

# Programme & Abstracts

4th European Conference on Injury  
Prevention and Safety Promotion 2017





## Welcome

It is a pleasure to welcome all delegates to the 4th European Conference on Injury Prevention and Safety Promotion (EU-Safety-2017) in Amsterdam, 21-22 September 2017, organised by EuroSafe in collaboration with the Netherlands' Consumer Safety Institute (Dutch name: VeiligheidNL). We are happy to be able to welcome you at the venue 'The Koninklijke Industriële Groote Club', a historical monumental building with classic halls and a modern atmosphere.

The conference builds on the many European Injury Prevention Conferences successfully organised over the past decades by EuroSafe and on the success of the World Safety-2016 Conference (in Tampere, September last year) which was attended by the largest European contingent ever.

This year the main theme of the conference is: **'Safety Promotion in Action'**.

The event:

- celebrates the achievements in injury prevention over the past ten years since the adoption by the EU-Council of Ministers of the Recommendation on Injury Prevention and Safety Promotion in 2007;
- reviews progress made in consumer safety policies, injury surveillance, national programmes, and national safety promotion programmes;
- demonstrates good practices in injury research and prevention, including a wide range of key topics: child safety, leisure safety, safety for older people and safety of vulnerable road users;
- reinforces collaboration between existing networks of injury prevention researchers and practitioners such as in fields of injury surveillance (IDB), child safety (ECSA) and safety for older people (ESA-on-Falls).

We are happy to have received 80 abstracts of which a large part were accepted for a full or short presentation in one of the ten break-out sessions. The programme also includes nine plenary presentations by invited speakers, addressing cross-cutting issues related to safety policy development and strategies for safety promotion. Abstracts of all presentations are included in this Book of Abstracts and will be published shortly after the conference at <https://www.veiligheid.nl/eurosafe-conference>.

The organisers thank all who contributed to the conference programme by sending in abstracts, reviewing abstracts and giving advice for the plenary programme. We hope that you will enjoy the conference and the atmosphere of Amsterdam!

Wim Rogmans, on behalf of EuroSafe

Birgitte Blatter, on behalf of Consumer Safety Institute



09.15-10.00 **Registration and coffee**

10.00 – 11.30 *Opening and Plenary Session: Setting the Scene* Location: *Groote Zaal*

Session chair: Errol Taylor, chairman Executive Board EuroSafe and Executive Director RoSPA

- 1 Welcome address by Ministry of Health, Welfare and Sport.  
*Minister of Health, Welfare and Sport, The Netherlands.*
- 2 Injury Prevention as a best practice example of cross-EU collaboration in health information generation.  
*Giulio Gallo, European Commission, DG Health and Food Safety, Luxembourg.*
- 3 EU-Consumer Safety Policies-Quo Vadis?  
*Malcolm Harbour, European Policy Centre, former Member of European Parliament and Chairman EP-Internal Market and Consumer Protection Committee, United Kingdom.*
- 4 How behavioural economy enables people to work safely  
*Willem Verbeke, Professor of sales and account management at the Erasmus School of Economics, The Netherlands.*

Location: *Groote Zaal 11.45 - 12.45*

Location: *Damzaal 11.45 - 12.45*

**Break-out session-1: Consumer product safety**

Moderator: Ron Gainsford, British Toy & Hobby Association, UK

- 1.1 Recent product safety issues in Austria - *Perz, Helmuth* (Full)
- 1.2 What substances consumer products consist of? What you should know and how you to use products safely made accessible on the online platform 'Waarzitwatin'. - *Buuron, Ine, et al.* (Full)
- 1.3 Integrated campaigning to improve consumer safety at home - *Drackford, Emma* (Full)
- 1.4 Hair Straighteners – A child burn risk - *Lumsden, Elizabeth* (Short)
- 1.5 Toy Safety - *Edmonds, Eric* (Short)
- 1.6 Virtual approach for assessing safety - *Hynčik, L. & Bońkowski, T.* (Short)
- 1.7 The UL Safety Index: A tool for injury prevention and safety promotion - *Wroth, David S.* (Short)

**Break-out session-2: Road safety**

Moderator: Gerald Furian, Kuratorium für Verkehrssicherheit, AT

- 2.1 Sustainable safe road traffic in the Netherlands towards 2030: vision update- *Aarts, Letty* (Full)
- 2.2. SES Risk factor of traffic-related injuries among adolescents - *Haddak, Mouloud* (Full)
- 2.3 Epidemiology of bicycle-related injuries from Hospital's Emergency Department perspective. Analysis of three years data from Luxembourg - *Bejko, Dritan, et al.* (Short)
- 2.4 Road Users' Willingness-to-pay For Road Safety Improvement - *Haddak, Mouloud* (Short)
- 2.5 Accident Risk Benchmark – Austria: Combining traffic accident and mobility survey data - *Furian, Gerald, et al.* (Short)
- 2.6 Bikes, Big Trucks & you - *Evans, Cheryl* (Short)

12:45 - 13:30 **Lunch break**

Location: *Groote Zaal 13.30 - 14.30*

Location: *Damzaal 13.30 - 14.30*

**Break-out session 3: Action on Falls in Older People (part I)**

Moderator: Tatiana Alves, Nat Inst of Health Doctor Ricardo Jorge, PT

- 3.1 Falls in older people: characterization of the occurrence in Portugal: 2013-2015 – *Alves, Tatiana, et al.* (Full)
- 3.2 Mortality trends for accidental falls in older people in Spain.

**Break-out session 4 Action on Child safety**

Moderator: Sheila Merrill, RoSPA, UK

- 4.1 Training on design, installation and maintenance of safe and challenging play areas – *Arenas, M. C, et al.* (Full)
- 4.2 Links between multiple risk behaviors and injury at fifteen-year-

1988-2013. - <i>Padrón-Monedero, Alicia</i> (Full)	olds – <i>Medved, Tina, MD, Rok-Simon, Mateja, Phd, MD.</i> (Full)
3.3 Effect of comorbidities on association between age and mortality after hip fracture. - <i>Padrón-Monedero, Alicia, et al.</i> (Short)	4.3 Take Action Today – Put Them Away – <i>Merrill, Sheila</i> (Short)
3.4 Increased care demand and medical costs after falls in long-term care facilities: a Delphi study - <i>Sterke, Carolyn Shanty, et al.</i> (Full)	4.4 Trends of Foreign Body injuries: comparison between Italian and U.S. official data - <i>Solidea Baldas</i> (Short)
3.5 Cost-effectiveness of falls prevention in nursing homes – <i>Panneman, M.J, et al.</i> (Full)	4.5 Equitable safe road environments for child pedestrians: Where are school crossing guards? – <i>Macpherson, Alison, et al.</i> (Short)
	4.6 The Decline in Active School Transportation: A Systematic Review of the Correlates of AST and Change over Time - <i>Rothman, Linda, et al.</i> (Short)
	4.7 Using child safety restraints: how do parents understand the costs and benefits? – <i>Dulf, Diana</i> (Short)
	4.8 Teaching Children by Playing Hide And Seek in Trucks’ Blind Spots - <i>Bauer, Robert &amp; Winkelbauer, Martin</i> (Short)
	4.9 Finland’s national action plan for injury prevention among children and youth - <i>Korpilahti, Ulla &amp; Kolehmainen, Laura</i> (Short)

Location: Groote Zaal 14.45 – 15.45

#### Break-out session 5 Injury data analysis (part I)

Moderator: Robert Bauer, Kuratorium für Verkehrssicherheit, Austria

- 5.1 To survey or to register. - *Bejko, Dritan, et al* (Full)
- 5.2 E-bikes; too fast, too furious! - *Poos, H.P.A.M., et al.* (Full)
- 5.3 Costs of road crashes in Europe - *Wijnen, Wim* (Short)
- 5.4 Alcohol and drugs – possibilities for screening and intervention at Emergency - *Klein Wolt, Karin & Vogels, Neeltje* (Full)
- 5.5 Morbidity due to unintentional poisonings in children and teenagers: trends and risks- *Struckinskiene, Birute* (Short)
- 5.6 Identifying injury related inequalities using the European Injury Data Base (IDB) – *Walters, Angharad, et al.* (Short)
- 5.7 Development of a signaling instrument for detecting striking changes in injury data – *Eilering, Malou, et al.* (Short)

Location: Damzaal 14.45 – 15.45

#### Break-out session 6: Sports injury prevention

Moderator: Jari Parkkari, Tampere Research Center of Sport Medicine, Finland

- 6.1 Epidemiology of overuse injuries in youth team sports: a 3-year prospective study – *Leppänen, Mari, et al.* (Full)
- 6.2 Acute and overuse injuries among sports-club members and non-members: The Finnish Health Promoting Sports Club Study - *Ristolainen, L., et al.* (Full)
- 6.3 Effectiveness of a tailor-made digital intervention to prevent injuries skiing and snowboarding – *Kemler, Ellen* (Full)
- 6.4 How to get Sports injury prevention to work in practice? – *Nauta, Joske* (Full)

#### 15.45 - 16.15 Refreshments

16.15 - 17.15 **Plenary session Challenges and Opportunities in Safety Promotion** Location: Groote Zaal

Session chair: Ron Gainsford, Honorary Member EuroSafe and advisor to the British Toy & Hobby Association

- 5 Injury Prevention Cycle: the sequence of prevention revisited  
*Willem van Mechelen, Professor of Occupational and Sports Medicine, Amsterdam Public Health Research Institute VUmc, The Netherlands.*
- 6 Adolescents, alcohol and injuries: interventions addressing a potent cocktail.  
*Shanthi Ameratunga, Professor of Epidemiology and Public Health, University of Auckland, New Zealand.*
- 7 Cycling in Amsterdam: use of safety performance indicators for pro-active policy making.  
*Eric de Kievit, City of Amsterdam, The Netherlands.*

17.15- 18.15 **Cocktail reception**

## Programme Friday, September 22, 2017

8.30 - 9.00 Welcome	
<i>Location: Grootte Zaal 09.00 - 10.00</i>	<i>Location: Damzaal 09.00 - 10.00</i>
<p><b>Break-out session 7: Water Safety</b></p> <p>Moderator: Detlev Mohr, Int. Lifesaving Fed. of Europe, DE</p> <p>7.1 Situation of Drowning Prevention in Europe - <i>Mohr PhD, Dr. Detlev</i> (Short)</p> <p>7.2 Marketing strategies that help reduce drownings by changing skills, attitudes and behaviours. - <i>Sweeney, Roger</i> (Full)</p> <p>7.3 Stop Ahogados: una campaña de prevención de ahogamientos global - <i>Dominguez, Ana M., et al.</i> (Full)</p> <p>7.4 Non-fatal drowning: Epidemiology and prevention - <i>Clemens, Tessa, et al.</i> (Short)</p>	<p><b>Break-out session 8: Action on Falls in Older People (Part II)</b></p> <p>Moderator: Errol Taylor, RoSPA, UK</p> <p>8.1 Falls prevention activities among community-dwelling elderly in the Netherlands: A Delphi study - <i>Olij, Branko F., et al.</i> (Full)</p> <p>8.2 Stand Up Stay Up - Taking the rise out of falls - <i>Martin, Ashley</i> (Full)</p> <p>8.3 Cost-effectiveness of interventions for preventing falls among elderly: A systematic review - <i>Olij, Branko F., et al.</i> (Short)</p> <p>8.4 TOM: a multifactorial approach to prevent falls and improve autonomy in community-dwelling elderly - <i>Veen, Rozan, van der, et al.</i> (Full)</p> <p>8.5 Implementing fall prevention: risk factors in an academic hospital population - <i>Boogaard, Laura</i> (Full)</p>
<i>Location: Grootte Zaal 10.15 - 11.15</i>	<i>Location: Damzaal 10.15 - 11.15</i>
<p><b>Break-out session 9: Injury data analysis (Part II)</b></p> <p>Moderator: Birgitte Blatter, Consumer Safety Inst, NL</p> <p>9.1 Measuring the burden of injury across Europe - <i>Walters, Angharad, et al.</i> (Full)</p> <p>9.2 Disability adjusted Years. - <i>Bejko, Dritan, et al.</i> (Full)</p> <p>9.3 Patterns of child injuries which require hospitalization in Republic of Serbia: Retrospective analysis - <i>Markovic, Marija, et al.</i> (Short)</p> <p>9.4 Unintentional injuries in Spanish children: a multicentre survey - <i>Esparza-Olcina, María-Jesús</i> (Short)</p> <p>9.5 An Interprovincial Comparison of Unintentional Childhood Injury Rates in Canada - <i>Fridman, Liraz, et al.</i> (Short)</p> <p>9.6 The Association Between Post-Concussion Symptoms and Health-Related Quality of Life in Patients with Mild Traumatic Brain Injury - <i>Voormolen, Daphne C., et al.</i> (Short)</p> <p>9.7 Time to surgery in a hip fracture population: Implications for patient safety - <i>Hahessy, Sinead</i> (Short)</p> <p>9.8 Risk factors for primary care compared to secondary care treated burn injury - <i>Zoonen, Eva, van</i> (Short)</p>	<p><b>Break-out session-10: Topical issues</b></p> <p>Moderator: Eva Vaagland, Norwegian Safety Forum, NO</p> <p>10.1 Teaming up for safety - Using risk assessment tools - <i>Jakobson Vaagland, Eva</i> (Full)</p> <p>10.2 Monitoring injuries for regional policy making on violence and traffic accidents - <i>Toet, Hidde &amp; Klein Wolt, Karin</i> (Full)</p> <p>10.3 20+5 years "Sicheres Vorarlberg" - a story of success - <i>Kremmel, Luzia</i> (Full)</p> <p>10.4 A Norwegian pathway to community safety- Based on Norwegian laws and regulations and the safe community concept - <i>Vaagland, Eva</i> (Short)</p> <p>10.5 Reliability of data on repeated Emergency Department attendances as predictors of violence: a case-control study in Italy - <i>Pitidis, Alessio, et al.</i> (Short)</p> <p>10.6 Where occupational and road safety matters collide: work-related road traffic fatality prevention - <i>Drummond, Anne &amp; Codd, Mary</i> (Short)</p>
11.30 - 11.45 Refreshments	
<i>11.45 - 13.00 Plenary closing session Location: Grootte Zaal</i>	

### The way ahead in Safety Promotion

*Session chair:* Gerald Furian, Member Executive Board and Head International Affairs at KfV

8 European initiatives in injury prevention: ten years after and the UN-goals for 2030.

*Dinesh Sethi, WHO-Office for European Region, Denmark.*

9 Technical solutions: are novel technologies the future for successful injury prevention?

*Lorenzo Chiari, professor of Rehabilitation Engineering & Biomechanical Signal Processing at the University of Bologna, Italy.*

- 10 Comprehensive and holistic strategy for promoting safety, health and well-being.  
*Gregor Doepke, German Social Accident Insurance (DGUV), Germany.*
- 11 Launch of next European conference in 2019, *Host organisers of EU-Safety 2019*

**13.00 Closure of the Conference**

Farewell lunch (13.00 - 13.30)

In the afternoon after the closure of the conference, EuroSafe will concurrently host two network meetings (participation on invitation only), 13.30-16.30

- 12 The 12th technical meeting of the network of National Data Administrators for the EU-Injury Database (IDB), *Location: Groote Zaal.*
  - 13 The annual meeting of the European Child Safety Alliance, *Location: Damzaal.*
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## Abstracts Thursday September 21, 2017

10:00 – 11:30

### Opening and Plenary Session: Setting the Scene

*Location: Grote Zaal*

**Session chair:** Errol Taylor, Chairman Executive Board EuroSafe and Executive Director RoSPA, United Kingdom.

#### 1 Welcome address by Ministry of Health, Welfare and Sport.

*Ministry of Health, Welfare and Sport, The Netherlands.*

#### 2 Injury Prevention as a best practice example of cross-EU collaboration in health information generation

*Giulio Gallo, European Commission, DG Health and Food Safety, Luxembourg.*

Health information is an indispensable input to evidence-based policies. However, despite thousands of indicators being collected in the EU, some high-priority areas are still not covered by robust data and some other areas such as injury prevention are still not part of a sustainable mechanism. Injuries are the leading cause of death in children and young people in the EU, and non-fatal injuries can lead to life-long impairment and disabilities. Comparable and reliable injury data is needed for monitoring, evaluating, and improving health policies.

The Commission's work on injuries began within the framework of the Injury Prevention Programme, which started in 1999 and ended in 2003 when the Public Health Programme came into force. In 2006 the Commission developed a Communication on "Actions for a Safer Europe", which emphasized preventative measures. In May 2007, this was followed up by a Council Recommendation on the prevention of injuries and the promotion of safety was adopted, which calls for joint actions between the Commission and Member States that would lead to the development of a European surveillance system to provide better evidence in the decisions over injury prevention. Already contributing toward this goal is the European Injury Database (IDB), which was set up with support of DG SANTE under the Injury Prevention Programme in 1999 and is still hosted by Commission services and supported through consecutive projects funded under the Health Programmes. Today, IDB covers data from hospitals and emergency departments in 21 EU Member States, and includes two separate data sets: a publicly accessible Minimum Data Set (MDS) and a restricted access Full Data Set (FDS), collected in a limited number of hospitals, that provides additional information on how and when injuries took place and on any consumer products that were involved.

Currently DG SANTE is working with the Commission's Expert Group on Health Information as well as the OECD and WHO to design a well-functioning and sustainable health information system in the EU. To this end, DG SANTE helped launch the BRIDGE Health project which includes 31 partners from 16 EU/EEA countries and is steered by the Expert Group on Health Information. The project recently published an analysis of the current health information system and proposes the establishment of a European Research Infrastructure Consortium (ERIC) to improve the sustainability and governance of the health information generation in the EU. To further support the transition to an integrated and sustainable health information system, the Commission is helping to launch a Joint Action on Health Information for the period 2017-2020 by providing 4 million Euros in co-funding. 26 EU Member States and 4 candidate countries have expressed their interest to take part in this initiative. Some stakeholders fear these new developments might jeopardize the continuation of specialized data collections, without considering the opportunities such a process can offer. The presentation will discuss these challenges and opportunities for the network on injury prevention.

*Contact: Giulio.Gallo@ec.europa.eu*

### 3 EU-Consumer Safety Policies - Quo Vadis?

*Malcolm Harbour, European Policy Centre, Chairman EP-Internal Market and Consumer Protection Committee, United Kingdom.*

There is continued concern about product safety, and well connected consumers are more and more aware of problems. Internet selling is making consumers more vulnerable to potentially unsafe purchases. Yet investment in projects to safeguard consumer interests appear to be a low priority in many EU Member States.

The European Commission proposals for long overdue improvements in market surveillance, information sharing and best practice exchanges are still blocked by disagreement over “marks of origin”. Proposals for building on the investment made in generating key data on injuries from accidents, and other crucial information needed to shape effective interventions, remain stuck in ministerial “in-trays”. Resources for Trading Standards Inspection across EU regions are tightly stretched. Brexit issues are taking resources away from consumer focused issues. Malcolm Harbour will examine the policies and practicalities for unlocking EU level action, and also the broader changes in approach might be needed. Are the original 2013 proposals still enough? Will producers consider that it is in their interest to share some of the costs to keep unsafe products out of the market? Should the EU consider more mandatory 3rd party testing and will this deliver the desired results? Can technology help with more comprehensive information sharing and consumer focused data available live at point of purchase? Should protecting public safety move into the centre stage of “grand challenges”, with new ideas generated by innovation contests? Is the CE marking still of value in an age of informed consumers? How are safety issues factored into public procurements?

He will invite audience participation in the debate at the conclusion of his remarks.

### 4 How behavioural economy enables people to work safely

*Willem Verbeke, Professor of sales and account management at the Erasmus School of Economics, The Netherlands.*

No abstract available (yet).

11:45 – 12:45

#### **Break-out session 1: Consumer Product Safety**

*Location: Grootte zaal*

Session moderator: Ron Gainsford, British Toy and Hobby Association, United Kingdom

#### 1.1 Recent product safety issues in Austria

*Helmuth Perz, Ministry of Labour, Social Affairs and Consumer Protection, Vienna, Austria.*

**Objectives** - Development of efficient product safety strategies beyond traditional boundaries

**Methods** Analysis of product safety incidents and accidents handled by the Austrian Ministry of Social Affairs including trends reflected by the RAPEX system

**Results** - Severe and fatal accidents caused by unsafe products (either by unsafe design, quality problems during production or poor consumer information etc.) persist on a very low level. Newly developed products can lead to emerging risks in particular when sold in high quantities (e.g. hover boards). Yet serious risks mainly arise from missing safety equipment like carbon monoxide detectors or window locking devices. Fires caused by rechargeable

batteries get a lot of public awareness because of the potentially severe outcome; however these incidents have to be compared to the huge number of accumulators in a typical European household. Market surveillance authorities are focused on 'classical' product safety issues (e.g. small parts) and sometimes tend to chase for 'exotic' products. Spectacular accident patterns (e.g. bursting glass furniture) seem to impress consumers and the media much more than severe but 'silent' accidents. Online-shopping in third countries can undermine legal restrictions (e.g. laser devices). Chemicals in consumer products are considered a threat but long term data on health effects are missing or unclear.

