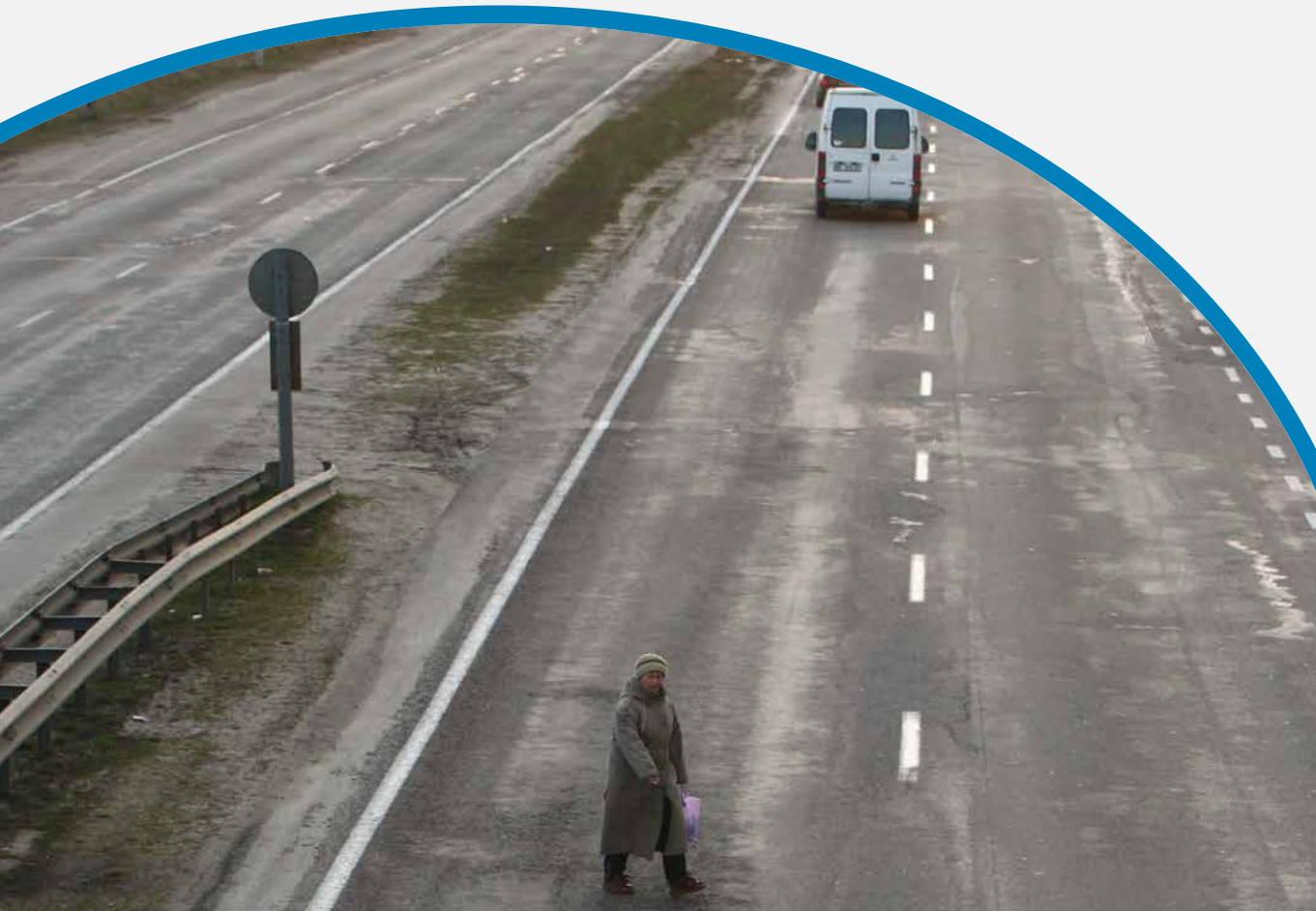




Injuries and inequities

Guidance for addressing inequities
in unintentional injuries





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Written by: Francesco Zambon
Belinda Loring

Abstract

This policy guidance aims to support national, regional and local policy-makers in Europe to prepare, implement and follow up policy actions and interventions to reduce inequities in unintentional injuries. Unintentional injuries, including road traffic injuries, falls, burns, drownings and poisonings still constitute a major public health problem, killing almost half a million people in the WHO European Region each year and causing many more cases of disability. The burden of unintentional injuries is unevenly distributed in the WHO European Region. Steep social gradients for death and morbidity exist across and within countries. Reducing health inequities is a key strategic objective of Health 2020 – the European policy framework for health and well-being endorsed by the 53 Member States of the WHO European Region in 2012. This guide seeks to assist European policy-makers in contributing to achieving the objectives of Health 2020 in a practical way. It draws on key evidence, including from the WHO Regional Office for Europe's *Review of social determinants and the health divide in the WHO European Region*. It sets out options and practical methods to reduce the level and unequal distribution of unintentional injuries in Europe, through approaches that address the social determinants of unintended injuries and the related health, social and economic consequences.

Keywords

HEALTH POLICY

INJURIES

SOCIAL DETERMINANTS OF HEALTH

SOCIOECONOMIC FACTORS

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DK-2100 Copenhagen Ø, Denmark

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ISBN 978 92 890 5047 0

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Edited by Nicole Satterley

Book design by Marta Pasqualato

Printed by AREAGRAPHICA SNC DI TREVISAN GIANCARLO & FIGLI

Cover: © World Health Organization

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Acknowledgements and contributions

This document was written by Francesco Zambon and Belinda Loring, WHO European Office for Investment for Health and Development, Venice, Italy.

The following people provided helpful comments and expert technical review:

- Francesco Mitis, Dinesh Sethi, Erio Ziglio, Åsa Nihlén and Sara Barragán Montes, WHO Regional Office for Europe
- Margaret Whitehead, WHO Collaborating Centre for Policy Research on Social Determinants of Health, University of Liverpool, Liverpool, United Kingdom
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- Neil Riley, Public Health Wales, Cardiff, United Kingdom
- Chris Brookes, UK Health Forum, London, United Kingdom
- Charles Price, European Commission Directorate-General for Health & Consumers, Brussels, Belgium
- Nabil Safrany, European Commission Executive Agency for Health and Consumers, Luxembourg.

