

## 100 IMPLEMENTATION OF FALLS PREVENTION OF OLDER PEOPLE IN THE CITY OF LAHTI

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10.1136/injuryprev-2016-042156.100

**Background** Falls and related injuries are a major public health concern in elderly people in Finland. Despite extensive knowledge base about prevention of falls, widespread and systematic falls prevention was insufficient at Lahti City Social and Health Care services. Along with the structural change of Social and Health Care services, starting in 2014, implementation of falls prevention and reducing the falls incidence was set into one of the strategic goals.

**Objective** IKINÄ – model was chosen as a framework for the implementation and developing local fall prevention practices. The emphasis is on organised and systematic multiprofessional fall risk assessment, risk-assessment-based planning and execution of necessary interventions. Implementation was initiated with analysing the falls, practices of recording the falls and skills and competence of the health care staff.

**Results** One to two fall prevention and implementation champions have been trained from each nursing home units, home care and acute/rehabilitation wards (altogether 98 staff members). Head of each unit is liable for deployment of implementation in co-operation with the staff. Practices and scales for systematic fall risk factor assessment have been put into operation.

**Conclusions** Target of the outcome and benefits of implementation are all citizens of Lahti and 1300 social and healthcare staff members. After two years, systematic fall risk assessment has become fixed procedure. Documentation of falls, risk factors, patient safety incident reporting and preventive work has improved. Daily physical activity and exercise has become a norm in units. The implementation is an ongoing process. Next follow-up survey will be done in spring 2016 and incident of falls and fall injuries are monitored regularly.

## 101 COST-EFFECTIVENESS OF VITAMIN D AND EXERCISE IN PREVENTING INJURIOUS FALLS AMONG OLDER WOMEN

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10.1136/injuryprev-2016-042156.101

**Background** Costs of falling in older persons are high, both to individuals and to society. Both vitamin D and exercise are suggested to reduce the risk of falls. This study assessed the cost-effectiveness of vitamin D supplementation and exercise, separately and combined, in preventing medically attended injurious falls among older Finnish women.

**Methods** Economic evaluation was conducted alongside a previously published 2-year randomised controlled trial where 409 community-dwelling women aged 70 to 80 years were recruited into four groups: 1) no exercise + placebo (D–Ex–) 2) no exercise + vitamin D 800 IU/day (D+Ex–) 3) exercise + placebo

(D–Ex+) 4) exercise + vitamin D 800 IU/day (D+Ex+). Outcomes were medically attended injurious falls and fall-related health care utilisation costs over the intervention period, the latter evaluated from a societal perspective based on 2011 unit costs. Incremental cost-effectiveness ratios (ICER) were calculated for the number of injurious falls per person-year prevented, and uncertainty estimated using bootstrapping.

**Results** Incidence rate ratios (95% CI) for medically attended injurious falls were lower in both Ex+ groups compared with D–Ex–: 0.46 (0.22 to 0.95) for D–Ex+, 0.38 (0.17 to 0.81) for D+Ex+. Step-wise calculation of ICERs resulted in exclusion of D+Ex– as more expensive and less effective. Recalculated ICERs were € 221 for D–Ex–, € 708 for D–Ex+ and € 3,820 for D+Ex+; bootstrapping indicated 93% probability that each injurious fall avoided by D–Ex+ per person-year costs € 708. At a willingness to pay of € 3,000 per injurious fall prevented, there was an 85.6% chance of the exercise intervention being cost-effective in this population.

**Conclusions** Exercise was effective in reducing fall-related injuries among community dwelling older women at a moderate cost. Vitamin D supplementation had marginal additional benefit. The results provide a firm basis for initiating feasible and cost-effective exercise interventions in this population.

## Fire Safety and Burn Injuries

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### 102 A SYSTEM FOR IMPROVED BURN INJURY SURVEILLANCE IN RESOURCE-LIMITED SETTINGS

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10.1136/injuryprev-2016-042156.102

**Background** There are limited and fragmented data collection systems for burn injury. A global repository may lead to better burn injury estimates and help identify key risk factors. A collaborative effort involving the World Health Organisation (WHO), the Global Alliance for Clean Cookstoves, the U.S. Centres for Disease Control and Prevention (CDC), and the International Society for Burn Injuries was undertaken to simplify and standardise in-patient burn data collection. Utilising an expert panel of epidemiologists and burn care practitioners, a new form and online data entry system was developed which can be used in resource-abundant or resource-limited settings. The Global Burn Registry (GBR) form has three functions: 1) to determine the magnitude and risk factors for burns, 2) provide baseline and follow up data to test primary prevention interventions, and 3) be designed for use without modification around the world.

**Methods** After development, international burn organisations, CDC and WHO solicited burn centre participation to pilot test the GBR system. WHO and CDC led a webinar to describe system implementation.