**Discussion** - The historical concept of product safety (enforcement) mainly refers to mechanical issues like weak ladders or broken bicycle forks. Although unsafe products in this 'classical' understanding can still be found on the markets and have to be removed there is a need to develop evidence based and efficient strategies e.g. by using (available or new) accident data. Furthermore a broader understanding of product safety (enforcement) is required including promotion of use and installation of safety devices; legally binding measures might be necessary e.g. for smoke detectors. For newly developed products more pre-market risk assessment is needed. For hazards caused by chemicals in products research on long term effects is critical and has to be funded despite high costs.

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## 1.2 What substances consumer products consist of? What you should know and how you to use products safely made accessible on the online platform 'Waarzitwatin'

*Ine Buuron<sup>1\*</sup>, Margaret Wouters<sup>2</sup>, Jelmer Boomsma<sup>3</sup>, Hester Hendriks<sup>2</sup>, Samantha Guichelaar<sup>2</sup>, Annet Bos<sup>1</sup>, Marielle Hermans<sup>1</sup>, Malou Eilering<sup>1</sup>, Femke Affourtit<sup>2</sup>, Walter Brand<sup>2</sup>, Wouter ter Burg<sup>2</sup>, Catheleyne Puts<sup>2</sup>, Linda Razenberg<sup>2</sup>, Patrick Zweers<sup>2</sup>, Jacqueline van Engelen<sup>2</sup>.*

*<sup>1</sup>Consumer Safety Institute (CSI), Amsterdam, Netherlands; <sup>2</sup>National Institute for Public Health and the Environment (RIVM), Centre for Safety of Substances and Products, Bilthoven, Netherlands; <sup>3</sup>Design agency Grrr, Amsterdam, Netherlands*

The Dutch Ministry of Health requested both RIVM and CSI to build the online platform 'Waarzitwatin' (Whatproductcontainswhichchemicals) aimed at consumers. 'Waarzitwatin' provides independent information on substances used in products we use on a daily basis. The platform consists of a database, a website and an application programming interface (API) making the platform's database available to third parties ultimately. The range of products included in the database will be substantial in the upcoming years: sunscreen, liquid pods, toys, diapers, mattresses, tooth paste, clothing, anti-ant agents, etc. The platform is built by design agency Grrr.

The chemical composition of each product is described and visualized. The function and utility of the substances in the specific product is explained as well as a short risk assessment based on the average consumer use of the product. This might be especially relevant to people who are pregnant or allergic to certain substances. Tips and tricks, advice and alternatives are given to facilitate safe usage of products and empower consumers in making well-considered choices on the products they want to use. Background information on chemicals in our bodies, on the basics of toxicology, on aggregated exposure to certain chemicals, on (inter)national laws and regulations, on quality marks, symbols and labeling is also provided.

The RIVM collects all relevant scientific reports and data on products, substances and risks. The Consumer Safety Institute 'translates' this information into accessible texts for consumers. The process of developing the platform is accompanied by constant qualitative testing among groups of consumers. They give feedback on the degree of usability of the platform as well as on comprehensibility of its content. The project is being closely monitored by stakeholders such as consumer organizations, several ministries, manufacturers, and (non)governmental organizations.

April 2017, a pilot version of the platform was launched (not accessible for the public). In September 2017 the launch of the public version of 'Waarzitwatin' ([www.waarzitwatin.nl](http://www.waarzitwatin.nl)) is planned. From 2018 on, the platform will be actively promoted among consumers. The first target group: young families.

Contact: [i.buuron@veiligheid.nl](mailto:i.buuron@veiligheid.nl)

### 1.3 Integrated campaigning to improve consumer safety at home

*Emma Drackford, Electric Safety First, Head of Communications, London., United Kingdom.*

**Objectives** - Electrical Safety First's campaigns communicate important safety messages in a way that will resonate with a broad consumer audience, encouraging them to make simple changes in behaviour that will protect themselves, their families and their homes from electrical accidents. Campaign objectives were:

- To raise consumer awareness of electrical safety to help prevent deaths, injuries and damage
- To establish Electrical Safety First as the leading voice on electrical safety issues.

**Methods** - Campaign priorities and target audiences were identified through analysing the results of the organisation's annual consumer survey which tracks behaviour change and awareness of the Charity's key aims, as identified in its five year strategy. Government fire and injury data was also used to highlight areas of concern. Relevant content and messaging was produced using case studies and a call to action that offered simple advice around behavioural change. Key campaign spikes were developed which focused on securing traditional media coverage as well as reaching a wider audience through supporting digital content, social media activity and strategic stakeholder partnerships. The team responded to additional opportunities, developing messaging to coincide with World Anti-Counterfeiting Day and Burns Awareness Day, and sharing seasonal messages for Christmas.

**Results** - Electrical Safety First reached millions of consumers with targeted messages on electrical safety issues. The team secured 1,585 pieces of coverage (representing an 85% increase on the previous year) that reached a potential 227,851,521 people with estimated advertising value of £2,594,145. One digital campaign alone achieved 2.7 million views on Facebook and over 14,000 social interactions (likes, comments and shares). The 2017 consumer survey has shown that unprompted awareness of the Electrical Safety First brand has almost doubled in the last year, with a big jump in awareness amongst the hard to reach 15-24 year old age group. There have also been positive shifts in attitudes towards product recalls and counterfeit electrical goods across all age ranges.

**Discussions/Conclusions** - The topic of "electrical safety" is a challenge to communicate as risks are not always tangible and messages need to be shared in a creative way that will grab attention without diminishing the seriousness of the issue. This has been achieved by taking a more quirky approach with digital campaigns, while more traditional media relations techniques are used to convey the key messages.

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### 1.4 Hair Straighteners – A child burn risk

*Elizabeth Lumsden, Community Safety Manager, RoSPA Scotland and Co-author/ co-presenter Lesley Nish, Senior Health Improvement Officer, NHS Greater Glasgow and Clyde, United Kingdom.*

**Objectives** - Delivery of a multi-agency approach to increasing awareness and reducing the risk of hair straightener burns to children, aged average two years old, in the NHS Greater Glasgow and Clyde Health Board area. Reconvene a working group including the Burns Unit, local Health Improvement staff, RoSPA, Public Health and associated agencies to review epidemiological features of hair straightener burns. Plan, design, monitor, evaluate and implement an evidence based, best practice approach, to reduce the frequency of incidents and injuries, building upon the previous campaign which was established in consultation with parents and carers and

which demonstrated a decrease in the number of children seeking medical treatment as a result of hair straightener burns.

**Methods** - Further consultation with parents/ carers and a range of health professionals regarding appropriate communication tools and resources was completed to redesign the poster for use in local communities, to contain visually meaningful images to portray the high temperatures that hair straighteners can reach. Media coverage was secured to facilitate awareness raising of temperatures and serious burns. A briefing note was provided to all Health Visitor teams, with the instruction that a brief intervention describing the issue and prevention methods should take place with every family. Heat resistant pouches have been extensively researched and purchased. These will be provided to families in need.

**Results** - The network continually monitors and reviews the campaign results, allowing the continuation of a focus on burn prevention. This has led to additional funding to provide an increased number of pouches for distribution.

**Discussion and Conclusion** - Very young children, averaging age two, were picking up, sitting on or standing on hair straighteners and suffering from burns, ranging from superficial burns to severe deep dermal, or full thickness burns. The children required either treatment at the Burns Unit, or some required more intensive treatment; a stay in hospital, skin grafts and an intensive care regime for up to two years. These injuries are both horrific for any child and their family and they are costly for the NHS to treat. Following implementation of the first round of the initial campaign and its subsequent reduced activity, injuries were again becoming evident. This led to the revised current campaign which now involves the targeted distribution of 8,000 heat resistant pouches as part of a discussion and brief intervention with families.

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## 1.5 Chemicals in children's products: prioritising the risk

*Eric Edmonds, Product Safety & Compliance Ltd, Ramsgate, Kent, United Kingdom.*

Protecting children from the adverse effects of harmful chemicals in consumer products, including toys, is an area of continued focus for all stakeholders.

There is an increasing amount of data available on chemical hazards for a wider range of substances, both in the academic literature and from REACH registrations. Restricting the use of a growing number of chemicals based purely on presumed hazard is not sustainable in the long term, either for industry or regulators.

A fundamental issue is that an appropriate test method to quantify the presence of a particular substance may not be available, or will take time and resources to develop. In practical terms, what cannot be measured cannot be enforced.

To effectively protect children from the effects of adverse chemicals a greater emphasis should be placed on using refined risk assessment methodologies based upon exposure, and applied in a consistent way, to prioritise those chemicals for restriction that present the highest potential for harm. This approach is not without its own challenges however.

Some case studies will be presented that illustrate the concept and will also explore both the potential benefits and the limitations. Finally, a framework for future action will be introduced.

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## 1.6 Virtual approach for assessing safety

*L. Hynčik and T. Bońkowski, University of West Bohemia, Czech Republic.*

**Objectives** - Virtual biomechanical human body models start to play an important role in assessing consequences of external impact due to the interaction with outer infrastructure. Not only traffic safety but for example also evacuation corridors or sports and leisure protective equipment performance can be analysed and optimized. The

advantage of the virtual approach is the possibility to cover wide spectra of non-standard scenarios and currently also broad spectra of the population using scaling methods. Correct biofidelic model in contact with the external infrastructure can provide a huge tool for predicting possible injuries and provide design optimization proposal by parametric analysis.

**Methods** - Correct biofidelic models are very important for the virtual approach. Virthuman is one of the scalable models originally used for road safety systems analysis and optimization. Its further development and ability to be coupled with protective equipment move the virtual approach forward to assess impact safety in many modes of traffic (road, railway, air) and interaction with infrastructure (playgrounds, sports and leisure). Having validated reference model, the developed algorithm enables to scale it for the given anthropometric and flexibility properties, couple with infrastructure and run the simulation for given initial and boundary conditions. The developed tool in the virtual environment also enables to take into account a group of virtual subjects to be in contact with outer infrastructure and one to another.

**Results** - Based on huge anthropometric database and validated reference biofidelic human body model, the group of virtual humans of different anthropometries can be developed automatically in order to be coupled with personal protective equipment (helmet, protectors and garments) and used for virtual analysis of the dynamical behaviour under external loading and interaction with the outer world. Not only the kinematic behaviour but also an injury assessment can be provided.

**Discussion and Conclusion** - Virtual analysis has a huge potential for injury prevention by design optimization using verified biofidelic human body model coupled to protective equipment and external infrastructure. The numerical simulation can provide assessment of existing infrastructure and help to design new prototypes.

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## 1.7 The UL Safety Index: A tool for injury prevention and safety promotion

*David S. Wroth, Underwriters Laboratories Inc, Global Government Affairs, Brussels, Belgium.*

**Objectives** - The objective of this paper is to review the results and methodology of the UL Safety Index. The Index takes an algorithm-based approach to address information gaps about health and safety by indexing the relative safety for 187 nations. It quantifies the relative state of safety by measuring the contributions of national resources and institutions, safety systems and frameworks, and the safety outcomes. This information can be used by policy makers and civil society to understand and prioritize actions to improve safety around the world.

**Methods** - A literature review was conducted to identify existing safety indices and provide a basis for comparative analysis. Composite indicators are commonplace tools to rank country performance in a variety of fields. However, the literature is void of an index for unintentional injury. The UL Safety Index uses methods and techniques similar to other composite indicators in variable selection, multivariate analysis, normalization, weighting, aggregation and presentation. From a conceptual model, potential indicators of safety were developed, data sets identified and validated against criteria related to the objectives of the index. The indicators were combined into three drivers and subsequently into the composite indicator. The OECD Handbook on Composite Indicators was used to review the methodology and conduct analyses for consistency, sensitivity and robustness.

**Results** - The Netherlands and South Sudan have the highest and lowest values of the Index respectively. Analysis shows opportunities amongst peer groups to share practices related to safety regulations, voluntary frameworks and interventions to improve outcomes. For example, the Baltic States of Latvia, Lithuania and Estonia all have UL Safety Index and Safety Outcome values in the lower third of the European Community. By analyzing Safety Index indicators, one shared element among these countries is a lower Standards Index score, indicating lower levels of activity in the standards community. A recommendation to improve the relative state of safety of these countries is to increase participation in international standards organizations and technical committees.

**Discussion and Conclusion** - The UL Safety Index uses a proven approach to develop a composite indicator that is transparent, methodologically sound, internally consistent and robust. There are no examples of comprehensive composite indicators of unintentional injury at the national level. The development and validation of such an indicator may improve the implementation of evidence based policies to improve safety, serving as an additional source of information for policy makers and practitioners in decision making to improve safety.

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11:45 – 12:45

## **Break-out session 2: Road Safety**

Location: *Damzaal*

Session moderator: Gerald Furian, Kuratorium für Verkehrssicherheit, Austria

### **2.1 Sustainable safe road traffic in the Netherlands towards 2030: vision update**

*Letty Aarts, SWOV Institute for Road Safety Research, The Hague, The Netherlands.*

**Objectives** - In the '90s of last century, the Netherlands adopted the road safety vision 'Sustainable Safety', which starts from the idea that professionals should cooperate in aiming for a safe road traffic system that is built around the physical and in psychological aspects of humans and is based on scientific knowledge of a range of relevant domains.

The vision has been operationalised, implemented country-wide and evaluated last decades. In 2005, the vision was updated to fit to the developments towards 2020. Now, 12 years later, the vision has been updated again to match the opportunities and challenges that are expected towards 2030, and making use of the latest knowledge. The presentation provides an outline of the vision and an overview of the new elements within the context of the relevant scientific knowledge.

**Methods** - The vision has been updated by starting with an analysis of main road safety problems of the most important mobility groups in the Netherlands. Also expectations about relevant future developments towards 2030 were collected and linked to expected future road safety problems.

For each of the mobility groups, a discussion session was organised with stakeholders to check facts, collect future road safety wishes and ideas on responsible actors that could help realising these wishes. Furthermore, for all elements of the vision a critical review was made in relation to remaining problems and future developments.

**Results** - The results of this process has led to an update of the vision that fits to future challenges and opportunities by widening the scope of road safety principles and the way these principles are elaborated. The vision explicitly balances between the wish to aim for an inherently safe road traffic system without the burden of moving towards a system that does not fit in other ways to our needs and wishes.

Not only road system design measures are addressed, but also process aspects such as responsibility of actors and how to keep improving the system.

**Discussion and Conclusion** - Whether the updated vision will have again impact on road safety policy like the original vision had in the '90 of last century will become apparent in the years to come.

It will be important to disseminate key elements in an appealing way to practitioners and make use of the increasing road safety casualty numbers in order to address the urgency of adequate actions. Furthermore, road safety investments and integration of road safety in other relevant domains will be important.

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### **2.2 SES Risk factor of traffic-related injuries among adolescents**

Mohamed Mouloud Haddak, Université de Lyon, and IFSTTAR (French Institute of Science and Technology for Transport, Development and Networks), Bron, France.

**Background** - Youngster injury is the leading cause of mortality, morbidity and permanent disability in adolescent in the developed world. The objective of this research is to study the joint effect of family and contextual socioeconomic characteristics of teenagers on their risk of road accidents, taking into account their mobility practices, their behaviour and their attitude to risk.

**Methods** - A case-control study was conducted on a population of 601 young people aged 14–17, in 2013. Cases (208 subjects) were selected from the Rhône Road Trauma Registry. Controls (393 subjects) adjusted by age and sex were randomly selected by telephone. L'exposition à la circulation routière est mesurée pour chaque mode de transport utilisé par le budget-temps. The relationships between SES status, urban/rural location, mode of transport, mobility practice, and injury type were determined using conditional logistic regression. Exposure to road traffic is measured for each mode of transportation used by the weekly time budget.

**Results** - The intensive use of motorised two-wheelers holds an essential role in the risk of road accidents between 14 and 17 years (OR = 4.1 [2.3–7.2]), followed by regular cycling (OR = 3.6 [2.0–6.5]) and skating (OR = 1.9 [1.1–3.1]). Socio-economic status of young people is highlighted: students in professional college or young apprentices are at higher risk (OR = 2.1 [1–4.3]). Compared with urban adolescents, adolescents living in rural areas suffer a 1.9 higher risk (1.9 [1.2–3.0]). The links between road risk behaviour and smoking are also underlined (OR = 4.4 [2–9.7]).

**Conclusions** - These results show that adolescent road traffic injury in Rhône is a major health concern, especially among motorcyclist males (40% of the injuries) from rural area and from lower SES. But this study also shows the significant impact of behavioural factors (tobacco, cannabis) on the risk of accident.

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## 2.3 Epidemiology of bicycle-related injuries treated in Emergency Departments in Luxembourg

### Analysis of three years data

Dritan Bejko<sup>1</sup>, Sonia Leite<sup>2</sup>, Jessica Pastore<sup>1</sup>, Scharel Lehnert<sup>2</sup>, Nathalie de Rekeneire<sup>2</sup>,

<sup>1</sup>Luxembourg Institute of Health, Luxembourg; <sup>2</sup>Ministry of Health, Luxembourg.

**Introduction** - Bicycle riding is being promoted in many countries because of its positive effects on health and environment. However the increase of bicycle use might result in an increased number of bicycle related injuries. Reports on reduced numbers of head injuries after compulsory helmet use have pushed many countries to adapt their legislation.

A particular attention is also paid towards safety issues in Luxembourg and a study describing the current situation in the country is necessary. Since 2013 the national injury surveillance system collects information on all injuries treated at the Emergency Departments (ED) of hospitals. Part of the European Injury Data Base (IDB) network this system provides valuable information through its Full Data Set (FDS) and its Minimum Data Set (MDS) on bicycle related injuries.

**Methods** - Data collected in all hospital ED in 2013 and in three out of four hospitals in 2014-2015 were used. In the FDS hospital, all transport injury events for whom the mode of transport was a pedal cycle were selected. In the MDS hospitals, accident narratives were searched for French/German keywords commonly used for pedal cycles. Selected cases were reviewed to find information about helmet use and eliminate false positives.

**Results** - A total of 2269 bicycle-related injuries and 197(8.7%) hospitalizations were registered among residents. For the same period 45 hospitalisations secondary to 164 bicycle accidents were reported from police data.

Yearly Incidence was higher among children and adolescents with a pick among 10-14 years old boys (6.7 ‰ habitants). Among persons ≥50 years old, 18.5% were hospitalized in comparison to 6.8% among the <50 years



old. FDS data show that in 91% of cases the accident was due to a fall and only in 6.5% to a collision with a motor vehicle.

Injuries of the extremities were more frequently seen (58.4%), followed by head injuries (21.4%). Information on helmet use, available in 6.9% of cases, was more often found on ED files of patients with head/multiple injuries (14.8 % versus 4.2%), or among hospitalized patients (15.3% versus 6.0%).

**Discussion** - Bicycle accidents are underestimated by current official statistics. Adolescents have a higher risk of bicycle-related injury but people  $\geq 50$  years old are more often hospitalized.

The predominant mechanism of bicycle accidents are falls and injuries to the extremities are more commonly found. Information on helmet use is found more frequently in the ED files if the patient has a head injury or is hospitalized.

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## 2.4 Road Users' Willingness-to-pay For Road Safety Improvement

*Mohamed Mouloud Haddak, Université de Lyon, and IFSTTAR (French Institute of Science and Technology for Transport, Development and Networks), Bron, France.*

**Background** - Few studies have explored, to date, the issue of the monetary valuation of non-fatal injuries caused by road traffic accidents. The present contribution seeks to raise interest in this question and to estimate French households' willingness-to-pay (WTP) to improve their road safety level.

**Method** - To do so, contingent valuation was conducted on the adult population (aged 18 years and older) of a French administrative Département (Rhône) during the year 2012. A survey was conducted in 2013 by telephone interview from 2,216 inhabitants, randomly selected from the Rhône population. The stratification of the sample was made by geographic region (two areas in Greater Lyon and outside). This study was based on the stated preference method. Respondents were asked their WTP to avoid diverse consequences of a road accident.

More precisely, the questionnaires contained five categories of questions: (1) personal experience in dealing with road accidents, (2) driving behavior and traffic accident risk perception, (3) use of means of transport (4) general socio-economic characteristics, and (5) willingness to pay to reduce the risk of non-fatal injury following a road traffic accident.

Participants had to envisage contributing financially to the implementation of a local project to improve the safety of road users in the Rhône Département. Since the participants were themselves inhabitants of the Rhône, they should feel immediately concerned by a project within their own area for their routine travel.

To test the relationship between WTP and injury severity, three road safety projects were independently presented. Each was characterized by the types of injury against which it offered protection. For each project, respondents were asked whether they were willing to pay for the project to be implemented, if so, the maximum amount of money they were willing to pay each year. If not, zero WTP was assigned, and follow-up questions tried to identify the reasons for this choice; this allowed "genuine zero values", consistent with an economic decision, to be distinguished from protest responses.