Further comments were also provided by the European Commission Directorate-General for Health & Consumers, the Executive Agency for Health and Consumers and the European Union Expert Group on Health Inequalities.

This document has been produced with the financial assistance of the European Union. The views expressed herein can in no way be taken to reflect the official opinion of the European Union.

The WHO European Office for Investment for Health and Development of the WHO Regional Office for Europe also wishes to thank the Italian Ministry of Health, the Veneto Region and the Tuscany Region for their long-standing support to the work of the office as well as the financial support for this publication.

Foreword

Overall population health indicators have improved across Europe over recent decades, yet that improvement has not been experienced equally everywhere, or by all. There are widespread inequities in health between and within societies, reflecting the different conditions in which people live. These health inequities offend against the human right to health and are unnecessary and unjust.

Health 2020 is a new value- and evidence-based health policy framework for Europe, supporting action across government and society to promote health and well-being, the reduction of health inequities and the pursuit of people-centred health systems. It was adopted at the 62nd session of the Regional Committee held in Malta in September 2012. Its commitment is to health and well-being as a vital human right, essential to human, social and economic development and a sustainable and equitable Europe. Health is a fundamental resource for the lives of people, families and communities.

To make this vision a reality we need to tackle the root causes of health inequities within and between countries. We know more about these now from the 2013 report of the European review of social determinants of health and the health divide, led by Professor Sir Michael Marmot and his team at the University College London Institute of Health Equity. Yet opportunities to be healthy are far from being equally distributed in our countries, and are closely linked to good upbringing and education, decent work, housing and income support throughout our life course. Today's disease burden is rooted in how we address these social factors that shape current patterns of ill health and lifestyles, and in the way our resources are distributed and utilized.

For these reasons I welcome the publication of this series of policy briefs, which describe practical actions to address health inequities, especially in relation to priority public health challenges facing Europe: tobacco, alcohol, obesity and injury. I hope this series will offer policy-makers and public health professionals the tools and guidance they need to implement the Health 2020 vision and the recommendations of the social determinants review. The policy briefs were prepared in collaboration with the European Union and I would like to express my gratitude for this support and for the recognition that the European Union and WHO both share this common commitment to addressing equity.

Achieving the promise of Health 2020 will depend on successful implementation of the relevant policies within countries. We can and must seize new opportunities to enhance the health and well-being of all. We have an opportunity to promote effective practices and policy innovations among those working to improve health outcomes. The present (often extreme) health inequities across our Region must be tackled and the health gap among and within our European Member States reduced.

Zsuzsanna Jakab WHO Regional Director for Europe

Introduction

Purpose of this guidance

This policy guidance aims to support national, regional and local policy-makers in Europe to prepare, implement and follow up policy actions and interventions to reduce inequities in unintentional injuries.

The term injury refers to the physical damage that results when a human body is suddenly subjected to energy in amounts that exceed the threshold of physiological tolerance, or damage resulting from a lack of one or more vital elements, such as oxygen (1). This policy brief addresses a broad group of unintentional injuries that are categorized according to their main causal mechanism: road traffic injuries, falls, burns, drowning and poisonings.

In the past, injuries were regarded as random, unavoidable accidents. In recent decades, due to a better understanding of underlying mechanisms, injuries are now regarded as largely predictable and preventable (2, 3). Unintentional injuries still constitute a major public health problem, killing almost half a million people in the WHO European Region each year and causing many more cases of disability.

The burden of unintentional injuries is unevenly distributed in the WHO European Region. While mortality rates from unintentional injuries have declined on average across the Region, in the Commonwealth of Independent States mortality rates have fluctuated vastly since the mid-1990s and continue to be the highest in the Region. Steep social gradients for death and morbidity exist across and within countries. People with lower levels of education, lesser occupations and/or lower income not only have a higher risk of incurring injuries, they also risk suffering more severe consequences when injury occurs (3).

Generally speaking, many interventions have proven to be effective in preventing, reducing or mitigating injuries. Measures include products (seat belts or smoke detectors, and flame-resistant clothing), environmental changes (speed bumps, swimming pool fencing), public education (social marketing campaigns, parent training), and policy guidelines or laws (legislation on drink-driving). Many such measures have also proven to be highly cost-effective.

While very little evidence exists on the differential impacts of safety interventions on various socioeconomic groups, the widening of socioeconomic inequalities in injuries necessitates that policy-makers incorporate the equity dimension in approaches used to tackle injuries (3). Preventive interventions should be designed so that they effectively counteract the underlying mechanisms of injury, which can be different in each social group. This policy document provides technical guidance on how to prepare, implement and follow up such interventions in practice.

Key messages

- Policies and interventions addressing unintentional injuries must be implemented with a clear view to have at least as much (if not more impact) on vulnerable groups compared with the rest of the population, in order to close the gap.
- Unintentional injuries (which include road traffic injuries, falls, burns, drowning, and poisonings) kill almost half a million people per year in the WHO European Region. Deaths are only the tip of the iceberg; there are many non-fatal injuries for each death that occurs, often with far-reaching health and social consequences.
- The burden of injuries is unequally distributed. In addition to differences across countries, there is a steep social gradient within countries.
- Unintentional injuries are predictable and preventable. Effective safety interventions can prevent, reduce or mitigate injuries.
- There is little evidence to show how safety interventions might impact differently on various socioeconomic groups. The possible differential impact on different socioeconomic groups needs to be evaluated for any policy and/or intervention.
- Policies and interventions need to be designed with knowledge of the underlying mechanism of injury, in order to effectively counteract health inequities.

Using this guide

The pattern of inequities in injuries varies greatly between and within countries in Europe. It is therefore not possible to make specific policy recommendations that will work in all countries. This guide provides a framework that policy-makers at national, regional and local levels can apply to their own unique context, in order to consider the processes by which inequities might occur, and to suggest policy interventions that may be helpful in addressing each of these factors. Additional resources are listed at the end of the guide to direct policy-makers to further evidence, promising practices and tools to support policy formulation and evaluation.