**Results** During an 8 month period, 55 hospitals in 29 countries enrolled in the pilot and were provided the GBR instrument, guidance, and data visualisation tool. Evaluations were received from 29 hospitals (53%). Key findings were: median time to upload completed forms was less than 10 minutes; physicians most commonly entered data (64%), followed by nurses (25%);

layout, clarity, accuracy, and relevance were all rated high; and a vast majority (85%) considered the GBR “highly valuable” for prioritising, developing, and monitoring burn prevention programs.

**Conclusions** The GBR was shown to be simple, flexible, and acceptable to users. Enhanced regional and global understanding of burn epidemiology may help prioritise the selection, development, and testing of primary prevention interventions for burns in resource-limited settings.

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#### WHAT INFLUENCES PARENTS OF CHILDREN UNDER 5 YEARS OF AGE TO TAKE SAFETY MEASURES

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10.1136/injuryprev-2016-042156.103

**Background** Children under 5 years of age are at high risk for sustaining burn injuries. In the Netherlands, 26.8% of the patients with burn injuries who require admission to a burn centre, are under 5 years of age. Most burns in children under 5 years of age are scalds. The majority of scalds can be prevented when appropriate measures are applied. To apply these measures, parents must know about the risks of scalding, the ability to perform precautionary measures and parents must be willing to perform these measures. The aim of this study was to identify the underlying determinants that influence the desired behaviour

**Methods** Parents of children under 5 years of age, recruited by a Facebook advertisement, completed an internet survey. The questions in the survey described 9 measures, that are effective to prevent the most common causes of scalds. The parents were first asked whether they performed the particular safety measure, after which an explanation of the safety measure was given followed by a question about the parents motivation to perform/not perform this measure. Knowledge and attitude were measured by using a multiple choice question. Other determinants of behaviour were examined by an open-ended question.

**Results** One of the important outcomes of the survey was that parents think that it is important for a young child to learn to cope with dangerous situations and thereby overestimate the cognitive capacities of children. In addition, parents think that their child is too small to be in danger and do not take into account their sudden development of physical skills. Furthermore, parents overestimate their own ability to keep a constant eye on their child.

**Conclusions** In order to develop effective prevention interventions, it is necessary to gain insight into the motivation of parents to perform safe or unsafe behaviour formed by the determinants of behaviour. Our outcomes provide a theoretical base for future prevention strategies aimed at the prevention of burn injuries in children.

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#### PARENTS' RISK PERCEPTION ABOUT CHILDRENS' INJURIES AND BURNS: A MULTIDIMENSIONAL UNFOLDING TECHNIQUE

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10.1136/injuryprev-2016-042156.104

**Background** Unintentional injuries are a significant issue of public health, accounting 60% of infant mortality around the globe. In Mexico, burns are the most frequent injury at home. This research explores parents risk perceptions about children’s injuries and burns.

**Methods** Multidimensional unfolding is a technique that maps ranking data into a low-multidimensional space that allows for a visual comprehension of the data. 28 parents of Guadalajara, Mexico (15 mothers, 13 fathers), were asked to sort three series of cards (adverse events, agents that could cause a burn, and people who take care of a child) by two different criteria: probability and severity. The last series was sorted only by probability.

**Results** The five perceptual maps have two dimensions, which show two sets of objects each: the subjects (the sample of 28 parents) as numbers, and the objects (either adverse events, agents that could cause a burn or people who take care of a child) as labels. The closer a number is to a label, the more probable or severe the label is considered by that number. Unfolding also permits for sub-dimensions or clusters in the configuration. Parents perceived as more probable to happen: fall, choking, and cut. They did not considered cut and fall as severe. Sun, hot liquids, and hot objects were the most probable agents. None perceived sun, ice, hot objects, smoke, and steam as severe agents. Mother and father were considered the least probable to experience a children’s injury.

**Conclusions** Multidimensional unfolding is an exploratory technique; ideal for research for the first time in Mexico, parents perceived risks or not. For example, smoke was perceived as not probable to cause a burn and ignore as severe. According to the World Health Organisation, burns include the respiratory damage resulting from smoke, being the most frequent cause of death. Parents were omitting important information. This is only the first step, is essential further investigation in this area.

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#### FAST AND AGILE FIRE EXTINGUISHING METHODS FOR FIRE & RESCUE FIRST RESPONSE

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10.1136/injuryprev-2016-042156.105

**Background** New agile fire extinguishing methods could be used instead of, or in combination with, traditional fire hose method in a number of situations, such as small fires in large buildings (Hospitals, Shopping malls), where the traditional fire hose method is rather slow.

In rural areas the first unit to respond is often a command unit that has neither the crew nor the equipment to carry out the traditional fire hose extinguishing. Provisioning fast and lightweight units with agile and lightweight fire extinguishing methods would speed up the process of getting the help. The improvement in the countryside service level would be obvious.

**Methods** We surveyed and evaluated new, innovative fire extinguishing methods in order to find out if they are useful as complementary methods. Sometimes these new methods are sufficient as such, but most often best used in combination with the traditional fire hose.

We investigated the usefulness of these methods through standardised burn experiments as well as field tests in actual house fires.

The test setup was based on research of most common causes and sources of house fires based on the statistical data. A comparison was also carried out also from the performance perspective,