**Results**- A Tobit and a type-II Tobit model were estimated to identify factors for WTP. The results highlighted the significant and positive influence of injury severity on WTP. Experience of road traffic accidents seemed to play an important role, positively influencing valuation of non-fatal injury. The young people seemed to be more willing to invest in improving their road safety. As predicted by economic theory, the study confirms the positive relationship between WTP and income level.

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## 2.5 Accident Risk Benchmark – Austria: Combining traffic accident and mobility survey data

*Gerald Furian, Robert Bauer, and Klaus Robatsch, KFV/Austrian Road Safety Board), Vienna, Austria..*

**Background & Objectives** - In 2013/2014 a comprehensive Austrian survey on the mobility behaviour of Austrians was carried out for the first time since 1995. The survey "Österreich unterwegs" was initiated by the Austrian Ministry for Transport and provides mobility behaviour data for Austria, differentiating by means of transport used and the purpose of the distances covered. On the other hand, official Austrian traffic accident statistics and the IDB Austria provide comprehensive data on traffic accidents in Austria. In the light of these newly available results KFV decided to set up a new project on combining the current mobility survey with traffic accident data. Combining these data sources makes it possible to calculate and compare various accident-related numbers for Austria, different Austrian regions as well as for other individual characteristics such as gender and age groups or for the purpose of the journey.

**Methods** - For the mobility survey a household sample was drawn randomly from the Austrian population register. 18,232 households with respondents aged 6 years and above were included in the survey. The survey period was from October 2013 to October 2014. For accident statistics there are two reliable sources: First, the Austrian road traffic accident statistics which is based on a standard accident registration form collected by the Federal Police. The second source is the Injury database (IDB) Austria. The IDB is a prevention oriented injury surveillance system that contains standardised information on the external causes of injuries treated in emergency departments.

**Results** - These three data sources were linked to one another and the following accidental figures for Austria 2014 are calculated: Road traffic accident rate, road traffic fatality rate, road traffic accident time rate, road traffic fatality time rate, road traffic accident rate, road traffic fatality rate, accident cost rate and accident cost-time rate. In a further step, the accident figures were analysed according to several socio-demographic variables like age, gender, counties, regions, seasons, weekdays, daytime etc. Thus, further information on the specific risk of different population segments to be involved in a traffic accident - differentiated by the means of transport used - is provided and is integrated into a benchmark.

**Conclusion** - Combining travel survey data with different data sources for road accidents makes it possible to calculate various accident-related key figures. These key figures are crucial for stakeholders in the field of road safety, enabling them to set priorities regarding the implementation of road safety measures.

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## 2.6 Bikes, Big Trucks & You – Evaluation of a children road safety intervention

*George Ursachi, Agilysis Limited, Banbury, UK, and Cheryl Evans, West Berkshire Council, United Kingdom.*

**Background** - Communities are actively trying to increase walking and cycling as default modes of transportation for short and medium distances through efforts such as safe routes to school, walking school buses and cycling programs.

Although a desirable goal that will increase overall health of communities (Bromell & Geddis, 2016), the safety of children must be intertwined within such efforts. Young children often lack the cognitive skills and experience necessary to negotiate pedestrian and cycling routes safely (Schwebel, et al., 2014). Research identifies risks associated with nearside undertaking, and the lack of awareness of these risks, leading to road fatalities in cyclists (Frings, Rose, & Ridley, 2012). Local data reveals significant upturn in collision risk among children aged 11-15 particularly associated with independent travel for school (Hartley, 2016).

**Aims** - 'Bikes, Big Trucks & You' aims to improve

- Knowledge about how large vehicles move and why this can cause risk to bicycles;
- Route planning to prioritise safer areas and controlled crossings;
- Attitudes towards helmets and high visibility clothing.

**Methods** Bikes, Big Trucks & You' is developed and delivered in partnership between Royal Mail, West Berkshire Council & Road Safety Analysis. Classroom based input and educational resources complement a practical exercise

using an articulated heavy good vehicle to address the significant increase in risk to child pedestrians and cyclists as they move into secondary education and independent travel. Delivered to students aged 9-11 throughout a selection of schools in Berkshire, the intervention is evaluated with three sets of questionnaires: pre, post, and six months' post. A comparison group, with a scaled back, classroom based input, is also used.

**Results** - Overall, the intervention saw important increases in selecting the correct answer. The results were consistent over time, showing important increases in the six months' post survey, compared to the answers from pre-intervention. The knowledge and routes questions, addressing issues such as lights, riding position and distances, saw the best improvements, significant and consistent over time. Attitudes towards helmets and visibility, showed positive movement in the post survey, although a significant change was not sustained in the six months' post survey.

**Conclusion**- 'Bikes, Big Trucks & You' represents a good practice example of how to develop, deliver and evaluate a data driven, research informed, successful intervention in children road safety.

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13:30 – 14:30

### **Break-out session 3: Action on Falls in Older People (part I)**

Location: Grootte Zaal

Session chair: Tatiana Alves, Dr. Ricardo Jorge, Portugal

#### **3.1 Falls in older people: characterization of the occurrence in Portugal: 2013-2015**

*Alves, T.; Rodrigues, E.; Neto M.; Mexia R.; Matias-Dias, C., National Health Institute Doutor Ricardo Jorge, Portugal*

**Introduction and Objectives** - Home and leisure accidents (HLAs) reported by health units of the National Health Service (NHS) are the basis of the injury surveillance system EVITA, coordinated by the Epidemiology Department of the National Health Institute Doutor Ricardo Jorge, in collaboration with the Central Administration of Health Systems.

EVITA allows the characterization of victims, situations and agents involved, identifying dangerous situations or products.

The study aimed to characterize the occurrence of injuries caused by falls in Portuguese older people in the period 2013-2015, improving knowledge and dissemination of the occurrence of this type of relevant Public Health events.

**Methods** - The results presented refer to data collected by the EVITA system during the period between 1 January 2013 and 31 December 2015. The analysis of the data is descriptive, using statistical software SPSS 20.0 (SPSS inc.).

**Results** - During the period 2013 to 2015, EVITA collected data on 4851 falls in people over 65 years of age, related Emergency Department attendances, (out of a total 14828 falls registered). Data shows a higher percentage of females (66.9%) than males (33.1%). "Home" was the place of occurrence with the highest percentage of falls (63.6%), with "bathroom" being the most frequent place inside the house (4.7%). The fall at the same level revealed the highest percentage. In most of the falls (65.3%), the activity at the time of the accident was "other", followed by the "domestic" (14.4%) and leisure (12.4%) activities. The limbs are the part of the body that most often appears as injured (53.6%).

**Discussion and Conclusion** - The analysis of the distribution of falls by sex allows to verify that in the period under analysis females fall twice as much as men, which may be related to the higher prevalence of females in older populations.

The results of the EVITA system illustrate the importance that emergency department have as a place of

registration and detail of HLA data. In view of the known impact of injuries caused by falls on mortality and morbidity, particularly in the most vulnerable, this study contributes to the characterization of this problem and its Public Health relevance, urging appropriate measures and prevention policies, with the possible involvement of several partners.

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### 3.2 Mortality trends for accidental falls in older people in Spain, 1988-2013

*Alicia Padrón-Monedero, Javier Damián, Pilar Martín, Rafael Fernández-Cuenca.*

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*Adelphi University, College of Nursing and PH. Garden City, NY 11530, USA.*

**Objective** - To measure the mortality rates from accidental falls and analyze its trends among adults 65 years and older and the different subpopulations in Spain (1988-2013).

**Methods** - Longitudinal analysis of death rates from accidental falls (1988-2013) stratified by sex for the population  $\geq 65$  years and by age groups (65-74, 75-84,  $\geq 85$ ). A joinpoint regression model was used to identify trend inflection points. The Annual Percent Change (APC) was estimated for each trend.

**Results** - Mortality rates per 100,000 person-years increased from 13.3 to 28.2 for males and 11.4 to 21.5 for females between 1988-2013. Males presented relevant trend increases between 1988-1996 (APC (95% CI) 5.8% (2.6;9.2)) and 2008-2013 (8.3% (4.4;12.4)). Females had relevant trend increases between: 1988-1997 (6.9% (5.3;8.4)) and 2009-2013 (9.5% (5.9;13.2)). There were no trend differences between sexes. 65-74 years old males had a uniform increase (0.5% (0.0;1.0)). Those aged 75-84 years showed two trend increases: 1988-1997 (5.5% (2.5;8.5)) and 2006-2013 (6.3% (3.5;9.2)). Men  $\geq 85$  years presented three relevant trends 1988-1997 (6.2% (1.9;10.7)) 1997-2008 (-2.8% (-5.3;-0.3)) and 2008-2013 (12.0% (6.0;18.3)). Trends for those  $\geq 75$  years were remarkably higher than for those aged 65-74. Women aged 65-74 years had a clear decrease between 1995-2001 (-8.4% (-14.0;-2.4)). Those aged 75-84 presented trend increases between 1988-1997 (7.0% (4.1;9.9)) and 2009-2013 (8.1% (1.6;15.1)). Women  $\geq 85$  had three relevant trends: 1988-1996 (8.2% (3.9;12.7)), 1996-2007 (-3.9% (-6.0;-1.9)) and 2007-2013 (10.4% (6.4;14.6)).

**Discussion and Conclusion** - Recent mortality trends from accidental falls increased in men  $\geq 65$  years and women  $\geq 75$  years. The largest increase is for  $\geq 75$  years old for both sexes. These results recommend the implementation of specific preventive programs.

### 3.3 Effect of comorbidities on association between age and mortality after hip fracture.

*A Padrón-Monedero, Pilar Martín, Elena V. Martínez-Sánchez, R Fernández-Cuenca. National Centre for Epidemiology, Instituto de Salud Carlos III, Madrid, Spain and Adelphi University, College of Nursing and PH. Garden City, NY 11530, USA.*

**Objectives** - To assess whether the association between age and mortality after an accidental fall-related hip fractures in an elderly population remains after adjusting for the individual Elixhauser comorbidities. It also tests the hypothesis that some potentially controllable comorbidities could be associated with an increased mortality.

**Methods** - Cross-sectional study of the population  $\geq 65$  years old hospitalized in Spain in 2013 with a diagnosis of fall-related hip fracture in the Basic Minimum Set Data (BMSD). The impact of Elixhauser comorbidities on the association between mortality and age groups (65-74, 75-84,  $\geq 85$ ) was analyzed by logistic regression models with progressive adjustment for demographic variables and comorbidities introduced individually.

**Results** - We identified 31,884 patients, 5.5% of which died during hospitalization. Compared with those 65-74 years old, the multivariate odds ratio (OR) of mortality for those 75-84 and  $\geq 85$  years old decreased from 2.23 (95% CI: 1.71-2.90) and 4.57 (95% CI: 3.54-5.90) to 2.11 (95% CI: 1.61-2.77) and 4.10 (95% CI: 3.14-5.35) respectively after adjustment for comorbidities. The OR of mortality for men was 1.77 (95% CI: 1.58-1.98)

compared to women. The comorbidities with higher OR for mortality were: congestive heart failure (OR: 3.88; 95% CI: 3.42-4.41), metastasis (OR: 3.44; 95% CI: 2.27-5.20), fluid and electrolyte disorders (OR: 2.95; 95% CI: 2.47-3.52), coagulation deficiencies (OR: 2.87; 95% CI: 2.08-3.96) and liver disease (OR: 2.40; 95% CI: 1.82-3.17).

**Discussion and Conclusion** - The association between age and mortality after hip fracture remains after adjusting for numerous comorbidities. However some potentially controllable disorders are associated with an increased risk for mortality, thus improving their management could benefit survival.

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### 3.4 Increased care demand and medical costs after falls in long-term care facilities: a Delphi study

*Carolyn Shanty Sterkea,b\*, Martien J Pannemanc, Vicki Erasmusa, Ed F van Beecka, a Department of Public Health, Erasmus University Medical Center, PO Box 2040, 3000 CA Rotterdam, The Netherlands ; b Aafje nursing homes, department of physiotherapy, PO Box 9293, 3007 AG Rotterdam, The Netherlands; c VeiligheidNL, PO Box 75169, 1070 AD Amsterdam, The Netherlands.*

**Objectives** - There is compelling evidence that falls in nursing homes are preventable. However, insufficient management support, staff time, and funding often hinder proper implementation of interventions to prevent falls. The aim of this study is to estimate the increased care demand and medical costs caused by falls in nursing homes.

**Methods** - We performed a three-round Delphi study with a panel of experts (nineteen nurses, nine physiotherapists, eight occupational therapists, and five physicians) all working in nursing homes in the Netherlands.

The experts received three online questionnaires to estimate the extra hours of care needed during one year after the fall. This was estimated for ten falls categories with different levels of injury severity, in two scenario's, i.e., a typical-case, and a worst-case scenario. We calculated the costs of falls by multiplying the mean amount of extra hours that the participants spent on the care for a resident after a fall with their hourly wages.

**Results** - In case of a non-injurious fall the sum of extra time spent on the faller by nurses, physiotherapists, occupational therapists, and physicians is on average almost five hours. Expressed in euro's that adds to € 193. The extra staff time and costs of falls increased with increasing severity of injury. A fall without physical harm but resulting in psychological consequences like fear of falling costs 39 hours on extra staff time and adds € 1355 to the costs.

In case of a fracture of the lower limb the extra staff time increases to 132 hours, expressed in euro's that is € 4604. In the worst-case scenario of a fracture of the lower limb, the extra staff time increases to 284 hours, expressed in euro's that is € 10170.

**Discussion and Conclusion** - Falls in nursing homes cost a lot of extra staff time spent on care.

Even for non-injurious falls and for falls with psychological consequences only.

Managers should take this into consideration when they have to weigh the fall-related extra work load against the investment in staff time needed for falls prevention.

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### 3.5 Cost-effectiveness of falls prevention in nursing homes

*Panneman MJ1, Sterke CS2, Blatter B1, Polinder S2, Van Beeck EF2, 1VeiligheidNL, Amsterdam 2Department of Public Health, Erasmus University Medical Center, Rotterdam.*

**Background and objective** - More than 50% of nursing home residents experience one or more fall incidents within a year and about one third of the cases result in injuries, leading to increased cost of treatment and care.

Effective falls prevention programs have been developed to reduce the number of accidents within long-term care institutions.

We investigated the direct medical costs and indirect costs of falls among institutionalized elderly in the Netherlands and conducted an economic evaluation of investments in effective falls prevention in this setting.

**Methods** - We conducted a cost-effectiveness analysis from a health care perspective. Falls and fall-related injury data of nursing homes were extracted from the Dutch National Prevalence Measurement of Care Problems (LPZ-2012-14). Injury data were extracted from the Dutch Injury Surveillance System (DISS, VeiligheidNL), a continuous monitoring system at Emergency Departments (ED) in which injury diagnoses and injury mechanisms are registered. By combining these two data sources we could estimate the annual number of falls, fallers and injuries in Dutch nursing homes.

Information on fall-related treatment and health care costs within the nursing home was retrieved from a Delphi study among professionals working in this setting. Costs of injuries treated in hospitals were calculated using the Dutch Burden of Injury Model. Intervention costs (based on time spent by professionals on fall preventive activities) were inventoried by questionnaires in institutions which participated in a fall preventive program. An estimate of the effectiveness of falls prevention programs in nursing homes was based on a review of the literature.

We developed a quantitative model to calculate the balance between investments (i.e. intervention costs) and benefits (i.e. less falls and injuries and related savings on health care expenditure; less Disability Adjusted Life Years (DALYs)) of the prevention of falls in long-term care facilities in the Netherlands.

**Results** - In the Netherlands annually 200.000 fall accidents occur that result in € 105 million additional health care costs (€ 80 million within nursing homes care and €25 million within hospitals).

We calculated the savings of a fall prevention program, nationwide at the expense of €20 million. Assuming the fall reduction of 30% (60.000 falls, 15.000 injuries) gives a saving of €30 million with a health benefit of 1500 DALY's prevented.

**Discussion** - Fall accidents in nursing homes lead to more work load and costs, which can be prevented by a fall preventive program. The model gives insight in the balance between investments and benefits of falls prevention in long term facilities.

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13:30 – 14:30

#### **Break-out session 4: Action on child safety**

Location: Dam Zaal

Session chair: Sheila Merrill, United Kingdom

#### **4.1 Training on design, installation and maintenance of safe and challenging play areas**

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**Objectives** - Play spaces provide crucial opportunities for children to play. Besides improving children's physical and psychological health, safe and innovative play spaces make neighbourhoods more attractive places to live. The staff of the agents involved in the play spaces, from its conception and design stage until its installation and maintenance, do not possess always adequate knowledge to create and manage user friendly play areas.

This research aims to develop an innovative training in the design, installation and maintenance of safer and challenging play areas, offering free and open educational resources. It establishes a pioneering cooperation between organisations from different fields of training, industry, research and societal groups.

**Methods** - The LEAN E-LEARNING DESIGN method was used as the starting point to create this course. This method is a new application of the Lean Canvas tool for training courses.

The key elements of the methodology to develop this training course were: Target audience; Needs of the potential users; Value proposition (competencies); Course structure; Metrics evaluation system; Didactic proposal; Technological proposal; Unique values; Sustainability proposal.

**Results** - The result has been the online course SAFERPLAY in six European languages, with free and open access via Internet, commonly known as BOC (Badged Open Course), on design, installation and maintenance of play areas.

Its pedagogical design is focused on five key tools: learning, activities, resources, interactivity and assessment. It covers topics such as child and environment, strategical planning, balance between risk and play, sustainability, legal framework and safety standards, installation, inspection and maintenance.

Two itineraries adapted to different user profiles can be taken. Students may also choose modules from any of the itineraries according to their interests and needs. In addition to training, this innovative tool provides interactive forums for users to facilitate the exchange of experiences and collaborative learning, promoting the creation of the SAFERPLAY community.

**Discussion and Conclusion** - SAFERPLAY project has developed a pioneer and innovative OER using innovative ICT-based methodologies, in order to provide training on design, installation and maintenance of safe and challenging play areas. SAFERPLAY is customised to the needs of the staff of the stakeholders involved and benefits all the parties involved.

This innovative system introduces a new learning methodology. The user can become part of a multidisciplinary network of professionals: the SAFERPLAY community.

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## 4.2 Links between multiple risk behaviors and injury at fifteen-year-olds

*Tina Medved, National Institute of Public Health, Ljubljana, Slovenia.*

**Objectives** - The period of adolescence is time of rapid change, taking on new social roles and testing different behaviors, among which also those with certain risk factors (smoking, alcohol and drug abuse, aggressive behavior etc.). Young people who are prone to problem behavior are more likely to adopt risky lifestyles that lead to negative health consequences, including injuries. According to the Problem Behavior Theory different risk behaviors in adolescence combine with each other in a so-called multiple risk behaviors (MRBs), which greatly increase the risk of injuries.

The aim of this work was to evaluate the influence of MRBs among adolescents as well as other selected factors on development of injuries.

**Methods** - The analysis included data from international cross-sectional study "Health Behaviour in School-Aged Children" (HBSC), conducted in 2014 on 15-year-olds from Slovenia. We used binary logistic regression for our analysis. Observed outcomes were injuries in the last 12 months, which have required medical treatment.

There were 24 independent variables included: MRBs, individual risk behaviors (smoking, drunkenness, use of marijuana, fighting), some sociodemographic indicators, poor self-perceived health, frequent psychosomatic symptoms, overweight, physical activity and perceived support of nearby.

**Results** - The analysis included 1615 15-year-olds. In the multivariate analysis, the odds for injuries were significantly greater in young people with MRBs (OR 4,19;  $p < 0,001$ ), those who, in the past year, participated in

fights at least once (OR 1,30; p=0,016), boys (OR 1,30; p=0,016), adolescents living in foster homes/institutions etc. compared to those who live in traditional families (OR 4,07; p=0,011), every day for at least 60 minutes physically active (OR 1,94; p<0,001), at least 2-3 times a week vigorous physically active in their free time (OR 1,36; p=0,025), young people with poor perceived support from family (OR 1,36; p=0,025), poor self-perceived health (OR 2,39; p=0,046) and those who have been bullied in the last year (OR 1,43; p=0,036). Adolescents with perceived poor peer support had significantly lower odds for injury (OR 0,40; p=0,001).

**Discussion and Conclusion** - The findings of our study indicate the need for innovative programs that address several high-risk behaviors. It would be necessary to develop and extend preventive measures and health promotion programs that focus on common safeguard factors: self-esteem, self-efficacy and resilience in risky behavior, training young people in skills of risk management and life skills.

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### 4.3 Take Action Today – Put Them Away

*Sheila Merrill, The Royal Society for the Prevention of Accidents (RoSPA).*

**Background** - Every year thousands of infants need medical care for poisoning from products commonly found around the home. Whilst long term injury is rare, the distress caused and the impact on hospital services could be avoided by increased awareness. Because of their inquisitive nature, most accidental poisonings happen to children under-five, predominantly aged one to three.