Not all European countries have data on unintentional injuries that can be disaggregated by socioeconomic factors beyond age and sex. There are very few published studies of interventions to address injuries which focus on equity or the distribution of impacts within the population. Additionally, given that countries in the WHO European Region have different models of social stratification, the evidence at hand – which stems from high-income countries – is not directly applicable in all cases (3).

Efforts to improve geographical and social data disaggregation, including both individual and contextual variables, will enhance the ability to monitor the differential impacts of policies and interventions on social groups.

Relevance to other key European policy goals

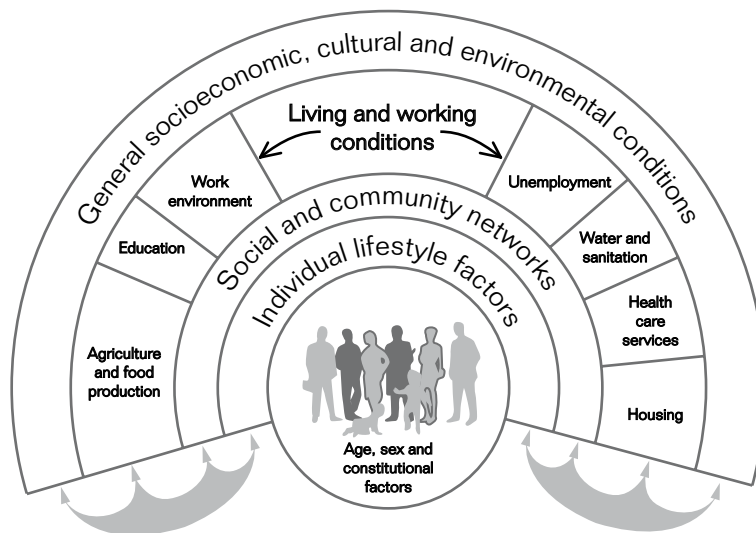
Reducing health inequities, along with improving governance for health and health equity are key strategic objectives of Health 2020 – the European policy framework for health and well-being endorsed by the 53 Member States of the WHO European Region in 2012. Tackling the major challenges posed by noncommunicable diseases and injuries is one of Health 2020's policy priorities. To achieve these objectives, Health 2020 strongly emphasizes the need to strengthen population-based prevention, and accelerate action across levels of government on the social determinants of health (SDH). Similarly, in 2009 the European Commission adopted a communication entitled “Solidarity in health: reducing health inequalities in the EU” (4) and the importance of addressing health inequalities is clearly stated in the European Union (EU) Health Strategy (5).

Among the initiatives which specifically boost safety action, the United Nations' Decade of Action for Road Safety 2011–2020 is a unique opportunity to shape the political agenda towards safer societies. The related Global Plan calls for a systematic approach and multisectoral action involving governments, academia, the private sector, civil society, the media, victims and their families. Action points are grouped in five categories or pillars: (1) road safety management, (2) safer roads and mobility, (3) safer vehicles, (4) safer road users, and (5) post-crash response (6).

Inequities in unintentional injuries in Europe

Health inequities are defined as systematic differences in health that can be avoided by appropriate policy intervention and that are therefore deemed to be unfair and unjust. To be able to devise effective action, it is necessary first to understand the causes of these inequities in health. Health inequities are not solely related to access to health care services; there are many other determinants related to living and working conditions, as well as the overall macro-policies prevailing in a country or region (Fig. 1). Inequities in health are caused by the unequal distribution of these determinants of health, including power, income, goods and services, poor and unequal living conditions, and the differences in health-damaging behaviours that these wider determinants produce.

Fig. 1. The main determinants of health

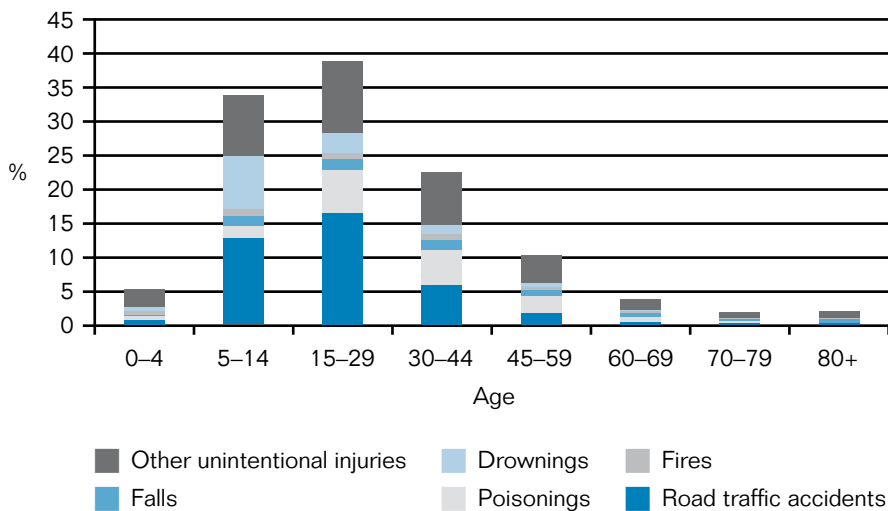


Source: Dahlgren & Whitehead (7).

Unintentional injuries are a major public health problem, accounting for almost half a million deaths annually in the WHO European Region, which constitutes 7% of all deaths (8). These injuries are categorized according to their main causal mechanism: road traffic injuries, falls, burns, drowning, and poisonings. Other mechanisms, such as electric current or exposure to mechanical forces, also account for a large number of injuries. The general approaches for prevention, however, are common to all.

The largest proportion of unintentional injuries is attributable to road traffic accidents, followed by poisoning and falls. These injuries are among the 10 leading causes of death among the population aged 0–59 years. In the age group 5–29 years, road traffic injuries are the leading cause of death, taking the lives of about 35 000 people annually. However, the distributional pattern of fatal injuries greatly varies according to the age group (Fig. 2) (8–12).

