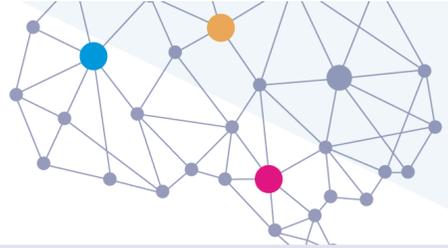


Table 1: Current Classification Scheme for TBI

Class	Mild	Moderate	Severe
GCS	13-15	8-13	< 8
Amnesia	< 30 min	30 min - 7 days	> 7 days
LOC	Short	Intermediate	Long



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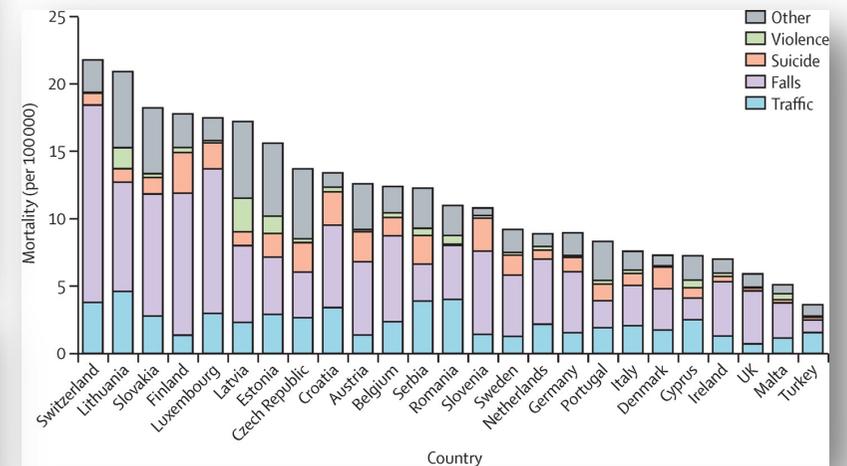
3. Epidemiology - general

Pediatric Patients

- TBI: **most frequent non-intentional injury in children <15y globally¹**
- 6.8% of all US-children < 17y with at least one TBI or concussion³
- In EU ca. 1815/100'000 cases annually⁴
- Male predominance already in children (1.5 times higher)⁶
- Mortality rates CH: **3.3/100'000 per year (age-adjusted)⁶**

Adults

- TBI accounted for **82'000 age-adjusted deaths** in 2012 in the EU²
- **Male predominance (1:6 in CH)²**
- **Markedly more elderly patients (>65y) affected²**
- 2.5 million cases per year in the EU,
- Prevalence in Switzerland 130'000 people
- Mortality rates CH: **21.8/100'000 per year (age-adjusted)²**



Age-adjusted mortality rates due to TBI

¹Pronczuk de Garbino J. Children's Health and the Environment: A Global Perspective. WHO 2004
²Majdan et al. *Lancet*, 2016
³CDC Concussion and Brain Injuries in Children, 2020
⁴Mukhtar et al. *Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine*, 2022
⁵Wittertröngel et al. *Pediatric research*, 2023
⁶Majdan et al. *Children(Basel)*, 2022



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3. Epidemiology – e-scooter

Original Investigation | Emergency Medicine

Comparison of Injuries Associated With Electric Scooters, Motorbikes, and Bicycles in France, 2019-2022

JAMA Network | Open™

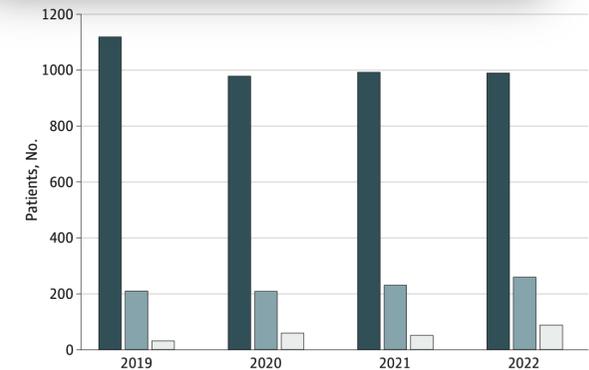


E-Scooter Accidents in Switzerland (SUVA)

100 in 2018

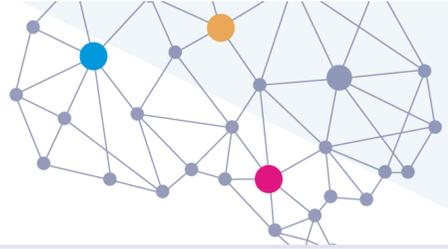
800 in 2019

2400 in 2021





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4. Prevention

TBI is a major cause of death and disability, contributing to about 30% of all injury deaths.

Prevent older adult falls

Fall risk prevention, balance exercise, check eyes, make home safe

Increase motor vehicle safety

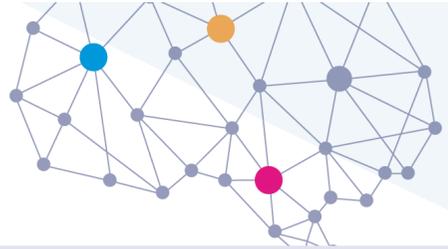
Seat Belt and Helmets, no drinking and driving (recreational vehicles)

Improve sports safety

Educate Coaches and Children about brain injury, Safe Play



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5. Impact on Society

Lifetime cost of TBI in the USA in 2000 \$220 billion¹

\$14.6 billion medical cost

As many as 65% of moderate to severe TBI patients have functional disability and report long-term problems in cognitive and mental health

Lifetime costs of TBI in the USA in 2012 \$758 billion²

CHF 16-20 billion

2.4% direct costs

13.3% work loss

83.3% quality of life lost

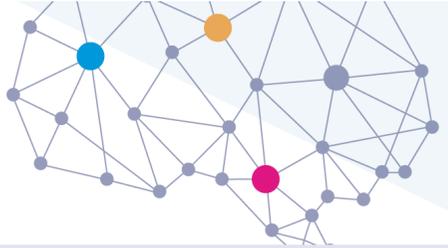
The per-person lifetime cost was \$115,300 - \$400,000

¹Langlois O et al. Txtbook of TBI 2011

²Lawrence B et al. Neurotrauma and critical care 2018



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6. Conclusions

- **Traumatic brain injury (TBI)**, according to the World Health Organization, will surpass many diseases as the **major cause of death and disability**.
- **“Silent epidemic”** impairments in memory or cognition, not visible.
- **Prevention** (primary and secondary) in falls, road accidents, sports
- **Increase public awareness** and educate the society about concussion and traumatic brain injury
- **Increase research funding**



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- 1** Awareness about brain health 
- 2** Interprofessional training 
- 3** Research on brain health determinants 
- 4** Brain health promotion for prevention 
- 5** Empowering patients and caregivers 