**Description** - Supported by the United Kingdom Cleaning Products Industry **RoSPA set up a major pilot programme to prevent child accidents in the home from cleaning products.** Launched in six cities and delivered through at least 120 local partners, the programme provided risk assessment tools and materials, which equipped both professional and consumers with skills and knowledge to ensure they were able to recognise potential dangers. The scheme also provided families with a free handy magnet note pad featuring safety advice.

**Results** - Professionals benefitted from receiving education, while 240,000 families received advice and resources. Media coverage reached over 4 million people via television, radio and newspapers. Social Media was also at the heart of this campaign.

Evaluation included a survey of both practitioners and families with positive feedback in the awareness of dangers and behaviour change. People were receptive to educational resources that fit into their lifestyle and home. A majority of families took action or shared safety messages after encountering the programme.

Feedback gathered at focus groups with parents highlighted a measurable impact on behaviour change. 98% said they liked the campaign materials and there were a variety of positive comments made including "This is a great campaign to help raise awareness of the dangers of cleaning products" and "Good. It makes you want to make your home safer."

Indications show that in the cities targeted, there has been a drop in the number of children attending emergency departments due to poisoning, with two cities showing a 50% drop in admissions and another a 25% drop in admissions.

**Conclusions** - The programme educated professionals and families on poisoning dangers in the home and has seen an initial reduction in hospital admissions in target areas.

People were more receptive to educational resources that fit into their lifestyle and home. A majority of families also said they had taken action or shared safety messages after their encounter with the programme.

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### 4.4 Trends of Foreign Body injuries: comparison between Italian and U.S. official data



Giulia Lorenzoni<sup>1</sup>, Danila Azzolina<sup>1</sup>, Solidea Baldas<sup>2</sup>, Dario Gregori<sup>1</sup>, <sup>1</sup> Unit of Biostatistics, Epidemiology and Public Health, Department of Cardiac, Thoracic and Vascular Sciences, University of Padova, Italy

<sup>2</sup> Prochild ONLUS, Trieste, Italy.

**Objectives** - Foreign Body (FB) injuries in upper aero-digestive tract in children represent a severe public health burden. Epidemiological surveillance is crucial to develop ad hoc public health interventions to reduce FB injuries burden.

The aim of the present study was to examine long term trends (2001-2013) in U.S. and Italy of incidence rates of FB injuries (ingestion and aspiration) in children aged 0-14 years.

**Methods** - Italian data were derived from hospital discharge records (HDR, hospitalized FB injuries); cases of interest were identified using ICD9-CM codes reported in the main and secondary diagnosis fields. U.S. data were derived from the National Electronic Injury Surveillance System (NEISS), where cases of aspiration and ingestion of consumer products treated in U.S. Emergency Departments (ED) are reported. European Injury Data Base (IDB) data were not included in the analysis because of lack of proper definition and comparability with HDR and NEISS data.

Yearly rates of FB injuries were calculated according with data on resident population. A non-parametric Spearman test was performed to test if significant trends exist. Engle-Granger Augmented Dickey-Fuller test was performed to compare U.S. and Italian trends.

**Results** - Significant decreasing trends of FB aspiration were detected in both Italy and U.S. (p-value 0.005 and 0.001, respectively), while trends of FB ingestion remained stable over the period considered. U.S. rates of both FB ingestion and aspiration were higher compared to Italian ones.

**Discussion and Conclusion** - The fact that U.S. rates were found to be higher than Italian ones might depend on differences in data collection procedures: Italian data included only hospitalizations for FB injuries, while U.S. data included visits at ED.

Lack of standardization in data collection procedures results in difficulties in a direct comparison of data from different collection systems and in estimating the actual burden of FB injuries. Further efforts should be made for the development of consistent surveillance procedures.

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#### 4.5 Equitable safe road environments for child pedestrians: Where are school crossing guards?

Alison Macpherson, Linda Rothman and Andrew Howard, School of Kinesiology and Health Sciences, York University, Toronto, Canada.

**Objective** - The burden of child pedestrian motor vehicle collisions (PMVC) is high, with pedestrian collisions representing 33% of child road traffic fatalities versus only 15% in adults.

There is substantial evidence that children with lower socioeconomic status are at increased risk of PMVC. Previous research has indicated that modifications to the built environment have the potential to reduce socioeconomic inequities in childhood injuries. It is unknown whether road safety feature installation differs throughout the City of Toronto and around schools by socioeconomic status (SES). School crossing guards are related to more walking to school and may have beneficial safety effects; however, it is unknown whether there are differences in guard installation location by SES.

The objective of the study was to determine whether school crossing guard installation is associated with school census area SES.

**Methods** - A cross-sectional observational study was conducted in the Spring, 2011, in Toronto, Canada, at 116 elementary schools. Trained observers counted the number of children walking to school during morning drop-off.

The proportion of families falling below the after tax low income cut-offs (ATLICO) as defined by Statistics Canada was obtained for the school census dissemination area from the 2006 Canadian census.

The total numbers of students attending the school were obtained from the Toronto District School Board. Binary logistic regression was conducted to determine the relationship between presence of a school crossing guard near the school and ATLICO, controlling for the numbers of children observed walking and the school size.

**Results** - Over 60% of schools had no crossing guards observed (n = 71). The odds of having a school crossing guard was double for each 10% decrease in the percentage of families falling below the after tax low income cut off near schools (OR 2.01, 95% CI 1.13, 3.56) after controlling for the numbers of children observed arriving to school walking and the school size.

**Discussion/conclusion** - Schools located in higher income areas are more likely to have school crossing guards. The implementation of school crossing guards are by community request in the City of Toronto, and the process of obtaining a guard must be examined to ensure equitable guard placement at locations where they are needed. The association between SES and the presence of other traffic safety features (e.g. traffic calming), also need to be examined to potentially reduce the socio-economic gradient of child PMVC .

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#### **4.6 The Decline in Active School Transportation: A Systematic Review of the Correlates of AST and Change over Time**

*Alison K. Macpherson, Linda Rothman, Ron N. Buliung and Tim Ross, School of Kinesiology and Health Sciences, York University, Toronto, Canada.*

**Objectives** - The use of active school transportation (AST) has been in steady decline for the last 50 years, concurrent with an increase in the prevalence of childhood obesity and the emergence and earlier onset of various other childhood chronic diseases. There are immediate and lifelong benefits related to AST, as an active lifestyle in childhood could influence physical activity and transport decisions throughout adulthood.

Injury prevention researchers have long advocated for active transport as one way to reduce traffic and child pedestrian injuries. During the last decade, children's school transportation literature has grown substantially; however, no comprehensive systematic review of thus literature exists which can help explain the decreasing trends of AST.

The objectives of the project were:

- To identify correlates of AST in North America;
- To discuss how these correlates may have affected changes in AST over time.

**Methods** - A systematic review was conducted of 7 electronic databases from 1990 to July, 2016 to identify statistically significant associations between correlates with AST.

Correlates were organized into the 4 layers of the social-ecological model (individual, social and built environment and policy), and categorized as having no, weak, moderate and strong associations with AST, according to an algorithm related to number of studies and the direction of the association (i.e. negative or positive).

**Results** - Sixty-three papers met inclusion criteria; with all but two being cross-sectional studies. Studies generally evaluated individual, school and built environment correlates, with only 5 evaluating policy and AST.

Distance to school was the only correlate exhibiting a consistent strong negative association with AST. Moderate positive associations were found for age, positive parent/child attitudes to AST, non-Caucasian ethnicity/race (school and individual), lower parent education and lower household income. Associations of other correlates with AST were inconsistent.

**Discussion and conclusions** - Several postulated explanations exist related to temporal changes in correlates contributing to decreasing trends in AST. Distances to school have increased due to rapid suburbanization,

population changes and fiscal restraints resulting in school closures, and policies related to school choice outside of the home neighbourhood.

The proliferation of a culture of automobility has affected parent perceptions related to road safety, and contributed to the current parenting model that emphasizes adult supervision. Greater car access over the past few decades has also contributed to automobile dependence. Inconsistent study findings were related to variability in AST outcome measurement, locations, study ages and spatial measurement units. More rigorous studies are needed, including longitudinal designs to examine the effects of directed interventions and policies related to AST.

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#### 4.7 Using child safety restraints: how do parents understand the costs and benefits?

*Diana Dulfab, Oana Maria Blagaab and Mara-Paula Timofeab , a Department of Public Health, College of Political, Administrative and Communication Sciences, Babes-Bolyai University, Cluj-Napoca, Romania; b Center for Health Policy and Public Health, College of Political, Administrative and Communication Sciences, Babes-Bolyai University, Cluj-Napoca, Romania.*

**Objectives** - The rates of child safety restraints (CSR) use are low in Romania compared to other EU countries. The use of CSR became mandatory and had more clear requirements in September 2014, but still, half of the children injured in car crashes did not wear any type of restraint. Our objective is to identify and describe the costs and benefits of using or not using child safety restraints; as part of a larger study which looked at parents' perceptions on CSR, in a sample of Romanian parents. Parents' perceptions and attitudes towards CSR are important factors in determining strategies to increase the use of CSR, therefore understanding the costs and benefits are important for future prevention efforts.

**Methods** - A total of 12 interviews were conducted with parents who self-identified as users or non-users of safety seats for their children when travelling in a car between August and November 2016. Purposive sample was used to recruit parent drivers after kindergarten hours, in locations previously used for an observational study (Rus, Peek-Asa, Jurchis, & Chereches, 2016). This qualitative study approach was used to further explore parents' experience with child safety seats and support future prevention efforts, one of the main themes identified being "understanding costs and benefits of using child safety restraining systems are a key to increase uptake and regular use of CSR".

**Results** - Both groups of parents acknowledge that the benefits of using CSR exceed the costs, but we can still observe a low rate of using CSR, or not using all the time. Low risk perception, children's discomfort and whims, breastfeeding and the prices of the seats were identified as reasons for not using child safety restraint all the time. Benefits of using child seats were mainly related to child safety but also the psychological comfort of parents; it is comforting to know that the child is safe and that parents can drive without this concern. CSR systems were perceived as being useful and trustful mechanisms, but still, it was found hard to handle by some of the parents.

**Discussions** - Besides tangible costs, our study identified also intangible costs and barriers like children whims and discomfort; and parents' difficulty in handling the seat. These findings indicate the need for hands-on education or counselling sessions for parents, which was proved effective in other studies (Tessier, 2010; Rothendtein, Howard, Parkin, Khambalia, & Macarthur, 2004), to increase the use of CSR.

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#### 4.8 Teaching Children by Playing Hide And Seek in Trucks' Blind Spots

*Martin Winkelbauer & Robert Bauer, KFV, Austria.*

**Objectives** - In urban areas, road traffic accidents of pedestrians and bicyclists (vulnerable road users) hardly involve buses and trucks. However, such collisions are extreme severe and make up 20% of the fatal collisions.

Modern trucks and buses have very good systems for indirect view (e.g. six mirrors mandatory for heavy goods vehicles). Nevertheless, an unintended perception triggered by peripheral vision through one of the mirrors is very unlikely, which means that drivers have to look into the right mirror at the right time to perceive VRUs. There are technical solutions, but their market penetration is low.

The activity described here aims at combatting these collisions by sustainably informing children of about 10 years of age about the issue and, hence, giving them the opportunity to protect themselves from being overlooked.

**Methods and Results** - The proposed intervention has two parts. In a classroom session of about 30 minutes, children receive information about blind spots around trucks and buses. Instructors explain the meaning of heavy vehicles beeping in reverse gear (a particular Austrian rule) and the consequences of ignoring this signal. Power points are used as well as a video, which tells the story of a girl going to school by bike.

In the practical part, children shall experience the blind spots around large vehicles. A truck and a bus are placed on a parking lot with enough space around; the actual blind spots are marked on the floor. The task is called playing "hide and seek". Two children take the driver seat of truck or bus and they are advised to look for rest of the group, who is asked to hide around the vehicle. One blind area after the other (e.g. behind the vehicle, on the right side and in front of a truck) is visited with the group, while the two children on the driver seat are replaced about every two minutes.

Children gradually get to understand the meaning of the floor markings. After half an hour, all children know which areas a truck driver is able to see and where the areas are, they have to avoid.

**Discussion, Conclusions** - The activity was very well assessed by the children. It received extremely good feedback from their teachers. Surprisingly, the children having participated in the activity even spread their new skills and information among schoolmates without having been encouraged to do so. A scientific evaluation has not yet been carried out, but is planned as soon as the activity is rolled out on a regular basis.

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#### 4.9 National Actions to prevent accidental injuries among children and youth 2010-2016

*Ulla Korpilahti<sup>1</sup>, Pirjo Lillsunde<sup>2</sup>, <sup>1</sup>National Institute for Health and Welfare, <sup>2</sup>Ministry for Social Affairs and Health, Finland.*

**Objectives** - Since 2009, National Institute for Health and Welfare, THL has coordinated Finland's National Action Plan for Injury Prevention among Children and Youth under 25. The work is geared towards preventing accidental injuries and reducing health losses from suicidal tendencies.

**Methods** - The goals and measures of the National Action plan are focused on the five most common causes of health losses through accidental injuries and self-harming and suicides as well as on the key growth and operating environments of childhood and adolescence. Since 2013 National Action Plan has been a part of Target Program for Prevention of Home and Leisure Accidental Injuries 2014–2020, under the Ministry of Social Affairs and Health.

**Results** - In the 2010s the annual number of accidental injury fatalities under 25 years has continued to decrease. Still an average of 114 children and adolescents in Finland die as a result of an accidental injury annually and 13 800 persons under 25 require inpatient care. The majority of accidental fatalities (83 %) involve young people aged 15 to 24. Each year, an average of 102 persons aged 15–24 years commit suicides, and about 700 persons in the same age group require inpatient care because of self-harming (2012–2014.)

An evaluation of National Action Plan in 2016 performed by representatives of expert organizations covered 210 measures's implementation in 2010–2016. Of these, 32 had been completed and 71 had progressed well. In 65 measures, action was still in its early stages and 20 measures had remained unimplemented. An injury death or disability has a permanent impact on the life of a child or an adolescent himself or herself and on family and friends

on many ways. The annual costs for inpatient care of persons under 25 resulting from accidental injuries or self-harming are amount to almost EUR 43 million.

**Discussion and Conclusion** - Systematic prevention and monitoring of injuries and action coordination will create a framework for effective promotion of safety, which will be supported by a variety of projects. In the near future, measures on National Action Plan will be aimed particularly at the age group 15 to 24, where the incidence of accidental injuries and suicides is higher than in younger age groups.

The reduction and prevention of the use of disciplinary violence against children is added to the National Action Plan. In 2017 the new implementation paper for 2017–2021 is going to be compiled.

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13:30 – 14:30

### **Break-out session 5: Injury data analysis (Part I)**

Location: Groote Zaal

Session chair: Robert Bauer, Kuratorium für Verkehrssicherheit, Austria

#### **5.1 To survey or to register, is that the question for estimating burden of injuries?**

*Dritan Bejko<sup>1</sup>, Maria Ruiz-Castell<sup>1</sup>, Bjarne Larsen<sup>2</sup>, Rupert Kisser<sup>3</sup>, Wim Rogmans<sup>4</sup>, Ronan A Lyons<sup>5,6</sup>, Huib Valkenberg<sup>7</sup>, Samantha Turner<sup>5</sup>, Robert Bauer<sup>8</sup>, Gabrielle Ellsessaer<sup>9</sup>; <sup>1</sup>Luxembourg Institute of Health, Luxembourg, <sup>2</sup>National Institute of Public Health, Denmark, <sup>3</sup>Eurosafe, Austria, <sup>4</sup>Eurosafe, The Netherlands, <sup>5</sup>Farr Institute Swansea University, Medical School, UK, <sup>6</sup>Public Health Wales NHS Trust, UK, <sup>7</sup>Consumer Safety Institute, The Netherlands, <sup>8</sup>Austrian Road Safety Board, Austria; <sup>9</sup>Landesamt Brandenburg für Umwelt, Gesundheit und Verbraucherschutz, Germany.*

**Introduction** - Injury is a major cause of mortality and morbidity. Burden of hospital treated injuries is best estimated using emergency department's (ED) registry based data. Population surveys, despite recall and/or selection bias, remain the only source of information for injury incidence calculation in many countries.

The aim of this study is to compare the yearly incidence of home, leisure, traffic injuries estimated by survey-based and register based methods and to combine information from both sources for a complete image of injury burden among adults in Luxembourg.

**Methods** - Data came from the European Health Examination Survey (EHES) and the European Health Interview Survey (EHIS). EHES data on 1529 residents aged 25-65, were collected between february 2013 and january 2015. EHIS data on 4004 residents  $\geq 15$  years old, of whom 2926 were 25-65 years old, were collected between february 2014 and december 2014. Participants were asked about last year's home, leisure and traffic injuries and treatment received for the most serious injury. Luxembourg ED registry based data supplied to the European Injury Data Base (IDB) in 2013 was used for the comparison. IDB, EHES and EHIS are part of the BRIDGE-Health (BRIdging Information and Data Generation for Evidence-based Health Policy and Research) development.

**Results** - Due to home, leisure and traffic injuries there were 1 133 inpatients and 15 810 outpatients 25-65 years old registered in the IDB data base in 2013. Among EHES and EHIS participants there were 70 inpatients, 177 outpatients, 140 patients treated out of hospital and 114 not receiving a medical treatment.

The incidence of hospital treated injuries was 57 ‰ habitants according to IDB, 65 ‰ habitants (95% CI 53-79) according to EHES and 51 ‰ habitants (95% CI 43-60) according to EHIS. The incidence of hospital admissions was 3.7 ‰ habitants from IDB, 12 ‰ habitants ((95% CI 8-19) from EHES and 17 ‰ habitants (95% CI 13-22) from EHIS.

**Discussion** - The overall incidence estimate of hospital treated injuries from both methods does not differ significantly but surveys overestimate the number of hospital admissions, probably due to telescoping bias.

With only about half of injuries treated in hospitals, the combination of both methods gives a better estimate of Injury burden but is limited to selected age groups and types of injury.

For injury prevention IDB registries provide a wealth of information collected in a cost/effective way.

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## 5.2 E-bikes; too fast, too furious! - An analysis of e-bike and conventional bicycle related accidents

*H.P.A.M. Poos, T.L. Lefarth, J.S. Harbers, I.H.F. Reininga, M. el Mounni, K.W. Wendt*

*Department of Trauma Surgery, University Medical Center Groningen, The Netherlands.*

**Objectives** - Bicycles are a popular mean of transportation in the Netherlands. In 2016, e-bike sales were almost 30% of total national bicycle sales and nowadays >10% of the bicycles used is an e-bike.

E-bikes are heavier and faster than normal bicycles, which could increase the risk of greater injury when having an accident. However, there is a lack of literature on this important issue. We performed a prospective cohort analysis to investigate differences in injury severity between e-bikers and conventional bicyclists.

**Methods** - An ongoing prospective cohort study of patients with an e-bike related accident, treated at the Department of Trauma Surgery of the University Medical Center Groningen, was started from June 2014. Patient characteristics were collected. The Abbreviated Injury Scale (AIS), Injury Severity Score (ISS), mortality rate and hospital care needs were determined.

Differences between e-bikers and conventional bicyclists were analyzed performing a matched pair analysis. Groups were matched based on age, gender and occurrence of comorbidity.

**Results** - From June 2014 to May 2016, 475 patients suffered from a bicycle accident: 107 were e-bikers (22.5%). Mean age of e-bikers and conventional bicyclists was respectively 65 and 39 years, and comorbidity was more frequently present in e-bikers. E-bikers had a significantly higher injury severity compared to conventional bicyclists. Furthermore e-bikers suffered from more severe injuries of the head, face, upper and lower extremity. E-bikers were more often and longer hospitalized, they also needed surgery more frequently. After propensity score matching the e-bikers were two times more often poly-traumatized, suffered from more severe head injuries and needed longer hospitalization than conventional bicyclists.

**Conclusion** - E-bikers were more severely injured, sustained more often multiple injuries and suffered from more severe head injury than conventional bicyclists when they were involved in an accident. This increased the need for medical care.

Preventive measures such as driving lessons and helmet use need more attention. Furthermore, physicians should be aware of more severe injuries when a patient with an e-bike related bicycle accident is treated.

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## 5.3 Costs of road crashes in Europe

*Wim Wijnen, SWOV Institute for Road Safety Research; Annelies Schoeters & Ward Vanden Berghe, Belgian Road Safety Institute BRSI, Robert Bauer, Austrian Road Safety Board, Wendy Weijermars (SWOV) and Heike Martensen (BRSI).*

**Objective** - This paper presents an analysis of official road crash estimates in European countries, aimed at identifying differences in costs estimates across countries and explanations for these differences. Next, standardized cost estimates for European countries are developed. The research was carried out within the European Horizon2020 project SafetyCube, aimed at developing a road safety decision support system including cost-benefit analysis.