Fig. 2. Deaths by unintentional injuries as a percentage of total deaths in the WHO European Region, by injury category, both sexes, 2011

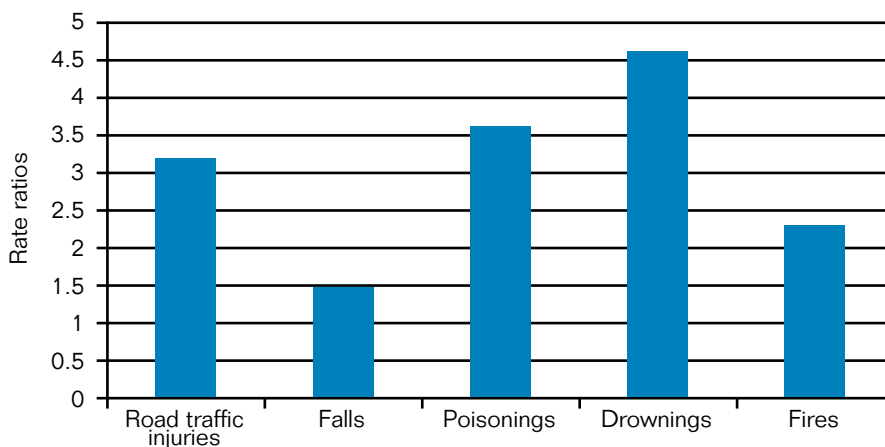


Source: WHO Regional Office for Europe (8).

Deaths are only the tip of the clinical iceberg; there are many non-fatal injuries for each death that occurs, often with far-reaching health and social consequences. A study in the Netherlands, for example, showed that for every death from injuries occurring in the home or during leisure, there were 160 hospital admissions and 200 emergency room attendances (10, 13).

Mortality rates from unintentional injury in Europe are higher in males than in females, and male deaths by drowning are 4.6 times as frequent as female deaths by drowning. However, the male–female ratio varies according to the category of injury (Fig. 3) (8). Conflicting evidence is available regarding socioeconomic differences in relation to gender (3). A study conducted in eight countries showed that men with lower levels of education generally have an increased death rate from transportation injury (in an all-country setting). However, analysing the social pattern for women and its relation to injury risk has led to conflicting results (14).

The burden of unintentional injuries is not equally distributed in the WHO European Region. Although countries in western Europe have reached good safety levels, death and disability from injury still remain high in eastern European countries. The WHO European Region shows the biggest difference in injury mortality between poor and wealthy countries in the world. Overall, the risk of dying of unintentional injuries in low- and middle-income countries is three times higher than in high-income countries. However, when considering specific causes of injuries, inequity gaps of a much greater magnitude are evident. For instance, the mortality rate for road traffic crashes is 3 per 100 000 in Sweden, while in Kazakhstan it is seven times this (9). In addition to these differences across the Region, disparities also exist within countries, without exception.

Fig. 3. Male to female ratios of deaths by injury in the WHO European Region, 2008

Source: WHO Regional Office for Europe (8).

In general, the disadvantaged in any country are at a higher risk of both fatal and non-fatal unintentional injury compared to the more advantaged members of society. Vulnerability, exposure and consequences of injuries are borne differently by the different socioeconomic strata (15–17). Children and people in disadvantaged groups may suffer from malnutrition and co-morbidity, making them more susceptible to worse outcomes after the injurious event. Furthermore, injuries accentuate the cycle of poverty, as the more vulnerable groups are less likely than wealthy individuals to pay co-payments for medical care, to afford time off from work or to be insured.

For instance, in England and Wales, children from worse-off families are 37.7 times more likely to die from exposure to smoke and fire than children from well-off families (18). The mechanisms which lead to injury vary in different social groups. Improving safety requires flexible and multifaceted interventions based on a thorough knowledge of communities (3).

Research has shown that the more preventable an ailment, the stronger the relationship between health outcomes and socioeconomic level. The disadvantaged have less access to safety equipment, to education and programmes to change unsafe behaviours – to mention only a few means of prevention. Affluent people have a range of resources, making prevention more accessible. Moreover, once injury has occurred, accessibility and affordability of high-quality medical care can lead to inequities, further increasing the burden of injuries for the poor (19).

Very few policies and interventions incorporate the equity dimension in their design. Further evaluation of differential impact across socioeconomic groups would be advantageous.

Key messages

- Unintentional injuries are a leading cause of death.
- The burden of injuries is unequally distributed across socioeconomic groups. People with lower levels of education, income and occupation are at a higher risk of unintentional injuries than those who are better off.
- Males are more affected by death and disability than females, in terms of all types of unintentional injuries.
- Preventive interventions might effectively increase the overall level of safety in a population, but may not decrease inequities across different socioeconomic groups.
- Despite solid evidence documenting inequities in unintentional injuries, few policies and interventions incorporate the equity dimension in their design.
- The complex interplay of individual, community and structural variables leads to different underlying injury mechanisms in various socioeconomic groups. Safety measures need to be based on this knowledge.

What can be done?

Unintentional injuries impose huge costs to societies, which could be abated. It is estimated that road traffic accidents alone reduce a country's gross domestic product by up to 3.9% (8). Furthermore, costs associated with medical care and the loss of income resulting from injuries can lead already disadvantaged people to further impoverishment, and push them into the medical poverty trap.

Cost-effective interventions exist to reduce the overall burden of unintentional injuries. They have high returns on investment through their saving of economically productive human lives. One study conducted in England demonstrates that significant savings can be made by preventing emergency department attendances and hospital admissions for unintentional injury among children and young people. An 11% national reduction in unintentional injuries among children could save enough funding to offset the cost of implementing the preventive interventions (20). Despite striking evidence of the steep social gradient for all types of injuries, it is unusual to find policies and interventions which articulately address the equity dimension in such a way that the impact on different social groups is foreseen (3). This results in a lack of knowledge about whether they are equally effective in all socioeconomic groups and about whether they progressively reduce the injury risk for those most vulnerable. Those interventions that target disadvantaged groups typically involve measures such as the adoption of safe practices and the use of safety equipment. However, these might not suffice in decreasing the injury risk level (21).