**Method** - Data on road crash costs was collected through a survey among 32 European countries. In addition, data were obtained from literature on costs in individual countries. Prior to the survey, a framework for assessing costs of road crashes was developed that includes a categorization of costs components and methods. The framework provided the basis for the questionnaire, which concentrated on costs per casualty and crash by severity level, total costs, costs per cost component, valuation methods and definitions. Standard European cost values, by cost component and severity level, were developed using costs estimates from countries that apply internationally recommended methods. By applying these values to other countries ('value transfer'), a harmonized set of cost estimates in European countries was developed.

**Results** - Total costs of crashes vary between 0.4% and 4.1% of GDP (n=31). This large variation is mainly explained by differences in valuation methods, cost components included and the extent to which underreporting is taken into account. Injuries have a large share in total costs: on average 2.4 times higher than the share of fatalities

Costs per fatality vary between €0.7 million and 3.0 million per fatality. Costs of a serious injury range from 2.5% to 34% of the costs of a fatality and costs per slight injury are 0.03% to 4.2% of the costs of a fatality. Variation in these costs is explained by differences in methods, reporting rates and definitions of a serious and slight injuries. On the basis of the harmonized European values obtained from the value transfer method, and taking into account underreporting, total costs in the EU are estimated at at least 3% of GDP. If the official cost figures are applied, total costs are more than two times lower.

**Discussion and conclusions** - The economic burden of road crashes in Europe is very substantial. However, official road crash cost figures often underestimate the 'real' costs because of methodological deficiencies. It is recommended to use the internationally recommended methods in future cost studies in individual countries.  
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#### **5.4 Alcohol and drugs – possibilities for screening and intervention at Emergency Departments**

*Neeltje Vogels, Trimbos-institute, Utrecht and Karin Klein Wolt, VeiligheidNL, Amsterdam, The Netherlands..*

**Objectives and method** - A large part of patients who are treated at an emergency department (ED) is under the influence of alcohol or drugs. The ED could be a good place to screen patients and to submit them -if necessary- to brief interventions concerning their substance abuse. To find out if screening and interventions regarding alcohol and drug abuse are feasible in the Netherlands, Trimbos-institute and VeiligheidNL conducted an exploratory study in 2015.

This study resulted in two recommendations, which have been followed up in 2016: Firstly, a toolbox with different methods for screening and intervention has been developed and secondly, the use of the toolbox was tested in different hospitals in so called pilot projects.

**Results** - During these pilots it became clear that although ED's were interested to do something about alcohol and/or drug abuse, it appeared not to be easy to carry out, mostly because of secondary conditions that could not be met or those conditions were hard to formulate.

Still, based on the results of the pilots a list of conditions has been drafted in order for the screening and brief interventions to succeed. These conditions are:

- **Ownership:** A project can only succeed if the head of the ED is involved and convinced of the added value of the project. Next to that it is also important to get a project manager involved who owns the project, together with the head of the ED. This will also result in more commitment of other ED-staff.
- **Keep it simple:** Because of the workload and stress at ED's, it is important that all extra work is simple and will fit in to the existing medical processes at the ED.
- **Communication and alignment:** A project start up (PSU) is recommended to divide tasks and get all the different stakeholders on board, including ICT and the local institute for addiction.

- **Training and instruction:** All the ED-staff and other involved professionals should be trained to know how to carry out the screening and intervention and for what reason. It is essential to inform the personnel on how much time it will cost.
- **Attention and monitoring:** Last but not least, it is important to monitor the project and to adjust if necessary. ED-staff needs to be informed of the results, in order to keep them motivated.

**Conclusion** - When the conditions mentioned above are met, Trimbos-institute and VeiligheidNL are convinced screening and intervention of alcohol and drugs abuse can be set up successfully at ED's. Especially because research has shown that ED's see it as their job to inform patients of the consequences of their behaviour.

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## 5.5 Morbidity due to unintentional poisonings in children and teenagers: trends and risks

*Birute Strukcinskiene, Faculty of Health Sciences, Klaipeda University, Klaipeda, Lithuania.*

**Introduction** - Child injuries are preventable. However, car crashes, drowning, poisonings, burns, and falls are some of the most common ways children are hurt or killed.

The objectives of the study were to estimate morbidity trends due to unintentional poisonings in children and teenagers with focus on the unintentional poisonings from medicines, alcohol, and drugs in Klaipeda County (Lithuania), and to analyse self-reported risks using the survey.

**Methods** - The data (over 2003-2015) were obtained from the Health Insurance Fund and the Department of Statistics in Klaipeda for the longitudinal study, and regression analysis was used. The children aged 0 to 14 and teenagers aged 15 to 19 treated at the hospital because of serious poisonings were examined.

The morbidity per 1000 children was calculated. In addition, the analysis of self-reported consumption, the accessibility to medicines, alcohol, and drugs, and the circumstances of usage of these substances for older schoolchildren using cross-sectional survey was conducted (n=322).

**Results** - Among patients treated in the Klaipeda County hospitals because of serious poisonings, 48 % were children aged 0 to 19 years. Children aged 0 to 14 years mainly were poisoned from medicines and very rare from drugs. There were less cases of alcohol poisoning among girls than boys. However, the results change among teenagers aged 15 to 19 years. Cases of alcohol poisoning were increasing and cases of drug poisonings were more frequent with age.

The study results revealed declining trends of non-fatal poisonings due to medicines in both children and teenagers age groups, and male and female subgroups. However, there were no significant changes of poisonings due to alcohol in teenagers aged 15 to 19 years, and in girls aged 0 to 14 years. Poisonings due to drugs were very rare, and showed no significant change.

**Discussion and Conclusion** - The main substance of poisoning for children aged 0 to 14 years were medicines, whereas for ones aged 15 to 19 years were alcohol. During the study period, the decreasing trend for poisonings due to medicines was observed, but not for poisonings due to alcohol. The study revealed self-reported easy accessibility to alcohol and medicines. Parents and children education and information within Child safety prevention projects/programs could influence to decrease in non-fatal poisonings due to medicines. However, more attention should be put on prevention of alcohol use among children and teenagers, with focus on legislation and enforcement.

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## 5.6 Identifying injury related inequalities using the European Injury Data Base

*Angharad Walters<sup>1</sup>, Samantha Turner<sup>1</sup>, Ronan A Lyons<sup>1,2</sup>, Jane Lyons<sup>1</sup>, Ashley Akbari<sup>1</sup>, Wim Rogmans<sup>3</sup>, Rupert Kisser<sup>4</sup>, Bjarne Larsen<sup>5</sup>, Huib Valkenberg<sup>6</sup>, Dritan Bejko<sup>7</sup>, Robert Bauer<sup>8</sup>, Monica Steiner<sup>8</sup>, Gabriele Ellsaesser<sup>9</sup>;*



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**Objectives** - Injuries are a leading cause of morbidity and mortality across Europe, however the burden associated with injuries is not equally distributed across the European region. Over the last few decades, morbidity and mortality due to injury has reduced in Europe, however, large geographical inequalities remain.

Many of the existing data sources across Europe lack coverage, scope, detail and comparability to investigate European injury inequalities. The European Injury Data Base (IDB) project was commissioned as part of BRIDGE-Health to generate comparable estimates of the burden of injury across Europe.

Injury related inequalities across Europe have been explored by the IDB team to identify risk groups in need of enhanced preventative measures and to support policy development.

**Methods** - Inequalities in gender, age and socioeconomic status (SES) were investigated. The IDB Minimum Data Set was used to obtain injury incidence, gender and age data and Eurostat was used to obtain country level SES indicators. Case studies of area level SES were also investigated by IDB member states.

**Results** - Those aged 0-4, 10-19 and 80+ are at greatest risk of all cause injury and up until the age of 60, males have the highest injury rates. Home and leisure injuries follow a similar age and gender profile to all cause injury rates. Males are at greatest risk of road traffic injuries in all age groups apart from the 75-79 age group. For self-harm injuries, females are at greatest risk in all age groups apart from the 65-69, and 85+ age groups. Males are at an increased risk of falls up until the age of 50. A weak positive relationship was observed between the percentage of the population 'At Risk Of Poverty or social Exclusion' (ARPE) and country level injury rates. Case studies of area level SES analyses show clear relations between injuries and deprivation.

**Discussion and Conclusion** - The IDB provides a large scale, comparable European injury surveillance system, with the ability to investigate injury related inequalities. The findings show that injury risk varies by age, gender and SES across Europe. Health policy development should reflect these findings and enhanced preventative measures should be targeted towards at risk groups.

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## 5.7 Development of a signaling instrument for detecting striking changes in injury data

*Malou Eilering<sup>1</sup>; Birgitte Blatter<sup>2</sup>; Jan-Fekke Ybema<sup>2</sup>,*

*<sup>1</sup>VeiligheidNL, Amsterdam, The Netherlands, <sup>2</sup>Working Life Research/ University Utrecht, The Netherlands.*

**Objectives** - In the Netherlands, in 2016, 656.000 injuries due to an accident, violence or self-harm resulted in an Emergency Department (ED) visit. The Dutch Injury Surveillance System (DISS) of the Consumer Safety Institute registers data of individuals who visit EDs of a selection of 14 ED's in the Netherlands. National estimates are made using the registered ED-visits. Surveillance of injury data is necessary to contain insight in causes, severity and nature of injuries. Early detection of striking changes in injury data is essential to respond quickly to the changing society and to implement preventive measures resulting in a reduction of injuries.

**Methods** - Literature describes several approaches for early detection of changes in data, based on statistical methods using cases and controls. However, DISS data lack controls, which results in difficulties finding a suitable signaling method.

For this reason, the Consumer Safety Institute developed a signaling instrument that can detect striking changes in injury numbers of DISS data at a very actual level. The signaling instrument combines several statistical approaches. A pilot is running at the Consumer Safety Institute.

**Results** - The developed signaling instrument is able to notice early changes in DISS-data. Resulting from logistic improvements in hospitals, the signaling instrument is able to use DISS-data available approximately 6 weeks after the ED-visit. The instrument contains a statistical model combining the z-score and chi-score based on raw numbers of ED visits versus reference periods to adjust for seasonal fluctuations. Index periods include 4-weeks of DISS-data as unit of analysis referencing the average of its equivalent and surrounding 4-week periods over the five past years. When z-score and chi-score both meet a predefined value, the signaling instrument shows a notification or 'red flag', which represents a striking increase or decrease of ED-visits of the analyzed period in comparison to its reference periods.

'Red flags' still need to be interpreted by an expert data analyst to examine its relevance, because 'red flags' are based on a capitalization of probability and may appear by chance.

**Discussion and Conclusion** - First results show that the signaling instrument is a suitable and promising model for early detection of striking changes in DISS data at one point in time.

Further development is needed in order to detect changes over time and investigate the practical usability for preventive purposes. Possibilities for adjustments based on external data sources, such as population and weather data, will be explored.

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13:30 – 14:30

## **Break-out session 6: Sports injury prevention**

*Location: Damzaal*

Session chair: Jari Parkkari, Tampere Research Centre of Sports Medicine, Finland

### **6.1 Epidemiology of overuse injuries in youth team sports: a 3-year prospective study**

*Leppänen Mari<sup>1</sup>, Pasanen Kati<sup>1</sup>, Kannus Pekka<sup>2</sup>, Vasankari Tommi<sup>3</sup>, Heinonen Ari<sup>4</sup>, Kujala Urho M<sup>4</sup>, Parkkari Jari<sup>1</sup>.*

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**Objectives** -The purpose of this study was to investigate the incidence, severity and player related risk factors of overuse injuries among young (12–20 years) basketball and floorball players.

**Methods** - A total of 387 players participated in a 3-year prospective study. Players completed a baseline questionnaire regarding their background information. During the study period, overuse injuries that averted players to fully or partly participate in their regular training were collected.

**Results** - In all, 204 overuse injuries were registered (injury incidence 1.51 injuries/1000h of exposure; 95% CI 1.35–1.78). Most of the injuries involved the knee (n=71) and lower back (n=42), and were classified as severe (n=89).

Injury incidence was 1.51 (95% CI 1.2–1.82) and 1.61 (95% CI 1.32–1.91) in basketball and floorball, respectively. Incidence was significantly higher among female compared with male players (incidence rate ratio 1.58; 95% CI 1.20–2.09).

An average time-loss from full participation due to an overuse injury was 50 days. Previous injury and playing at adult level were the strongest factors associated with occurrence of an overuse injury.

**Discussion and Conclusion** - Overuse injuries that limit athlete's sports participation are relatively common among young basketball and floorball players.

Most of the overuse injuries in these sports affect the knee and low back, and cause significant absence from full sports participation. Effective prevention strategies as well as training load monitoring are needed in youth team sports.

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### **6.2 Acute and overuse injuries among sports-club members and non-members: The Finnish Health Promoting Sports Club Study**

*Ristolainen L<sup>1\*</sup>, Toivo K<sup>2</sup>, Parkkari J<sup>2</sup>, Kokko S<sup>3</sup>, Alanko L<sup>4</sup>, Heinonen OJ<sup>5</sup>, Korpelainen R<sup>6</sup>, Savonen K<sup>7</sup>, Selänne H<sup>8</sup>, Vasankari T<sup>9</sup>, Kannas L<sup>3</sup>, Villberg J<sup>3</sup>, Kujala UM<sup>3</sup>, <sup>1</sup> ORTON Research Institute, ORTON Foundation and ORTON Orthopaedic Hospital, Helsinki, Finland; <sup>2</sup> Tampere Research Center of Sports Medicine, Tampere, Finland; <sup>3</sup> Faculty of Sport and Health Sciences, University of Jyväskylä, Jyväskylä, Finland; <sup>4</sup> Sports Medicine Clinic, Foundation for Sports and Exercise Medicine, Helsinki, Finland; <sup>5</sup> Paavo Nurmi Centre & Department of Health & Physical Activity, University of Turku, Turku, Finland; <sup>6</sup> Oulu Deaconess Institute, Department of Sports and Exercise Medicine, Oulu, Finland; Medical Research Center Oulu, Oulu University Hospital and University of Oulu, Oulu, Finland; Center for Life Course Health Research, University of Oulu, Oulu; <sup>7</sup> Kuopio Research Institute of Exercise Medicine, Kuopio, Finland, <sup>8</sup> LIKES Foundation for Sports and Health Sciences and University of Jyväskylä, Department of Psychology, Jyväskylä, Finland; <sup>9</sup> UKK Institute of Health Promotion Research, Tampere, Finland*

**Objectives** - Physical activity in adolescence is promoted for its multi-dimensional health benefits. However, the injury risk increases along with increasing intensity. Our aim was to compare the occurrence of acute and overuse injuries in Finnish sports club members and non-members. We also studied the association between training and competing volumes and the risk of injury.

**Methods** - In this cross-sectional survey a structured questionnaire was completed by 1.077 14-16-year-old sports club members and 812 non-members. The main outcomes were self-reported acute and overuse injuries, their location, type, and the circumstances under which they occurred. Additional questions concerning training volumes and the amount of competitions were directed to sports club members.

**Results** - At least one acute injury in the past year was reported by 44.0% of sports club members and 19.8% of non-members ( $P < 0.001$ ). Sports-club members were three times (OR 3.13, 95% confidence interval (95% CI) 2.54-3.87) more likely to report an acute injury than non-members.

Thirty-five percent of sports club members and 17.4% of non-members ( $P < 0.001$ ) reported at least one overuse injury during the past year. The overuse injury OR for sports club members was 2.61 (95% CI 2.09–3.26).

The most common site for an acute injury was the wrist and hand in both groups, the acute injury rate was 22.7 per 100 person-years in sports club members and 12.8 in non-members ( $P < 0.001$ ). The overuse injury rate of the knee was 16.5 per 100 person-years among sports club members compared to 8.0 in non-members ( $P < 0.001$ ).

Participating yearly in forty competitions or more compared to 7–19 competitions increased the risk for an acute injury (OR 1.55, 95% CI 1.05–2.08,  $P = 0.028$ ) and for an overuse injury (OR 1.53,  $P = 0.038$ ) in sports club members.

**Discussion and Conclusion** - Both acute and overuse injuries are more common among youth sports club members than non-members, and the number increases along with increasing amounts of training and competitions.

More effective injury prevention is needed for all adolescents, both for adolescents engaging in sports club activities and for other adolescents.

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### 6.3 Effectiveness of a tailor-made digital intervention to prevent injuries skiing and snowboarding

*Ellen Kemler, Consumer Safety Institute, Amsterdam, the Netherlands.*

**Objectives** - Being active in sports has many positive health effects. The direct effects of engaging in regular physical activity are particularly apparent in the prevention of several chronic diseases, including: cardiovascular disease, diabetes, cancer, hypertension, obesity, depression and osteoporosis. Besides the beneficial health effects of being active, sports participation is unfortunately also associated with a risk for injuries.

To prevent sports participants for sports injuries, and consequently, withdrawal from their activities, effective injury preventive measures are made compulsory in some sports. However, in sports like skiing and snowboarding, injury preventive measures are not compulsory. Therefore, a behavioral change in sports participants is necessary to increase the use of those effective measures and subsequently prevent or reduce injuries in winter sports.

The aim of this study is to evaluate the effectiveness of an evidence-based tailor-made intervention to stimulate injury preventive behavior in skiers and snowboarders.

**Methods** - A randomized controlled trial with a follow-up period of 4 months during the winter sport season (January 2017 - April 2017) was conducted. The participants consist of unexperienced skiers and snowboarders. At baseline, skiers and snowboarders in the intervention and control group are asked to report the injury preventive measures they usually take during their preparation to their winter sport holiday. One and three months after baseline, skiers and snowboarders are asked to report retrospectively in detail what they have done regarding injury prevention during their current winter sport preparation and winter sport holiday.

Descriptive analyses (mean, standard deviation, frequency, range) are conducted for the different baseline variables in both study groups. To evaluate the success of the randomization, baseline values are analyzed for differences between the intervention and control group (Chi Square, independent T-tests and/or Mann-Whitney test). Chi square tests and/or logistic regression analyses are used to analyze behavioral change according to the intention to treat principle.

**Results** - A total of 848 skiers and snowboarders were included in this study. The results of this RCT will be presented.

**Discussion and Conclusion** - To conquer the negative side effects of sports participation, the use of injury preventive measures is desirable. As the use of injury prevention is mostly not compulsory in skiing and snowboarding, a behavioral change is necessary to increase the use of effective injury preventive measures in winter sports.

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### 6.4 How to get sports injury prevention to work in practice?

*Joske Nauta PhD, Dept of Public and Occupational Health, Amsterdam Collaboration on Health and Safety in Sports, VU University Medical Center.*

**Background** - Over the past two decades the fundamental and practical knowledge on the prevention and treatment of various sports and physical activity related injuries has exponentially grown. Based on the current available evidence it is reasonable to state that we are able to significantly reduce injuries in both elite athletes as well as the general public. Few initiatives have led to sustained increase in preventive behaviors, mostly involving the use of protective gear. But in most cases, the wide-scale implementation of effective prevention programs under real life conditions proves to be an ongoing challenge. This presentation will go into two approaches to tackle the challenge of improving uptake of preventive methods to reduce sports injuries in the general public. The first approach is to increase our understanding of the reasons why preventive measures are not used. This can be

achieved by conducting qualitative research in the target population. The second approach would be to 'catch them young', as the saying goes: Focus on youth athletes to make sure that preventive methods become routine at a young age.

**Method** - The presentation will be mainly based on implementation studies that were conducted in Dutch athletes and youth.

**Results** - Researchers are increasingly aware that it is important to understand the implementation context for injury prevention. Insights in the actual reasons for athletes to (not) use preventive measures remains, however, limited. The injury prevention implementation studies that were conducted in Dutch youth have shown that it is extremely challenging to recruit participants.

**Conclusions** - Injury prevention strategies should be improved to better suit the wishes and expectations of athletes in order to increase uptake by the general public. Qualitative research may be the way forward to gain a better understanding of the reasons why athletes are so reluctant to implement injury prevention.

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16:00 – 17:15

## **Plenary Session: Challenges and Opportunities in Safety Promotion**

*Location: Grote Zaal*

Session chair: Ron Gainsford, Honorary Member EuroSafe and advisor to the British Toy & Hobby Association, United Kingdom

### **4 Injury Prevention Cycle: The sequence of prevention revisited**

*Willem van Mechelen, Professor of Occupational and Sports Medicine, Amsterdam Public Health Research Institute VUmc, The Netherlands.*

In the 60's, 70's and 80's sports injury prevention research was in its infancy. Studies were carried out in an unsystematic way and with inferior epidemiological principles. This changed from the 90's onwards when a number of conceptual models were introduced that guided the systematic development of sports injury prevention programmes.

Arguably the most widely known and recognized of these conceptual models is the sequence of prevention. The sequence of prevention has gained substantial momentum within our field, and has without doubt set the scene for a more systematic approach to sports injury prevention research. Nowadays the field has become of adolescent age; there is substantial data available about the extent of the sports injury problem, about the etiology as well as about the mechanisms that cause sports injuries and about effective prevention strategies. Many research specific factors have contributed to this advancement of the field, such as advanced statistics, validated injury registration tools, better methods to capture and analyze injury mechanisms, and interactive platforms to provide personalized intervention methods. This progress, however, does not rule out that next steps are needed for the field to further mature. This keynote lecture will review and revisit the sequence of prevention 25 years after its introduction, summarizing past achievements while also looking forward. Potential adaptations to the model will be discussed with the aim to improve its steps in order to push the field forward towards maturation.