Equity-oriented interventions should be designed so that they effectively counteract underlying mechanisms of injury, which can be different in each social group. These interventions need to progressively increase the level of safety of the groups most in need, through concerted, multisectoral actions. Safety-for-all strategies such as legislation, regulation and enforcement are effective in reducing injuries in all social groups. These include setting minimum conditions and product standards and imposing safe behaviour and practices, such as wearing seat belts in cars. Whereas it is generally accepted that passive, universally targeted interventions, such as road traffic safety management are most effective in reducing the injury burden, it is not known whether they differentially favour disadvantaged people, thus reducing inequities across socioeconomic groups (3).

Effective approaches tend to focus on the distinct pathways and mechanisms by which safety differentials arise. Equity-oriented policies and interventions aim to narrow inequities through action targeted at reducing the exposure to, risk of and consequences of injury for less-affluent people or neighbourhoods (22).

There are a number of approaches to preventing socioeconomic inequalities in unintentional injuries, focusing on various aspects of prevention (7, 23).

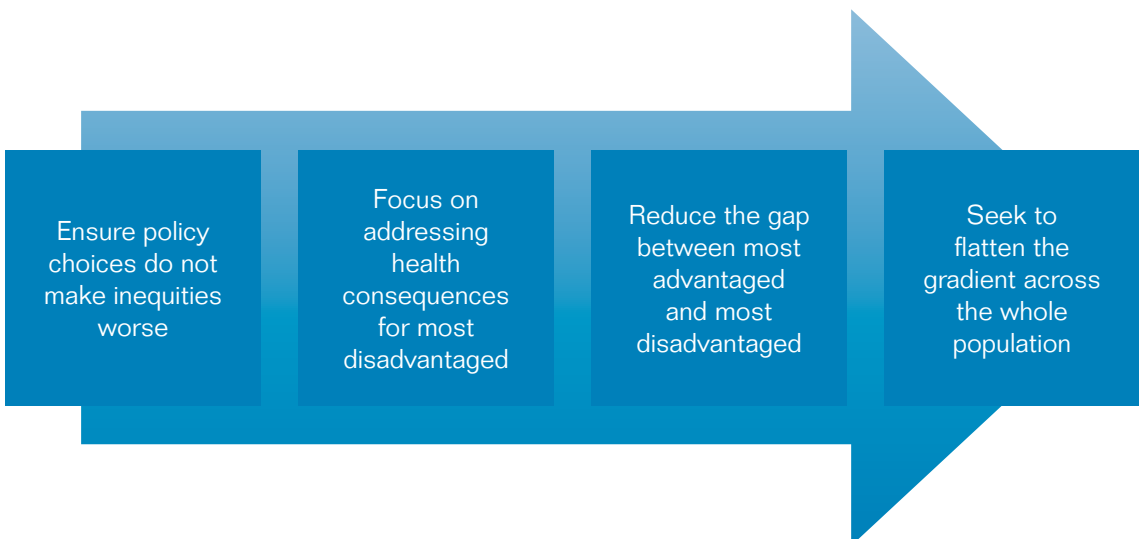
- **Primary prevention** Opportunities for safety: some people face higher structural risks, such as children living near areas with high-speed traffic.
- **Secondary prevention** Opportunities to avoid risk: some people are less able to avoid injury. Not all can afford child car restraints, for example.
- **Tertiary prevention** Access to or use of health care: some people live in areas lacking emergency trauma care and rehabilitation services.

Such interventions should be part of larger social welfare policies and policies promoting social mobility.

Step-wise approach

Countries in Europe have very different experiences and capacities to address health inequities; however, no matter what the starting point, something can be done. An incremental approach can be taken to reducing inequities, wherever one begins (see Fig. 4).

Fig. 4. Incremental approach to reducing inequities



It is not only the most disadvantaged who suffer a disproportionate burden of unintentional injuries. A social gradient exists, whereby each socioeconomic group is at relatively higher risk of unintentional injury than the next group above them in the social spectrum. Addressing gaps between groups and reducing the social gradient requires a combination of universal policies and additional measures according to the different levels of need involved.

“First do no harm”

Some public health interventions inadvertently make inequities worse. Unless equity is explicitly taken into consideration, the business-as-usual approach tends to create policies, programmes and services that have a social gradient in their effect. Unfortunately, although this is not the policy-makers’ intent, it means that the most disadvantaged groups receive the least benefit from the policy, even though they have the most to gain, and inequities worsen rather than improving.

For example, a study from the United Kingdom assessed the effectiveness of home safety interventions, which included safety consultation and provision of free safety equipment to a large sample of families. The study found that ethnic minority families were less likely than non-minority families to engage in home safety practices (such as storing medicine and cleaning products safely), widening inequities rather than narrowing them (24).

This seems to be especially true for broad public education campaigns and individual health promotion interventions, which often have the most impact on people who are better off. This does not have to be the case, however (25, 26). Some measures, such as traffic calming, are effective in reducing pedestrian injuries for all socioeconomic groups. Traffic calming can also reduce relative inequalities in child pedestrian injuries (27). Even good strategies to prevent unintentional injuries have not been evaluated for their effectiveness in different socioeconomic groups. It cannot be assumed that these measures will have the same effects across society. A number of tools are available for assessing the equity impact of policies and interventions (see the section on where to find out more at the end of this policy brief).

The formulation of policies and interventions can benefit from a set of 10 well-known strategies for the prevention of injury (28). They target both stages of the injury process, as well as areas of change. No thorough evaluation has assessed these strategies through an equity lens. However, presumably the closer a given intervention is to targeting the source of danger by modifying, eliminating, separating or isolating it (passive safety), the greater its potential for reducing inequities in injury risk. Conversely, the more an intervention relies on adopting safe behaviour (active safety) in difficult living, working or road environments, the less effective it is likely to be among deprived individuals and communities, unless accompanied by enforcement (3). As such, it is less likely to contribute to narrowing the safety gap. Table 1 shows the 10 strategies developed by Haddon and their impact on inequities (28).

The policy-maker has three approaches available to implement such strategies:

- population-based programmes with the same intervention for all groups;
- programmes targeting most-at-risk groups;
- population-based programmes with personalized interventions for different groups.

Legislation, regulation and enforcement are safety-for-all strategies and have proven to be effective in reducing the overall burden of injuries. Targeted programmes aim to identify people at risk and decrease their exposure and vulnerability to risk, as well as preventing unequal consequences of injuries. This can be achieved, for instance, through educational programmes and the distribution of free safety equipment to the groups at greater risk (29).

Table 1. 10 strategies for injury prevention and their potential impact on inequities

Haddon's ten strategies for injury prevention and control	Type of intervention	Aim of policy/ intervention	Examples	Impact on inequities
Eliminate the hazard	Legislation, regulations, infrastructures	Limiting exposure	–	Likely to increase safety for all
Separate the hazard	Legislation, regulations, infrastructures, provision of safety devices	Limiting exposure	Falls: stair gates	Education programmes related to the use/ possession of stair gates were more effective among disadvantaged families compared to their controls (30)
			Falls: window locks	Education programmes related to the use/possession of window locks were less effective among disadvantaged families compared to their controls (21)
Isolate the hazard (time and space)	Legislation, regulations, infrastructures	Limiting exposure	Fencing for public aquatic facilities/ locations; installing barriers for cliff edges	Likely to increase safety for all

Table 1. contd

Haddon's ten strategies for injury prevention and control	Type of intervention	Aim of policy/ intervention	Examples	Impact on inequities
Modify the hazard	Legislation, regulations, infrastructures	Limiting exposure	Scalds: safe hot tap water temperature	Education programmes related to thermal injury prevention were more effective in disadvantaged families compared to their controls (21)
			Road traffic injuries: traffic calming	Traffic calming is associated with reduction in absolute pedestrian injury as well as reduction in relative inequities in child pedestrian injury rate (27)
			Burns: flame-resistant nightdresses	Does not prevent injury, but significantly contributes to the reduction of fatal injuries for members of all social groups (3)
Equip the person	Safety standards, pricing policies of safe equipment, free distribution of safe equipment	Limiting vulnerability	Road traffic injuries: legislation on bicycle helmets	Bicycle helmet legislation is effective in increasing helmet use by all children and particularly those in low-income areas (31)
			Fires: smoke detectors	Equal impact on all socioeconomic groups (32, 33)

Table 1. contd

Haddon's ten strategies for injury prevention and control	Type of intervention	Aim of policy/ intervention	Examples	Impact on inequities
Train and instruct the person	Home visiting programmes, social marketing campaigns, training courses, law enforcement	Limiting vulnerability	Road traffic injuries: population-based education programmes combined with affordability and accessibility of cycle helmets	Programmes had a positive impact on head injuries both in rich and poor municipalities (34)
Warn the person	Home visiting programmes, social marketing campaigns, training courses, law enforcement	Limiting vulnerability	Road traffic injuries: population-based education programmes combined with affordability and accessibility of cycle helmets	Programmes had a positive impact on head injuries both in rich and poor municipalities (34)
Supervise the person	Parenting programmes, law enforcement	Limiting vulnerability	Interventions to prevent drowning	More impact on disadvantaged groups (21)
			–	Likely to increase safety in disadvantaged groups
Rescue the person	Improving trauma care in deprived areas, increasing accessibility and affordability of care	Improving health outcomes	–	Likely to limit long-term consequences of injuries in disadvantaged groups
Repair and rehabilitate the person	Increasing accessibility and affordability of care, social welfare, social protection	Limiting health consequences	–	–

Key messages

- Well-intentioned public health interventions often make health inequities worse – equity needs to be explicitly considered in the design of all policies and programmes to address unintentional injuries.
- Do not assume that what works on average, works for everyone – it is essential to investigate the effect of interventions on different socioeconomic groups.
- All policies need to be monitored to ensure they work effectively in practice to deliver the intended equity results.
- Modifying, isolating and/or eliminating the source of danger have great potential for reducing inequities in injury risk in all socioeconomic groups (passive safety).
- Interventions that rely on adopting safe behaviour (active safety) are likely to be less effective among deprived groups.

Policy interventions at different levels

Inequities in unintentional injuries can arise from factors at many levels. This includes factors in the broader socioeconomic context, different exposures, different vulnerabilities, different experience within the health system, and different consequences from injuries (Fig. 5). For the most disadvantaged in society, inequities exist at all of these levels, leading to compounding disadvantage.

For example, poor, socially excluded groups are more likely to have increased exposure to unsafe housing and dangerous traffic environments, they have reduced access to information and safety instructions, are less likely to pay for car and home insurance, and have less access to high-quality medical care and rehabilitation services (3).