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### **5 Adolescents, Alcohol, and Injuries: Interventions addressing a potent cocktail**

*Shanthi Ameratunga, Professor of Epidemiology and Public Health, University of Auckland, New Zealand.*

We are living at a time when there are an impressive 1.9 billion young people aged 10 to 19 years across the world, the largest generation of adolescents in human history. This reality owes much to the hard-won gains derived from addressing diseases of early childhood in many parts of the world. While this is cause for celebration, it is sobering to note that the league tables for deaths in adolescence are now increasingly dominated by road injuries, self-harm, and interpersonal violence. And the risk factor contributing the highest proportion of disability-adjusted life years (DALYs) in adolescence is alcohol. Based on population level estimations conducted by Jürgen Rehm and Kevin Shield, both the absolute numbers and rates of alcohol-attributable injury deaths and potential years of life lost, increased from 1990 to 2010. Eastern Europe had the greatest mortality burden of alcohol-attributable injuries in 2010.

Recent studies suggest that even in countries where overall levels of consumption of alcohol are declining in adolescence, alcohol-related harms, particularly violence and injuries, have increased. The explanations for the changing patterns of adolescent drinking in recent decades are complex and not fully elucidated. But the association of heavy episodic binge drinking with injuries remains a stark and constant feature of the adolescent injury burden.

Intervention approaches to addressing this challenge can be considered in three broad groups: *universal interventions* that target the overall population; *selective interventions* targeting groups deemed to be at

potentially greater risk of engaging in hazardous drinking patterns; and *indicated interventions* which target individuals already engaging in demonstrably high risk patterns of alcohol use, often with attendant consequences.

This presentation will critique the challenges and opportunities with these approaches as they apply to adolescents drawing particular attention to (1) the theoretical compared with realised potential of screening and brief interventions using motivational interviewing; (2) traps for the unwary including risks of increasing inequities in harm reduction among the most vulnerable young people; (3) novel designs that can overcome common barriers to implementing and scaling up interventions; and (4) approaches that avoid 'lifestyle drift' and prioritise broad and collaborative action on the structural determinants of harmful alcohol use.

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## 6 Amsterdam City of Bikes: challenges and solutions regarding safety and mobility

*Eric de Kievit, City of Amsterdam, The Netherlands*

Amsterdammers cycle a combined two million kilometers per day in the city. That's the equivalent to someone cycling 50 times around the planet. The average total number of bike rides made by Amsterdam's 835,000 residents is 665,000 per day. Representing 36% of all trips, the bicycle is by far the most widely-used means of transport in Amsterdam. In the city centre, over 50% of all trips are made by bike. It's also the city's fastest growing means of transport. Cyclists help create a healthy, accessible and attractive city.

Prevent more traffic accidents', that is what we aim for with this RoadSafetyPlan 2016-2021. It is an ambitious and challenging goal. It has been getting busier in the city, with rising numbers of inhabitants (+10.000 p/y.), jobs (+5.000 p/y), tourists (+450.000 p/y) and students (+2.500p/y), and even more events are being organized. This has its effects on the roads and the bike paths. Especially within the ring road (A10) the demand for space in the public space gets bigger. The bike paths keep getting busier, more elderly people are using bikes and a lot of children are cycling to school. In addition to the traditional urban bike, the city is home to an increasing number of other types of bicycles and bike-like vehicles, such as the e-bike, the delivery bicycle and the speed pedelec. At the same time the speed differences on the bike paths are increasing, which can create conflicts.

Cyclists ('fietsers') are among the most involved in traffic accidents. During this key-note a new risk assessment approach is explained and interventions are addressed for safe cycling in Amsterdam both on behavior and infrastructure.

Remarkable is that 70% of bike accidents is one-sided: there are no other road users involved. By adding side marking and skirting strips, flexible posts and adjusting the Amsterdam design standards to bike safety, we want to further bring down the number of accidents. Amsterdam also keeps having campaigns such as a campaign against using smart phone in traffic and the bike lights campaign. Based on research of real traffic behavior examples are given of newly designed junctions like shared space and the 'banana'.

## Abstracts Friday September 22, 2017

09.00-10.00

### Break-out session 7: Water Safety

*Location: Grote Zaal*

Moderator: Detlev Mohr, Int. Lifesaving Fed. of Europe, Germany

### 7.1 Situation of Drowning Prevention in Europe

*Detlev Mohr, International Lifesaving Federation of Europe (ILSE), Bad Nenndorf, Germany.*



**Objectives** - One of the leading causes of accidental death worldwide is drowning. In Europe 35.000 – 40.000 people drown each year. An average of 3,5 people drown every hour in Europe. But there are huge differences between the countries in Europe. Five years ago the death rates in three countries (Lithuania, Latvia, Belarus) were 23 times higher than in the safest three (Germany, United Kingdom, Netherlands).

National drowning statistics based on ICD classification can't give answers to the questions where and how to prevent. Death in open water has more causes than those included in ICD.

The real drowning figures are higher as in the official national statistics of death.

Police reports or a statistics on the base of collecting press cuttings give the lifesaving federations additional information for strategic decisions and activities in prevention.

The objective of the analysis is to gain knowledge about where what preventive measures must be taken in order to reduce the number of fatal water accidents significantly in the future.

**Results** - The author will present suitable and effective examples for actions to prevent drowning.

Drowning is one of the major causes for unnatural death in Europe especially for children as well as for elders. The International Lifesaving Federation has published in 2007 its first worldwide drowning report: nearly half a million people drown each year worldwide. The drowning figure of Europe was reported by WHO in year 2002 as about 38.000. Nearly 5.000 of the drowning victims were children. Every second victim in Germany was a senior person 50 years of age or older.

**Discussion and Conclusions** - Prevention is the main measure to reduce drowning figures. The lack of societal awareness of drowning risks makes it necessary to start initiatives to disseminate healthy practices in a simple economic and effective way. Water environments should be positive and beneficial for both children and adults, and undertaking preventive action to enhance safety is therefore essential. If mortality rates were the same as those in the countries with the lowest rates, then 90% of these deaths among children could be averted. This demonstrates the very great potential for prevention. Such actions need to be intersectoral to ensure safe water environments using the combined approaches of engineering and modifying the environment, legislation and education.

Proven interventions to reduce drowning among children include removing or covering water hazards, installing four-sided pool fencing, using personal flotation devices and instituting immediate resuscitation. Our countries have also to face the situation that the number of those children who are not able to swim increases constantly. The situation seems to be getting worse as: less swimming lessons at school; lowering number of public swimming pools; less interest in parents especially with lower education level and lower income; increasing population with migrant background.

Therefore the lifesaving federations started a program to increase the ability to swim in children. The program consist of various measures, such as public information, supporting communities to keep public pools open and helping with life guard services, supporting schools by taking over swimming lessons and special programs to teach the teachers, to provide information on swimming programs to less educated parents and to families with a migration background and the cooperation with financial supporters for sponsoring.

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## 7.2 Marketing strategies that help reduce drownings by changing skills, attitudes and behaviours.

*Roger Sweeney, Marketing Manager & Deputy CEO, Irish Water Safety, Galway, Ireland.*

**Objectives** - An average of 133 people drowns in Ireland each year. The author outlines the practical marketing interventions that were used over the last ten years to contribute to a 26% reduction in drownings and a change in public skills, attitudes and behaviours so that aquatic environments are enjoyed with confidence and safety.

**Methods** - The Irish population is exposed to a wide range of aquatic environments, putting most of the population at risk of drowning at some stage in their lives. This is a very wide population group to target yet

effective drowning prevention campaigns require specific targeting of at-risk groups within the population. To this end, the author outlines his analysis of the metrics that identified at-risk groups that in turn informed targeted marketing campaigns, in keeping with the practice of monitoring performance metrics to inform strategies that strengthen performance. A particular emphasis is placed on marketing interventions that encourage child safety. The author also outlines the methods that have been successful in driving public safety media campaigns and also the partnerships with local and national government, university researchers and corporate entities in the private sector that have partnered to change the skills, attitudes and behaviours of adults and children at risk in aquatic environments.

**Results** - Although drowning continues to be a serious problem in Ireland, the current annual average drowning rate of 133 in each of the last ten years is 26% lower than the annual average of 180 drownings in each of the previous forty years. The author will describe the safety promotion initiatives that have engaged the public in the last ten years during which we have seen this reduction in drowning fatalities.

**Discussion and Conclusion** - This paper will inform practitioners with practical, innovative marketing practices to promote water safety drowning prevention initiatives in other jurisdictions.

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### 7.3 Stop Ahogados: una campaña de prevención de ahogamientos global

*Ana M. Dominguez, Jessica Pino, Isabel García and Alberto García, Royal Spanish Lifesaving Federation (RFESS), Madrid, Spain.*

**Introduction** - According with World Health Organization (WHO, 2014), at least 372,000 people die each year by drowning in the world, that is, every hour, 42 people are killed for this cause. In Spain, 415 people have lost their lives by drowning in 2015 (RFESS, 2016), 437 in 2016 (RFESS, 2017) and in the first four months of 2017 the number amounts to 111 drowned (RFESS, 2017). That is to say, the number of drowned in Spain reaches almost half of the victims by traffic accident.

Prevention is the main measure we can take to prevent this number of deaths continuing increase, with special emphasis on raising awareness about the real problem, however, authorities do not take any action.

For this reason, the Royal Spanish Lifesaving Federation (RFESS) launched in 2016 the #StopAhogados campaign through its social networks.

**Objectives** - To decrease drowning deaths in our country; to raise awareness about aquatic environment dangers; to increase user's knowledge in accident prevention; to create a "lifesaving culture".

**Methods** - The #StopAhogados campaign, through videos and pictures, has transmitted prevention advices with a special emphasis on awareness about drowning deaths that occur each day.

The main support of #StopAhogados has been RFESS Twitter (@ RFESS1), Facebook (Real-Federation-Spanish-Salvage-and-Rescue-448517478632746/) and Instagram accounts.

**Results** - Through this account a great international repercussion has been achieved in fourteen languages (Spanish, German, Belgian, Bulgarian, Danish, Finnish, French, Gaelic, Dutch, English, Italian, Polish, Swedish and Serbian) and Spanish sign language. Also, ILS, ILSE and Latin American federation (FLASS), elite athletes and a large number of practitioners and people related to lifesaving have taken part in this initiative, too.

**Discussion and Conclusions** - The lack of social awareness about drowning makes necessary to start initiatives to disseminate healthy practices in a simple and economic way as presented here.

The way started in 2016 has been just the beginning for this campaign. During 2017 the campaign is growing exponentially thanks mainly to the low economic cost and its different channels of dissemination, being able to even become an international slogan in the fight against drowning.

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#### 7.4 Non-fatal drowning: Epidemiology and prevention

*Tessa Clemens, Hala Tamim, Michael Rotondi, Alison Macpherson, York University, Faculty of Health, School of Kinesiology and Health Science.*

**Objectives** - Despite the fact that non-fatal drowning is a significant cause of morbidity from water-related injury events, there is a paucity of information on its incidence. Most epidemiological studies of drowning have focused on fatalities only; consequently, there is a lack of evidence on the characteristics of non-fatal drowning. The majority of existing non-fatal studies focus on children and adolescents only, and often do not include water transport related drowning events.

The primary objective of the study was to describe non-fatal drowning in Canada. A secondary objective was to identify which characteristics, if any, differ significantly between non-fatal and fatal drowning incidents.

**Methods** - This retrospective study was conducted using data collected on drowning incidents in Canada over a five-year period, from fiscal year 2008/09 to 2012/13. Data were extracted from three databases, the Canadian Institute for Health Information Discharge Abstract Database, the National Ambulatory Care Reporting System, and the Drowning Prevention Research Centre Canada database. Victims of a non-fatal drowning incident who required ambulatory care or who were discharged by an acute care facility in Canada were compared to fatal drowning cases where the cause of death was unintentional drowning, as determined by the coroner or medical examiner.

**Results** - 1148 cases were extracted from the Discharge Abstract Database, 3135 cases were extracted from the National Ambulatory Care Reporting System, and 2283 cases were extracted from the Drowning Prevention Research Centre database. A conservative estimate based on data reported from emergency departments and hospital admissions in Ontario suggests that for every one person who dies from unintentional drowning, three suffer a non-fatal unintentional drowning that requires urgent medical attention. 19% of non-fatal drowning victims who were seen in an emergency department in this study were hospitalized. Multivariable logistic regression revealed that the characteristics of non-fatal drowning differed significantly from those of fatal drowning across all variables: age, sex, province, urban versus rural residence, and external cause.

**Discussion and Conclusion** - The study results suggest that there may be a basis for expanding drowning prevention interventions to target characteristics specific to non-fatal drowning.

Further research related to non-fatal drowning is warranted.

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09.00-10.00

#### **Break-out session 8: Action on Falls in Older People (Part II)**

Location: *Damzaal*

Moderator: Errol Taylor, RoSPA, United Kingdom

#### 8.1 Falls prevention activities among community-dwelling elderly in the Netherlands: A Delphi study

*Branko F. Olij, Vicki Erasmus, Judith I. Kuiper, Frans van Zoest, Ed F. van Beeck, Suzanne Polinder, Erasmus MC – University Medical Center Rotterdam, Department of Public Health, Rotterdam, The Netherlands.*

**Objectives** - A clear overview of the current falls prevention activities of health professionals in the Netherlands is missing. This study aimed to provide an overview of the current falls prevention activities in community-dwelling elderly (70+) with an increased risk of falling in the Netherlands. Therefore, we determined: a) how health professionals detect community-dwelling elderly with an increased risk of falling; b) which falls prevention activities

are used by health professionals and why; c) how elderly can be stimulated to participate in falls prevention programs; and d) how best to finance falls prevention.

**Methods** - A two-round online Delphi study among health experts was conducted. The panel of experts (n=125) consisted of physiotherapists, (community) nurses, general practitioners, occupational therapists and geriatricians. The median and Inter Quartile Deviation (IQD) were reported for the questions with 5-point Likert scales, ranging from 'least' (1) to 'most' (5).

**Results** - Respectively 68% (n=85/125) and 58% (n=72/125) of the panel completely filled in the first and second round questionnaires. According to the panel, regular case-finding of community-dwelling elderly with an increased risk of falling hardly takes place (median=2 [hardly]; IQD=1). Furthermore, these elderly are reluctant to participate in annual case-finding (median=3 [reluctant]; IQD=1). According to 73% (n=37/51) of the panel, 0-40% of the elderly with an increased risk of falling are referred to exercise programs. In general, the panel indicated that structural follow-up is often lacking. Namely, after one month (n=21/43; 49%), three months (24/42; 57%), and six months (27/45; 60%) follow-up is never or hardly ever offered.

Participation of elderly in falls prevention programmes could be stimulated by a combination of measures. Should a combination of national health education, healthcare counselling, and removal of financial barriers be applied, 41-80% of the elderly is assumed to participate in falls prevention programs (n=47/64; 73%). None of the panel members indicated full financing of falls prevention by the elderly. A number of individuals are considered key in falls prevention activities, such as the general practitioner, physiotherapist, and informal caregiver.

**Discussion and conclusion** - This Delphi study showed clear directions for improving falls prevention activities and how to increase participation rates.

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## 8.2 Stand Up Stay Up – Taking the rise out of falls.

*Ashley Martin, The Royal Society for the Prevention of Accidents (RoSPA), Birmingham, United Kingdom..*

**Introduction** - Falls and fractures are a common and serious health issue faced by older people in England. The human cost includes distress, pain, injury, loss of confidence, loss of independence and mortality. There were over around 255,000 falls-related emergency hospital admissions in England among patients aged 65 and older in 2016. The total cost of fragility fractures to the UK estimated at £4.4bn which includes £1.1bn for social care. Without a step change in prevention these figures will increase significantly given the ageing population.

**Method** - RoSPA is inviting partners involved in improving health and quality of life for older people to "Stand Up" and join a national movement to actively promote measures that focus on preventing the first fall. Over 200 organisations have registered in the first year and this number continues to grow. Ten partner areas with high levels of falls have been selected from across 7 English regions to develop strategic approaches and evidence based community interventions. Local interventions vary but include increasing strength and balance training, early identification of those at risk of falling, home hazard assessment and frontline staff training.

**Results** - This initial paper will focus on early results from interventions using QTUG (Quantitative Timed Up and Go) technology to identify those at risk of falling and measure improvements after interventions. Responses from the community to innovations that use dance, library programmes and online tools will also be highlighted. Progress with strategic development in each local partner area and with the development of the wider movement will also be reported.

**Conclusion and discussion** - This is the second year of the three-year programme which is funded through the Department of Health Innovation, Excellence and Strategic Development Programme and is being independently evaluated. This paper provides an opportunity to follow the programme through the key stages of the journey from

inception to delivery of innovative work aimed at preventing falls and reducing the burden of injury that they cause.

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### 8.3 Cost-effectiveness of interventions for preventing falls among elderly: A systematic review

*Robbin H. Ophuis, Branko F. Olij, Suzanne Polinder, Ed F. van Beeck and Carolyn S. Sterke*

*Department of Public Health, Erasmus University Medical Center, P.O. Box 2040, 3000 CA Rotterdam, The Netherlands.*

**Objectives** - To provide an overview of the evidence regarding the cost-effectiveness of nursing home based interventions for the prevention of falls among elderly, and to assess the quality of the identified studies.

**Methods** - A systematic review was conducted using the Embase, MEDLINE, Web of Science, Cochrane, CINAHL, PsycINFO, and Google Scholar databases. We included full economic evaluations on nursing home based interventions for the prevention of falls among elderly published before April 2017, with no restrictions on comparators. Study characteristics and cost-effectiveness data were collected. The quality of the studies was independently appraised by two reviewers using the Consensus on Health Economic Criteria checklist.

**Results** - Five out of 2.503 identified studies met the inclusion criteria. Two studies reported the cost-effectiveness of a multifactorial intervention program both consisting of an individual geriatric assessment, staff education, exercise therapy, and advice on environmental adaptations. The remaining three studies reported the cost-effectiveness of single interventions: a staff training program, a medication evaluation program and a tai chi based exercise program.

All interventions were compared to usual care. A cost-benefit analysis was performed in three studies. In all these studies, the interventions were cost saving in comparison with usual care. Cost-effectiveness and cost-utility analyses were conducted in the remaining studies, in which incremental cost-effectiveness ratios of €21,350 per quality adjusted life-year gained and €7,480 per femoral fracture avoided in comparison with usual care were reported. The quality of the included studies was variable.

**Discussion and Conclusion** - Five studies reporting the cost-effectiveness of nursing home based interventions for the prevention of falls were identified.

The comparability of the studies was limited by heterogeneity in terms of interventions, study design, and outcome.

Nevertheless, the results show that nursing home based interventions for the prevention of falls are potentially cost-effective in comparison with usual care.

More high quality economic evaluations are necessary in order to draw solid conclusions about the cost-effectiveness of such interventions. Prioritizing interventions can thus be facilitated for policy makers.

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### 8.4 TOM: a multifactorial approach to prevent falls and improve autonomy in community-dwelling elderly

*Rozan van der Veen, Chantal Zuizewind, Malou Eilering and Martien Panneman (VeiligheidNL, Amsterdam, The Netherlands), Jessica Hohenschon (Philips Innovation Services, Eindhoven), Inge Mohede (Nutricia, Zoetermeer, The Netherlands), Auke-Jan Meijer (ONVZ health insurance, Houten, The Netherlands), Rozemarijn de Feijter (PostNL, Den Haag, The Netherlands).*

**Objectives** - The first fall of an older person is a critical starting point of a cascade of events that can lead to injury, inactivity, social isolation, more falls and institutionalization. In a time where the focus of healthcare policy has shifted to prevention, self-sustainability and independence, the need for a local and multifactorial approach is

growing. TOM is a multifactorial intervention program developed by a public-private consortium (VeiligheidNL, Philips, Nutricia, ONVZ and PostNL) ) and aimed at stabilizing and improving the mobility of people aged 65 and over in order to sustain autonomy and independent living. The objective of the current study is to assess the feasibility and acceptability of TOM in four living labs, its cost-effectiveness and effectiveness on mobility, health and well-being.

**Methods** - This study is designed as a pre- and post case-crossover design. TOM will be implemented in four living labs between April 2017 and December 2018, each consisting of 30 to 60 community-dwelling older people aged 65 and over. Participants follow a 14-week evidence-based exercise program and receive weekly social support, nutritional advice and, in case of (risk of) malnutrition, medical nutrition. Data are collected by a senior mobility monitor at baseline and at the end and by questionnaires at baseline, at the end and six months follow-up of each living lab. Acceptability and feasibility data are collected by focus groups with participants and healthcare professionals at the end of each living lab.

**Results** - Forty-seven participants were included in the first living lab. Results of the first living lab will be available in December.

**Discussion and conclusion** - We hypothesize that TOM is feasible for older people and may have a positive impact on prolonging autonomy and independent living, by reducing the risk of falls. By following this program, older people are expected to improve in mobility, health and well-being. Taken together, the multifactorial approach of TOM may provide a cost-effective blueprint for a local fall prevention method in order to maintain older people's self-sustainability and independence.

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## 8.5 Implementing fall prevention: risk factors in an academic hospital population

*L. Boogaard, B. Olij, R. Ophuis, J. Mackenbach, S. Polinder, V. Erasmus, Department of Public Health, Erasmus MC, Rotterdam, The Netherlands.*

**Objectives** - Every five minutes an elderly person visits the emergency department because of a falling accident, leading to 38.600 hospital admissions and 3.260 deaths annually, with numbers expected to grow in the future. Despite growing concern, fall prevention guidelines are poorly implemented into medical practice.

**Methods** - The Erasmus University Medical Centre implemented fall prevention in 2016, using the three-question fall risk test (Consumer Safety Institute). Patients were identified as at low or at high risk of falling. High risk cases underwent a further assessment of the 12 most important fall risk factors. Patients (cc their GP) received a personal fall prevention plan with tailored preventative intervention advice. To investigate the implementation we aimed to include 200 patients aged 70 years and older, visiting the emergency department (ED) or nephrology outpatient clinic (NOC), from December 1<sup>st</sup> 2016.

**Results** - 216 patients aged 70 years and older, underwent screening between December 2016 and March 2017. 137 patient (63%) were at low risk of falling. Of the 79 patients (37%) who were at risk of falling, 55 (69%) underwent a fall analysis.

Participants had a minimum of 2, a maximum of 10 and a mean of 6,95 (SD 1,7) risk factors for falling of a total of 12. Most reported risk factors were 1. problems with balance and walking (n=51; 92,7%), 2. medication (n=49; 89,1%) and 3. fall history (n=47; 85,5%). The number of risk factors did not differ between departments (ED: 6,8 (1,9) vs. NOC: 7,1 (1,6) (mean (SD)); p=0,536). There was a significant positive relationship between age and number of risk factors ( $\beta=0,304$ ; p=0,024). Women had significantly more risk factors than men (7,5 (1,8) vs. 6,5 (1,7) (mean (SD)); p=0,035). Three months after screening, preventative interventions had been initiated by a medical professional in 2 (3,6%) patients.

**Conclusion** - Our pilot showed that fall risk assessment is of great relevance since it exposes over a third of patients >70 years as at risk of falling. Age and female gender are positively related to the prevalence of risk factors, of which medication, balance and walking and history of falling were the most prevalent.

To fully understand and facilitate successful implementation we will conduct further research (under the CARPE DIEM-study) to assess 1. barriers and facilitators in healthcare professionals and patients towards prevention and 2. patient-initiated preventative interventions.

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10.15 - 11.15

### Break-out session 9: Injury data analysis (Part II)

Location: Groote Zaal

Moderator: Birgitte Blatter, Consumer Safety Institute, The Netherlands

## 9.1 Measuring the burden of injury across Europe

*Angharad Walters<sup>1</sup>, Samantha Turner<sup>1</sup>, Ronan A Lyons<sup>1,2</sup>, Jane Lyons<sup>1</sup>, Ashley Akbari<sup>1</sup>, Wim Rogmans<sup>3</sup>, Rupert Kisser<sup>4</sup>, Bjarne Larsen<sup>5</sup>, Huib Valkenberg<sup>6</sup>, Dritan Bejko<sup>7</sup>, Robert Bauer<sup>8</sup>, Monica Steiner<sup>8</sup>, Gabriele Ellsaesser<sup>9</sup>;*  
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**Objectives** - Injuries are a leading cause of morbidity and mortality in Europe and not only place a huge burden on individuals and health services but on society as a whole. The European Injury Data Base (IDB) project was commissioned as part of BRIDGE-Health to produce comparable injury burden estimates across Europe and to support injury prevention research and policy development. The impact of injuries have traditionally been measured using singular outcomes such as emergency department attendances, hospital admissions and deaths. However, in recent years, the combination of these outcomes in composite measures such as Disability Adjusted Life Years (DALYs) have become increasingly important at providing comparable estimates of injury burden.

**Methods** - DALY estimates were calculated for IDB countries and years where both fatal and non-fatal injury data were available. Fatal data were obtained from the European Detailed Mortality Database (EDMD) and non-fatal injury data from Emergency Department data recorded in the IDB Minimum Data Set (MDS). The DALY estimates utilised disability weights from the Injury-VIBES study.

**Results** - DALY estimates generated by the IDB project were between 2-10 times greater than estimates produced by previous studies such as the Global Burden of Disease study. Results show that males and 10-14 year old children have the highest DALYs. DALYs by injury type show that accidental falls have the highest average EU28 rate of 5,965 per 100,000 population, followed by road traffic injuries, self-harm, assaults, accidental poisoning and burns.

**Discussion and Conclusion** - The DALY estimates produced by the IDB project demonstrate that the burden of injury in Europe is substantially higher than previously estimated. In particular, males, children aged 10-14 and accidental falls contribute considerably to the burden of injuries across Europe.

These findings should be used for policy development and to form strategies to reduce the impact of the burden of injuries.

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## 9.2 Disability Adjusted Years of Life lost due to injury in Luxembourg in 2013

*Dritan Bejko<sup>1</sup>, Nathalie de Rekeneire<sup>2</sup>, Samantha Turner<sup>3</sup>, Wim Rogmans<sup>4</sup>, Robert Bauer<sup>5</sup>, Bjarne Larsen<sup>6</sup>, Rupert Kisser<sup>7</sup>, Ronan A Lyons<sup>2,8</sup>, Huib Valkenberg<sup>9</sup>, Gabrielle Ellsessaer<sup>10</sup>; <sup>1</sup>Luxembourg Institute of Health, Luxembourg, <sup>2</sup>Ministry of Health, Luxembourg, <sup>3</sup>Farr Institute Swansea University, Medical School, UK, <sup>4</sup>Eurosafe, The Netherlands, <sup>5</sup>Austrian Road Safety Board, Austria, <sup>6</sup>National Institute of Public Health, Denmark, <sup>7</sup>Eurosafe, Austria, <sup>8</sup>Public Health Wales NHS Trust, UK, <sup>9</sup>Consumer Safety Institute, The Netherlands;<sup>10</sup>Landesamt Brandenburg für Umwelt, Gesundheit und Verbraucherschutz, Germany.*

**Introduction** - Considering age of occurrence and disability, Years of Life Lost (YLL) and Years Lost due to Disability (YLD) give a better image of injury burden than mortality and morbidity. The sum of YLL and YLD measures the Disability Adjusted Life Years (DALY), which provides an indicator of the difference between an ideal situation where everyone leaves a full and healthy life and the actual health status of the population. Based on objective information, DALY would therefore improve the information to prioritize actions in public health. The estimation of injury burden in Luxembourg is currently based on morbidity/mortality. DALY calculations based on exhaustive real data coming from all hospitals has not yet been done .

**Methods** - Since 2013, the injury surveillance system collects information on all injuries treated at the Emergency Departments (ED) of hospitals in Luxembourg. Part of a larger European Injury Data Base (IDB) network this system collects all information needed for YLD calculation. The BRIDGE-Health IDB Interactive DALY Tool provides the methodology and specific injury group Disability Weights (DW) for DALY calculation. DW were integrated in the SPSS national injury data base at individual level. The annual statistics of the causes of death were used for YLL calculation and data from IDB Luxembourg 2013 for YLD calculation. To correct for yearly variation due to small population size, the mean of years 2012-2014 per sex and age group was used for the death statistics.

**Results** - Injuries are the fourth cause of death in Luxembourg after cardio-vascular diseases (CVD), cancer and respiratory disease. Causing about 7060 YLL (13%) or twice as much as respiratory disease, injuries are ranked third for the number of years of life lost. A total of 74 907 DALY were lost in 2013 due to injuries in Luxembourg. Home and leisure accidents were the first contributor with 22 214 YLD, followed by sport, road traffic and work-related injuries with respectively 10160, 7472 and 7547 YLD. However at individual level a head contusion will "cost" a loss of 4.32 years in terms of YLD , i.e.about 4 times higher than a concussion for a non-hospitalized two years old child.

**Discussion** - DALY might have been overestimated because of high non-hospitalised long term DW for superficial injuries and not enough detailed information about the life status of patients admitted in hospitals collecting a Minimum Data Set level of information. However missing data on injury diagnosis (23%) found mainly in one hospital might have somehow compensated for this overestimate.

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## 9.3 Patterns of child injuries which require hospitalization in Republic of Serbia: Retrospective analysis

*Markovic Marija, Vojvodic Katarina, Matejic Bojana, and Brkovic Andjelka ; Institute of Public Health of Belgrade, Serbia and Institute of Social Medicine, Faculty of Medicine, University of Belgrade, Serbia*

**Objective** - To determine patterns and circumstances of injury which represent risk factors for occurrence of child injuries which require hospital admission and treatment.

**Methods** - Secondary analysis of data collected during cross-sectional study conducted in 2013/2014, on a sample of 2.381 first-year students from six universities in Serbia, which examined the prevalence of adverse childhood experience during their first eighteen years of life. The survey instrument was a structured questionnaire developed by WHO and CDC methodology, adapted to local context.

For the purpose of this paperwork the part of the questionnaire which describes patterns of injury was used. Data were analyzed by descriptive and analytical statistics (chi-square test, univariate and multivariate logistic regression), with confidence interval set at 95% for all tests. Reliability analysis is done by Chronbach alpha ( $\alpha$ ) coefficient.

**Results** - Nearly one third of respondents (30%) suffered an injury in childhood which decreased their ability in performing everyday activities, of which almost half has been hospitalized (48.9%). The most common place of injury were sports facilities/grounds (in 31.5% respondents), 2 times more often than the other locations, falls were the most common cause (70.8%) and injuries were mainly unintentional (89.3%). Fractures were the most common type of injuries (every third respondent). Majority of respondents (75.6%) was physically incapacitated after the injury, with almost every eleventh (8,6%) suffering lasting consequences. Injuries requiring hospital admission were significantly associated with sports environment, OR=2.04 (1.12-12.06), absence of intent, OR = 1.92 (1.04-4.56) and long term consequences, OR = 3.88 (0.82-16.04).

**Discussion and conclusions** - The study highlights the significant presence of childhood injuries in Republic of Serbia and indicates the patterns of injuries which require hospital admission and treatment. One of the main reasons of conducting this survey was the lack of adequate routine data on non-fatal child injuries, as well as the absence of similar researches in our country and region, which additionally stresses the importance of this study. Despite of present limitations -the fact that it could be generalized for the student population only, and retrospective study design, which can lead to recall bias, our study, which in detail examines the patterns of injury that lead to hospitalization, may constitute a good starting point for implementation of further research on this topic and could contribute to the creation of adequate preventive programs in our country.

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#### 9.4 Unintentional injuries in Spanish children: a multicentre survey

*María-Jesús Esparza-Olcina, Primary Care Spanish Paediatrics' Association (AEPap).*

**Objectives** - To know population habits related to child injury prevention and their influence on child health.

**Methods** - Survey through a sentinel net of 204 primary care paediatricians (PapEnRed) with the collaboration of Mapfre Foundation: 1726 questionnaires answered between November 2013 and January 2014.

**Results** - 42.9% of children were male and 57.1% female. 90% meet three prevention-protection measures from a list: in the park, in toys and medicines, but only 50% take preventive measures with respect to furniture. 9.1% of children under the age of 12 stay alone at home sometime, even infants younger than 1 year old. 18.3% of families do not know the emergency phone number. 57.2% of injuries happened at home (they are more frequent the younger the child is) and 44.8% at school, in the park, playground, and streets. At home, injuries are more frequent in the living room (23.8%), children's room (10.2%), parents' room (9.3%) and kitchen (10%). Outside home: at school (44.6%), garden or playground (21%) and streets (20%). 65% of children were with a parent. In 56.7% the injury was a fall and 26.2% was a blow against an object, a person or an animal. Drowning, choking, crushing, burning and foreign body aspiration are more frequent from 2 to 4 years old. Falls and poisoning more frequent under the age of two. Injury by a sharp object from 5 to 11 years old. Blows over the age of five and animal bites from 5 to 7 years old.

As to the type of injury: 29.3% were wounds, 12.7% sprains or luxation, 10.8% broken bones, 5.9% burns, 19.1% other injuries.

Due to the accident, 72.9% of children needed medical assistance: 54.9% in the health centre, 35.3% in hospital emergency department and 4.1% were admitted to hospital. 45% of respondents to the survey considered that the accident happened 'by accident' or 'bad luck', 21% by child imprudence, 14% by carer negligence, and 3% by lacking of preventive measures.

Several risk factors were assessed, such as order in siblings, age, medication, risky behaviour, or protective measures at home.

**Conclusions** - Unintentional injuries are more frequent in children staying alone at home, in children taking medication for a longer time, in children characterised as being more risk seeking compared to their peers, and in households without protective measures on medicines and cleaning products.

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#### 9.5 An Interprovincial Comparison of Unintentional Childhood Injury Rates in Canada Between 2006 – 2012

*Liraz Fridman, Jessica Fraser-Thomas, Ian Pike, & Alison Macpherson, York University, Toronto, Canada.*

**Background** - Unintentional injuries cause more deaths in Canada for children and youth (>1 year) than any other cause. Evidence-based policies aimed at preventing childhood injuries vary across Canadian provinces. The rate of children hospitalized from a fall-related injury in 2010 was highest in males and females ages 0-9 (Parachute, 2015).

Policies that have been implemented to prevent these injuries include window safety mechanisms, safer stair gates, and improved playground equipment (Mackay et al., 2016).

Other causes of injury that have shown significant morbidity and mortality rates include poisonings, burns, suffocation, and drowning and a number of evidence-based policies have been implemented to prevent these injuries from occurring.

**Objective** - Given the burden of unintentional injuries and the variability in provincial policies, our objective was to perform an interprovincial comparison of unintentional population-based injury hospitalization and death rates for Canadian children and youth ages 0-19 and compare trends between 2006 and 2012.

**Methods** - Population-based hospitalization rates per 100,000 from unintentional injuries were calculated for children/youth (<19 years) using data from the Discharge Abstract Database (DAD) between 2006 and 2012. Population-based mortality rates over the same time period were analyzed using data from provincial coroners. Percent change in unintentional injury hospitalization and death rates from 2006 – 2012 were reported for each province.

**Results** - The rate of hospitalization from injuries for children/youth less than 19 years in Canada from all-causes was 567.87 per 100,000 population between 2006-2012. The Canadian population-based injury morbidity rates from all unintentional causes decreased from 458.74 to 446.55 per 100,000 (-2.66%). Saskatchewan (SK) had the highest overall unintentional injury morbidity rate (907.82 per 100,000) from all unintentional causes and Ontario (ON) had the lowest rate (460.13 per 100,000). SK also had the highest rate of injury hospitalizations for all sub causes except for drowning where Manitoba had the highest rate. ON was the only province with an injury morbidity rate that was consistently below the Canadian average. Similar trends were observed for population-based mortality rates in Canada.

**Discussion and Conclusion** - Injury prevention policies related to falls, poisonings, burns, suffocation, and drowning vary among provinces. Although the overall injury hospitalization rate is decreasing over time, some sub causes such as choking/strangulation have shown an increase in certain provinces.

Evidence-based policies related to childhood injury prevention such as playground equipment safety, carbon monoxide detection, hot water heater temperature regulation, consumer product safety, and four-sided pool fencing should be standardized across Canada.

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## 9.6 The Association Between Post-Concussion Symptoms and Health-Related Quality of Life in Patients with Mild Traumatic Brain Injury

*Daphne C. Voormolen, Suzanne Polinder, Nicole von Steinbuechel, Pieter E. Vos, Maryse C. Cnossen, Juanita A. Haagsma; Erasmus University Medical Center Rotterdam, Department of Public Health, Rotterdam, The Netherlands.*

**Objectives** - Mild traumatic brain injury (mTBI) occurs frequently in the general population and is an important public health concern. A subset of mTBI patients experiences post-concussion symptoms and when these symptoms prolong for over three months, it is typically referred to as post-concussion syndrome (PCS). Little is known about the effect of PCS on Health-Related Quality of Life (HRQoL) of patients that have experienced a mTBI. The objectives of this study were to assess the impact of PCS on HRQoL six months after mTBI and the correlation between the PCS and HRQoL domains.

**Methods** - A prospective observational cohort study was conducted among a sample of adult mTBI patients. Follow-up postal questionnaires at six months after emergency department (ED) admission included socio-demographic information, the Rivermead Post-Concussion Symptoms Questionnaire (RPQ), and HRQoL measured with the 36-item Short-Form Health Survey (SF-36) and the Perceived Quality of Life Scale (PQoL). We used the Mann Whitney U test to test for differences between patients' experiencing/not experiencing PCS and SF-36/PQoL summary scores and the Spearman's correlation coefficients to evaluate the correlation between the RPQ items and the SF-36 domains and PQoL subscales.

**Results** - 731 mTBI patients completed the six-month questionnaires, of whom 40.9% were classified as having PCS. Patients with PCS had significantly lower scores on all SF-36 domains and lower physical and mental component summary scores. The mean PQoL score for patients with PCS was significantly lower than for patients without PCS. All items of the RPQ were negatively correlated to the SF-36 domains and PQoL subscales, indicating that reporting problems on any of the RPQ items was associated with a decrease on different aspects of an

individuals' HRQoL.

**Conclusions** - PCS is common after mTBI and mTBI patients suffering from PCS have a considerable decrease in HRQoL. More insight is needed in the role of pre-injury psychological, personality and psychosocial factors that may influence both the report of post-concussion symptoms and physical, mental and social functioning measured with the SF-36.

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## 9.7 Time to surgery in a hip fracture population: Implications for patient safety

*Sinead Hahessy, School of Nursing and Midwifery, National University of Ireland, Galway, Ireland and Audrey Butler, Advanced Nurse Practitioner in Orthopaedics, Mid-Western Regional Hospital, Limerick, Ireland.*

**Objectives** - The prevalence and management of hip fractures amongst the aging population is the subject of much debate due to an increase in life expectancy, the prevalence of osteoporosis and concern regarding the safe management of hip fracture patients. Studies have shown that sustaining a hip fracture increases mortality risk, with reported rates ranging from 14%-36% at one year post surgery (Zucherman, 2005) and from 8%-10% at thirty days (Griffiths *et al.*, 2011). Patients with a hip fracture may be appropriately delayed for surgery as they require optimisation or clinical interventions to treat acute medical illnesses (Moja *et al.*, 2012). Other patients are inappropriately delayed due to hospital factors (Brener, 2013; Lee & Elfar, 2014). Timely efficient admission and surgery is well documented as the best course for the safe management for these patients.

**Methods** - The aim of this prospective cohort longitudinal follow-up study was to establish if a relationship existed between duration of time spent in the Emergency Department (ED), time to surgery and functional ability in patients with hip fractures. Functional ability for fifty one patients with a hip fracture was evaluated using the Barthel Index Score (BIS) on admission and at six weeks post-surgery. This prospective cohort longitudinal follow-up study was undertaken in an acute hospital that provides health care services for a population catchment of 379,327 in Mid-West Ireland. Ethical approval was granted from the local Scientific Research Committee. Data were analysed by using SPSS version 20.

**Results** - The study findings reveal a change in BIS at 6 weeks for patients who are delayed to surgery. Patients who experienced long delays (>12hrs) in the ED awaiting admission functioned less well (Kruskal-Wallis test  $p = .033$ ). Correlation existed between time to surgery and returning to pre-fracture place of residence, ( $p = .000$  Pearson chi-square), which also remained significant while controlling for age. Results indicate that prolonged waits had an overall negative impact on patients' post-fracture functional ability and their safety.

**Discussion and conclusions** - This study highlights the deleterious effects on functional ability when orthopaedic surgery is delayed. The results indicate that prolonged waits have an overall negative impact on patient safety. The orthopaedic multidisciplinary team must advocate for adequate and efficient patient care protocols and systems for the benefit of this patient group. Examination of how hospitals are currently providing services for hip fracture patients in Europe is justified. It is imperative that orthopaedic teams make functional recovery and return to independent living a priority outcome for patients to ensure safe and efficient services.

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## 9.8 Risk factors for primary care compared to secondary care treated burn injury

*Eva van Zoonen (Dutch Burns Foundation), Robert Verheij (NIVEL), Lando Koppes (NIVEL), Margriet van Baar (Association of Dutch Burn Centres) and Carine van Schie (Dutch Burns Foundation), The Netherlands.*

**Objectives** - In order to determine target groups for burn prevention programmes, it is necessary to identify risk factors for burn injury. It is known that specific socioeconomic- and demographic risk factors affect the risk of burn injury that needs to be treated in secondary care. However, little is known about risk factors for burn injury treated

in primary care and whether risk factors are the same as for burn injuries requiring secondary care. Our study tries to fill this gap.