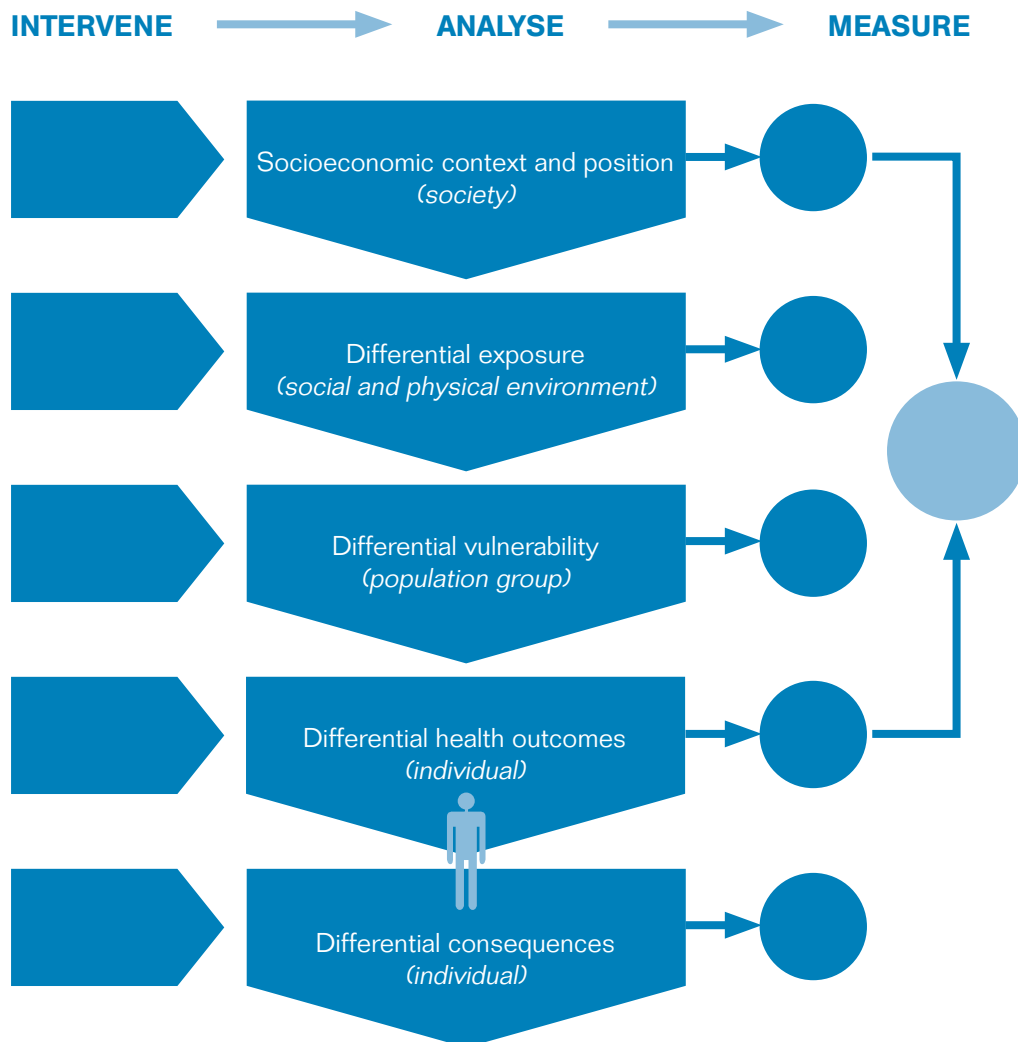
Thinking about the ways in which inequities in unintentional injuries may arise can be a helpful way to identify points at which to intervene (Fig. 5).

A comprehensive approach to reducing inequities in unintentional injuries involves a combination of policies that address inequities in the root social determinants, as well as policies that treat the symptoms or attempt to compensate for inequities in the SDH. This requires a mix of interventions that have short-term actions but a long-term focus, as well as both simple and complex interventions (Fig. 6).

Socioeconomic context and position

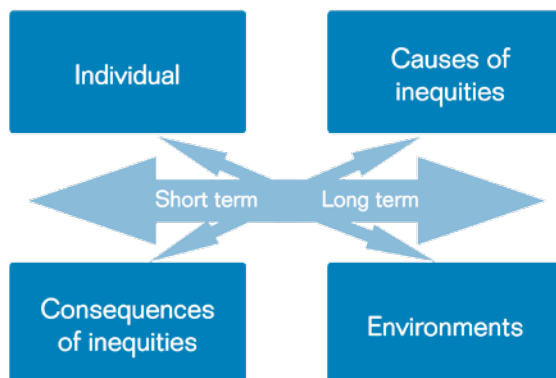
Factors in the global, European or national socioeconomic contexts can influence how the SDH are distributed. This includes factors in the socioeconomic context which

Fig. 5. Levels at which health inequities can arise and be addressed



Source: Blas & Kurup (35).

Fig. 6. Addressing inequities requires a combination of policies



influence how risk is produced, distributed and played out in European societies. These factors can influence which groups are most at risk of injury-related harm, and they may be modifiable or able to be compensated for (Table 2).

Measures such as legislation, regulation and enforcement – applied to key risk factors for unintentional injuries – reduce the injury burden generally and can also reduce inequities, by setting minimum conditions and standards and imposing safe behaviour and practices. However, a recent survey on road safety found that only 49% of the countries in the WHO European Region have comprehensive legislation on the five main risk factors for road traffic injuries: excessive speed, drinking–driving, helmet use, seat belt use and child car restraints. The survey also showed that the vast majority of the countries reported that legislation should be enforced more effectively (11).

Safety-for-all strategies, such as legislation that limits access to dangerous products or substances, have protective impacts, on both unintentional and intentional injuries. One example is the legislation in England that limits the maximum amount of paracetamol and aspirin that can be purchased in one transaction, with warnings on the packaging about the danger of overdose (Box 1). This legislation and its enforcement were effective in preventing not only accidental poisoning, but also suicides (36).

Box 1. United Kingdom: legislation effective in reducing accidental poisoning

Poisoning caused by paracetamol (a drug which is usually sold without a medical prescription) is responsible for many accidental deaths, and is a frequent cause of hepatotoxicity and liver unit admissions. In the United Kingdom, legislation was introduced to restrict pack sizes of paracetamol sold over the counter. Packs were limited to a maximum of 32 tablets in pharmacies and to 16 tablets for non-pharmacy sales. A study conducted in England and Wales showed that the legislation to restrict pack sizes of paracetamol was associated with a significant reduction in deaths due to paracetamol poisoning over an 11-year period. However, further studies are needed to investigate how equitably the reduction in deaths is distributed throughout society (36).

Differential exposures

Certain groups may be exposed to factors which increase the risk of unintentional injury. There is differential exposure to hazards, such as unsafe environments or traffic conditions. For example, in the United Kingdom, children from more deprived areas are more likely to walk to school and are less likely to be accompanied by adults than children from more affluent homes (38).

Effective strategies for reducing exposure to risk may need to target behaviours as well as infrastructures (Box 2 and Table 3). For instance, child pedestrian journeys to school can be supervised (behaviour), and safe play areas can be developed (environmental change). In addition, land use and transport policies, as well as home design regulations, can have an effect in terms of modifying the exposure to hazards (39).