**Methods** - Data were derived from electronic health records of 450 general practices participating in NIVEL Primary Care Database in 2010/2015. We studied the effect of socioeconomic and demographic factors on the risk of burn injuries in primary care.

**Results** - Females have a higher risk of burn injuries than males. The same is true for children of 0-4 years, especially boys. Young adult women between 15 and 30 also have an increased risk of burn injuries. Patients living in a low income neighbourhood and with a low socioeconomic status (SES) are at higher risk to obtain burn injury compared to average patients. Also the level of urbanity affects the risk of burn injury. The more urban, the higher the risk of burns. Patients living in neighbourhoods with a high percentage of non-western immigrants, are at greater risk for burn injury than average.

**Discussion and conclusion** - Most socioeconomic- and demographic risk factors for burn injuries in primary care are comparable to risk factors in secondary care. However, female patients are overrepresented in primary care, while male patients are overrepresented in secondary care.

Also, young adult woman are not as often seen in secondary care as in primary care. In addition to known risk groups, young adult women has to be taken into account when determining target groups for burn prevention.

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10.15 - 11.15

### **Break-out session-10: Topical issues**

Location: *Damzaal*

Moderator: Eva Vaagland, Norwegian Safety Forum, Norway

## **10.1 Teaming up for safety – Using risk assessment tools**

*Eva Jakobson Vaagland, Norwegian Safety Forum, Oslo, Norway.*

**Background** - Public health work in Norway is mainly focused on lifestyle diseases, diabetes and cardiovascular diseases and the prevention of these. Much less interest is put into injury prevention and safety promotion, although life lost due to injuries is a major cause of death up to 45 years of age, and caring for injuries is a costly part of the national health service. We need to increase awareness about the scope of injuries, causes of injuries and the potential for injury prevention and safety promotion.

**Objective** - The objective is saving lives and protecting people from injuries, by spreading information, and inviting groups to take part in risk assessment work. We want to put safety and injury prevention on the radar of communities, organizations, NGOs, institutions, families, neighbors and individuals. By increasing knowledge and awareness we hope to change attitude and practice.

**Methods** - By sharing facts, information and best practice - easily accessible on a website - we want to increase knowledge and give insight about injuries and safety promotion. We supply tools, checklists and suggestion on how to carry out safety checks in private homes, playgrounds, outdoor areas around elderly centers etc. We have also launched a digital map tool to register places and take pictures of points of interest on "Safety walks" in the neighborhood, this gives us a good background material for taking action. The project can be used by Safe Communities to invite new groups to take part in the local safety scheme. Organizations in all parts of Norway are invited to take part and get involved in local risk assessment. We hope that the project can be a way to promote interest in injury prevention and safety promotion on a community level.

**Results** - The project was developed in 2015-2016 and is now tested by communities and organizations. The initial phase; dialogue with stakeholders, developing web site, basic information etc has gained a lot of interest. We`re

now collecting reports from local activities and move from pilots to a broader use of the tools and the project as a whole.

#### **Discussions and conclusions -**

The project gives us possibilities to increase awareness and involve new groups in community safety. It also gives plenty of opportunities to communicate safety messages, in different media and on Facebook.

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## **10.2 Monitoring injuries for regional policy making on violence and traffic accidents**

*Hidde Toet and Karin Klein Wolt, VeiligheidNL, Amsterdam, The Netherlands.*

**Background** - Traffic accidents and violent incidents affect safety as well as the health of citizens. In the Netherlands, every year, 18,000 and 125,000 victims of respectively violence and traffic accidents attend an Emergency Department (ED). Many violent incidents and traffic accidents remain hidden to the police and municipalities.

By collecting information on where, when and under which circumstances violent incidents and traffic accidents occur, policy makers obtain information on how to create a safer environment. Hospitals collect information on injuries and accidents during the treatment of victims on ED's, which can be used to inform policy makers.

The past years several pilot projects started in the Netherlands in which hospitals, municipalities, regional governments, police and other parties cooperated with the objective to improve regional knowledge on violence and traffic accidents and reduce the number of injury-victims.

**Methods** - In the Amsterdam region, in 2013, hospitals started to register data of patients, hot times and hot spots, who attended the ED with violence-related injuries. The Dutch Consumer Safety Institute (VeiligheidNL) translated the received data into reports. A reviewing committee monitored the legal standards where the reports have to comply with (non-traceability of the data). After approval the reports were sent to municipality and police. They evaluated if the data gave sufficient reason to take preventive measures, and took action if warranted. From 2015 the Medical Center Leeuwarden (MCL) hospital, the Regional Road safety Agency Friesland (ROF) and VeiligheidNL investigated whether specified traffic accident-data, e.g. geographical accident-location, could be collected to improve the information position of ROF. The Amsterdam pilot-project provided a blueprint for the data-collection and -sharing process in Friesland.

**Results** - In 2014-2015 Amsterdam hospitals collected a total of 3,098 ED-treatments for injuries related to violence. During this period quarterly data-reports, e.g. location-listings, were shared with the police and municipality. Also specified targeted theme-reports, in particular on young adults, specific city-locations, glass injuries, weapons use, domestic violence and night bars and clubs, were shared.

During the traffic accident pilot, 2015-2016, the MCL-hospital registered information about hot spots and hot times of approximately 1,100 traffic accidents. The data of geographical traffic accident locations were reported to the ROF every quarter.

**Conclusion and discussion** - The accident-data obtained through the ED's are a valuable source of information in addition to existing regional accident-information sources available for regional parties. The ROF for example concluded that about 80% of the reported traffic accidents were previously unknown. It has not yet been properly tested if the provided information can be used for improving targeted safety interventions, and thereby leading to the reduction of violence incidents and traffic accidents.

Other initiatives in this area will gain more success if injury-prevention on ED's is seen as a valuable task of their provided health care and the burden on hospital-staff for the collection of this specific accident-data is minimised.

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### 10.3 20+5 years 'Sicheres Vorarlberg' – a story of success

*Luzia Kremmel, Sicheres Vorarlberg, Dornbirn, Austria*

**Background** - Sicheres Vorarlberg (back then known as "Sichere Gemeinden") was founded in 1993 in a model region including 14 of 96 communities of Vorarlberg with the aim to reduce the accident rate (specifically home, leisure and sports accidents). The effects of this model region were evaluated in 1996 and showed an impressive 19% decline. This led to the extension to the entire province of Vorarlberg in 1997 (hence the title of this abstract – 20 years of work in whole Vorarlberg plus 5 years in 14 communities). Since then, it's organized as an independent organization with 4 employees and several trainers who are performing the various projects in the field. 1998 followed the designation as "Safe Communities" by the WHO.

**Method** - There are various approaches for "Sicheres Vorarlberg" to develop programmes: 1. statistics, 2. expert opinions (e.g. alpine guides), 3. our own subjective perception, 4. networking with other players (e.g. BFU - Switzerland, Große schützen Kleine – Austria). Once a new problem area is identified (either by severity or by prevalence of injuries) "Sicheres Vorarlberg" invites experts and professionals regarding this specific topic to develop a strategy together (and ideally a concrete action) to target this problem.

**Results** - Today "Sicheres Vorarlberg" performs around 600 events with more than 30.000 participants annually. The activities range from information for parents-to-be or avalanche safety courses to physical activity groups for the elderly. Overall "Sicheres Vorarlberg" conducts 24 permanent and annually repeating programs and a wide range of different single events. Vital to the success of all programs and activities is the cooperation and networking with different local players like alpine organizations, sports associations, schools, kindergartens, communities, public authorities, police, experts, etc.

Statistics is on the one hand (as mentioned above) the basis for future projects, on the other hand it's a method to evaluate our activities as well. Therefore, after two general evaluations of the accident rate in 1996 and 2001, now issue-specific evaluations are performed periodically. Such as a skiing and snowboarding accidents survey in 2012 or recently, a sports accidents survey (both in cooperation with "Kuratorium für Verkehrssicherheit").

**Conclusion** - Within the last 25 years "Sicheres Vorarlberg" has acquired renown with its citizen-oriented workings and the hands-on mentality based on scientific research and the cooperation with various experts.

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### 10.4 A Norwegian pathway to community safety– Based on Norwegian laws and regulations and the safe community concept

*Eva Jakobson Vaagland, Norwegian Safety Forum.*

**Background** - Norwegian Safety Forum (NSF) was established in 1985 to provide information on all aspects of injuries and safety, and to promote co-operation between private and public sector and non-governmental organizations. It's a well established meeting place with a wide range of experience in the field of injury prevention and safety promotion. The organization is supported by the Norwegian Ministry of Health and Care. NSF has been the national center for Safe Community-work in Norway since 2004, and also functions as an "International Safe Community Support Centre".

An updated Law of Public Health was introduced in Norway in 2012 where preventive efforts were given a broader attention. The same focus was echoed in the health sector reform, the Strategy for Universal Accessibility and the Planning- and Building Act. These laws and regulations give Norway a supportive framework, and a potential to gain interest for safety work on community level.

**Methods** - A new model for community safety has been developed based on Norwegian laws and regulations and the Safe Community concept. The national model is developed to meet the specific political and administrative demands on Norwegian municipalities in terms of health, safety, plan processes etc. The model is based on a



lifecycle perspective, long term, systematic, evidence based safety efforts. It promotes inter- and cross-sector cooperation, sustainable projects and broad participation from all parts of society. The model is a useful tool for communities turning national policies into local realities. NSF offers advice and guidance, network meetings and seminars.

**Discussion and Conclusion** - The national model was launched in 2014. It has motivated new municipalities to join the national network and put community safety on the local agenda. The Norwegian national network includes nationally as well as internationally designated communities. 26 municipalities and 2 counties are designated, and another 15- 20 are part of the network but not yet designated. NSFs work with community safety is specifically mentioned in the new National Program for Public Health and the National Plan for Road Safety.

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## 10.5 Reliability of data on repeated Emergency Department attendances as predictors of violence: a case-control study in Italy

Alessio Pitidis<sup>2</sup>, Selene Bianco<sup>1</sup>, Fabio Voller<sup>3</sup>, Marco Dalmaso<sup>1</sup>, Carlo Mamo<sup>1</sup> ;

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**Objectives** - Domestic violence against vulnerable people is characterized by its recurrent and ongoing nature. Emergency Departments (EDs) are ideal settings to identify victims of violence. Paths of repeated attendances may be indicators of unrecognized cases of violence. The aim of the study is to mine socio-demographic, clinical and anamnestic factors from repeated ED attendances highly predictive of violence, in order to define or integrate suspicion indicators useful for screening of violence on vulnerable subjects in ED settings.

**Methods** - A case-control study was carried out on data of two Italian regions: Piedmont and Tuscany. These two regions contribute with all their hospital EDs to the European Injury Database in the Minimum DataSet format. Statistical analysis was made by multivariate logistic regression analysis. Three groups of people vulnerable to domestic violence were defined as cases: adult women (aged 15-69 years), children (aged 0-14 years) and elders (aged 70 years or more) with at least an attendance for violence during the years 2013-2015. Patients admitted in ED for road traffic injury in the same population groups were selected as controls. For cases and controls, all ED attendances occurred during the 24 months prior to the defined outcome (excluding attendances occurred within 24 hours prior to it) were used for defining exposure.

**Results** - For all regression models, an increase in the number of attendances is associated to increase of the probability of being victim of violence. As expected, an increase of the number of previous ED attendances for violence strongly affects the probability of the outcome being related to violence both for children and for women. Being foreigner increases the probability of being victim of violence both in children and in women. Predictive factors were: age among women (with fertile 30-49 age group at greater risk), number of diagnoses of mental disorders (in children and women), respiratory diseases, neoplasms and diseases of the blood (for elders).

**Discussion and conclusions** - The study confirms how much the phenomenon of violence is affected by recurrence and underreporting. Its results suggest that some predictive risk factors can be useful to suspect a case of violence when patient is admitted in ED not for the first time in a short period. Moreover, that frequent attendance at the ED is a suspicion indicator per se. The second step of the study will be the application of classification methods. Once identified the main features influencing the classification, they could be implemented in a ED screening procedure in order to define a suspicion index alerting the ED specialists for the suspect of violence victimisation in vulnerable patients.

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## 10.6 Where occupational and road safety matters collide: work-related road traffic fatality prevention

*Anne Drummond, University College Dublin, Ireland and Mary Codd, University College Dublin, Ireland.*

**Objectives** - The aim of this study was to use narrative data from coronial road traffic fatality files, in the Republic of Ireland, to assess the extent of work-related road traffic fatalities. One of the study objectives was to identify areas for prevention.

**Methods** - Narrative data from road traffic fatality cases (n=833) from hard copy national coroner files (2008 to 2011 inclusive) were manually examined to identify work-related road traffic fatality cases. Anonymised national road traffic and occupational fatality data were provided by the national road safety and occupational safety authorities to assess concordance between existing datasets and the new coronial dataset.

Fatality cases were classified as a) worker fatalities, b) non-worker fatalities, in which the 'other party' to the collision was a worker whose work activity was a primary contributor to the collision, and c) bystander fatalities, in which the 'other party' to the collision was driving for work and was exposed to the risk of road traffic injury and the physical and/or psychological trauma of the collision. Descriptive statistics were used to examine the characteristics of each group and to identify relevant occupational and / or road traffic fatality prevention strategies.

**Results** - Results confirmed work-related fatalities as a significant contributor to the national Irish road traffic fatality toll (n=193, 23%). Among work-related road traffic fatalities were: 4% who were working at the time of the collision; 5% who were non-workers, killed because of another party's on-road or driving work activity; and 14% who were bystanders (also non-workers), who died in collision with a working vehicle, although the work activity was not a contributory factor in the collision.

**Discussion and Conclusions** - The study confirmed that, through non-identification and under-reporting of work-related road traffic fatalities, work-related fatalities are underestimated nationally. The facts of the worker being deceased and /or being the only person in the working vehicle, were key limitations to investigators ability to collect information on work-related factors. Prevention was confirmed to be a multi-faceted activity, which requires both organisational-level employer engagement and national level targeting and tailoring of existing interventions from the three domains of road, public and occupational safety to mitigate the risk of work-related road deaths. Study recommendations included continuing and building upon the existing national strategy of high levels of cooperation and collaboration between the Road Safety and Occupational Safety Authorities and the Police.

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11.45 - 13.00

### Plenary closing session

Location: Groote Zaal

### The way ahead in Safety Promotion

Session chair: Gerald Furian, Kuratorium für Verkehrssicherheit, Austria

## 8 European initiatives in injury prevention: ten years after and the UN 2030 Agenda for Sustainable Development

*Dr Dinesh Sethi, Programme Manager Violence and Injury Prevention, Division of Noncommunicable Diseases and Promoting Health through the Life-Course, WHO Regional office for Europe.*

The Global Health Estimates 2015 show that injuries and violence are a still leading cause of death and disability in Europe. In 2015 there were 530 000 deaths due to injury in the 53 countries in the WHO European Region, responsible for 5.7% of all deaths and 9.4% of the burden as measured in DALYs. The WHO Regional Committee

resolution and the European Commission recommendation on the prevention of injuries in Europe highlighted the importance of organized efforts of society for the prevention of injuries. Considerable success has been achieved and the past ten years have witnessed a decline in injury deaths of 29%. Nevertheless injuries remain a leading cause of death particularly in young people: in those aged 15-29 years, they account for 50% of all deaths. Self-harm, falls and road crashes account for 57% of all the deaths and burden due to injury.

Large inequalities exist in the region and rates in European Union are more than twice lower than the Commonwealth of Independent States, with rates in some Western European countries as the lowest in the world. Death rates in males are 2.5 times higher than in females. Death rates when comparing high-income countries with low- and middle-income countries are 1.7 times higher; there has been convergence between death rates in low- and middle-income countries and high-income countries, suggesting that the rate of decline in these are quicker than in high-income countries. However inequalities in childhood injuries when comparing high-income and low- and middle-income countries have widened. Road crash injuries have increased in several countries and deaths from falls are a challenge in older people where death rates have increased over the last several years.

These findings show that there is a strong need for renewed momentum in injury prevention actions across Europe. The UN 2030 Agenda for Sustainable Development offers an opportunity to reinvigorate the injury prevention agenda. Importantly this is because it gives a governance structure for intersectoral working for injury prevention practitioners and because there are specific injury related goals and targets, such as Sustainable Development Goal (SDG) target 3.6 on halving road crash deaths by 2020 and SDGs target 16.2 on ending violence against children by 2030. Further injury prevention should be incorporated into other SDGs such as 11 to make cities safe and sustainable, SDG 10 to reduce inequalities, SDG 3.5 to reduce alcohol related harm and SDG3.2 to reduce child mortality. There is an opportunity for the exchange of expertise between Member States and to harness the SDG agenda and implement injury and violence prevention programmes.

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## **9 Technical solutions: are novel technologies the future for successful injury prevention?**

*Lorenzo Chiari, Professor of Electronic and Informatics Bioengineering at the Department of Electrical, Electronic, and Information Engineering "Guglielmo Marconi" and Head of Interdepartmental Centre for Industrial Research in Health Sciences and Technologies at the Alma Mater Studiorum Università' di Bologna, Bologna, Italy.*

As much as about 6.8 billion people worldwide are users of mobile phones. Young people are still the largest consumers of ICT technology. With the new generation of older people (people born soon after the Second World War II), the technology is and will increasingly become a necessary part of older people's life. The field of mobile technologies expands at a high speed.

The advent of smartphones has created potential for both collecting and delivering time- and context-sensitive health and safety information, thus penetrating significantly into society. The latest generation of smartphones is viewed as handheld computers rather than just phones, due to their powerful on-board computing capability, capacious memories, large screens and open operating systems that encourage application development. The same sensors are now also available as wristbands for use in sport and fitness industry or as integrated parts of smartwatches that people wear on a daily basis (e.g. accelerometers and gyroscopes). In addition to continuous activity monitoring, smartphones and smartwatches can be programmed to provide automated and contextually tailored information to facilitate healthier and safer behaviors throughout the day and across a variety of contexts. A smartphone can also be programmed to act as an electronic diary, it is able to provide reminders, and it can be integrated into a widespread Internet-of-Things architecture, e.g. to set up a smart home or a smart working environment. The big and sensitive touchscreens enable developing clear and intuitive user interfaces, and it is possible to draw the attention of the user by means of audio, video, and vibrotactile stimuli and/or feedback.

Hence, mobile technology offers plenty of solutions for monitoring of behavior and interventions targeting prevention by changing behavior. This talk will illustrate a number of examples in which mobile technologies have been used for injury prevention, with their strengths and weaknesses. Particular attention will be devoted to illustrating how mobile technologies can help prevent falls and functional decline in an ageing population.

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## 10 Comprehensive and holistic strategy for promoting safety, health and well-being.

*Gregor Doepke, German Social Accident Insurance (DGUV), Germany.*

**Introduction** - The German Social Accident Insurance (DGUV) is promoting safety and health at work for more than 130 years. Statistics show that there has been a significant decline in the number of occupational and commuting accidents over the last 100 years. This shows that we came a long way in prevention. But statistics also show that in recent years, numbers only decline much slower. The trend shows that the approaches taken to date may not be sufficient to achieve further progress towards the goal of Vision Zero – a world with no occupational illnesses or deadly and serious accidents at work.

The establishment of a workplace culture which factors issues of safety and health in all decision-making and operational levels is now seen as a worthwhile endeavour. It will be offering new opportunities to improve safety and health at work as well as in private life. That implies that the topics of safety and health not only have to be thought of on technical and medical levels at work, but should also be systematically and permanently incorporated in structures and processes. Therefore a culture of prevention requires a basic understanding of prevention by everyone.

**Methods** - The German Social Accident Insurance addresses these goals with a new campaign to establish a nationwide culture of prevention. Previous campaigns and efforts mainly focused on improving circumstances at work. The goal of the upcoming campaign is to affect people's actions in a way that safety and health become a natural part of their thoughts and actions. The desired changes mainly apply to the working environment, but also to people's private life, because thoughts on safety and health must be taken into account in any situation. To achieve these transitions in thought processes we will use a two level approach. An umbrella campaign focuses on the media, political decision-makers and the society as a whole, while the campaigns realised by the Social Accident Insurance Institutions are addressing the companies and their employees directly. All communicative efforts will reach people not only at their workplace but in everyday life, too.

Changes in values and cultures occur over long periods. Therefore we are planning this campaign to last for ten years to ensure not only that the campaign topic is communicated to all companies and institutions, but also that there is long-term momentum behind the value-changing process. Sustainability is a major key in creating a successful change in prevention to reach our objective, the Vision Zero.

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## 11 Launch of next European conference in 2019

*Host organisers of EU-Safety 2019.*

**13.00 Closure of Conference** *Location: Library*

## 12 The 12th technical meeting of the network of National Data Administrators for the EU-Injury Database (IDB) *Location Grootte Zaal*

**13 The annual meeting of the European Child Safety Alliance** *Location Damzaal*

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