Table 2. Factors in the socioeconomic context that shape inequities and interventions to consider

Sources/drivers for inequities	Interventions to consider
<p>Levels and distribution of poverty</p>	<ul style="list-style-type: none"> • Simplify eligibility requirements and support provided to those without documentation. • Improve acceptability of services for high-risk groups (staff training, recruitment policies, gender and cultural sensitivity, opening hours, location of services). • Review the continuum of care pathway to ensure better links between health and social services for people at risk of poorer outcomes upon discharge from health care (e.g. homeless people). • Provide supported housing to people discharged from care.
<p>Cultural norms about safety, and gender norms</p> <p><i>E.g. young males have risk-taking behaviours and lifestyles, encouraged by masculine norms, expectations and identity</i></p>	<ul style="list-style-type: none"> • Introduce campaigns to promote a culture of safety which are designed according to qualitative and quantitative studies on reasons for unsafe behaviours among vulnerable groups, and which are designed to specifically reach out the most disadvantaged. • Strengthen enforcement on legislation, and introduce regulations setting safety standards. • Implement measures on gender norms and values to address risk-taking behaviours. • Introduce measures to change harmful drinking cultures among certain groups (e.g. men and young people) to prevent drink-driving.
<p>Conditions of home and working environment, and of recreational areas; traffic environment; maintenance of road infrastructure</p>	<ul style="list-style-type: none"> • Increase safety standards for home and working environments. • Conduct regular road safety audits on the existing road network and incorporate safety in the design of new roads. • Produce safety devices (helmets, seat belts, child restraints) which comply with international safety regulations. • Develop safety-oriented legislation that sets minimum standards and conditions in the workplace, public and private buildings, recreational areas and on roads.

Table 2. contd

Sources/drivers for inequities	Interventions to consider
Different opportunities for safety: availability and affordability of safety equipment	<ul style="list-style-type: none"> • Guarantee affordability of safety equipment (stair gates, smoke detectors, helmets) by regulating their price. • Co-finance the purchase of safety equipment for less-affluent groups. • Provide financial incentives, free distribution and borrowing schemes for child restraints (37).
Social exclusion/marginalization	<ul style="list-style-type: none"> • Involve people from excluded groups in the development and implementation of policies that allow them to fulfil their rights (e.g. to education, health, housing).

It is important to understand the mechanism that leads to increased exposure to risk of injury among different social groups. For instance, if parents in disadvantaged social groups simply have an information deficit, potentially this can be addressed by an educational approach. However, if children face increased risk because they live in areas in which they are exposed to high volumes of traffic, then area-wide environmental and policy measures may be required (39).

Alcohol impairment is a risk factor for unintentional injuries in all socioeconomic groups, with a stronger association for those groups lower on the socioeconomic scale. Furthermore, alcohol misuse is one of the strongest predictors for interpersonal violence and self-inflicted injuries. Interventions aiming to decrease alcohol abuse, such as reducing access by limiting the opening times of bars and sales points, will lead to wider societal benefits given the significant role played by alcohol in injury outcomes (3).

Box 2. Lipetskaja oblast in the Russian Federation: safer behaviours through strengthened enforcement and social marketing campaigns

In 2010 the Russian region of Lipetskaja oblast implemented a multisectoral project on road safety (Road Safety in 10 Countries). Among the initiatives undertaken were a newly designed social marketing campaign and a series of public relations initiatives aiming to increase seat belt use.

Hard-hitting television advertisements were complemented by bill-boards and other media to target the groups most at risk. During the campaign, enforcement operations by police officers were increased 10-fold compared to pre-campaign measures. The initiative led to significant improvement in seat belt use and life saving in the region. However, whether the safety improvements are equally spread across socioeconomic groups was not evaluated (40, 41).

Table 3. How differential exposures could occur and interventions to consider

Sources/drivers for inequities	Interventions to consider
<p>Differential exposure to unsafe environments</p> <p><i>E.g. people living in deprived neighbourhoods may be more likely to be exposed to unsafe environments</i></p>	<ul style="list-style-type: none"> • Enforce legislation which sets minimum safety standards in the workplace, home, on roads and in recreational areas. • Implement soft engineering approaches, such as traffic separation and traffic calming measures for the prevention of road traffic injuries. • Introduce parenting support programmes and investment in high-quality early childhood education and childcare. • Provide incentives for less-affluent groups in order to promote use of public transport. • Introduce population-based measures to increase lighting in outdoor environments in deprived areas (tunnels, parks, streets).
<p>Differential exposure to unsafe practices</p>	<ul style="list-style-type: none"> • Ensure strict enforcement of legislation on key risk factors for road traffic injuries (drink-driving, excess speed, seat belts, child restraints, motorcycle helmets), accompanied by social marketing campaigns on those factors. • Enforce policies which limit alcohol impairment. • Provide home safety education and visitation programmes to increase the adoption of safety practices.
<p>Lack of supervision/enforcement</p> <p><i>E.g. children living in deprived neighbourhoods may experience poor parental supervision</i></p>	<ul style="list-style-type: none"> • Provide home safety education and visitation programmes to improve parental supervision and increase the adoption of safety practices. • Implement community-based interventions to foster social cohesion.

Differential vulnerabilities

Certain factors make some groups more vulnerable than others to unintentional injuries, even if their exposure is the same. Vulnerabilities that contribute to inequities can be due to the presence of disabilities which reduce mobility, as well as unsafe behaviours and practices, or lack of availability of safety equipment. Interventions targeting people at risk are a common way of tackling vulnerabilities (see Table 4). Such interventions include educational programmes providing adequate information on safety practices, and proper installation and use of equipment, sometimes combined with its free distribution (see Box 3 and Box 4). A greater vulnerability faced by people from deprived groups does not exclusively stem from poor knowledge or safety practices. Differences in vulnerability to injury are also due to barriers that hinder safe practice, for example lack of funds to spend on child safety equipment and its maintenance.

Table 4. How differential vulnerabilities could occur and interventions to consider

Sources/drivers for inequities	Interventions to consider
High cost of safety equipment	<ul style="list-style-type: none"> • Introduce pricing policies for home safety devices and safety equipment for road traffic injuries. • Consider factors such as advocacy, social marketing, local device production, lowering of tariffs, and introducing mandatory use, in order to help stimulate market growth. • Carry out free distribution of safety equipment among less-affluent groups. • Implement borrowing schemes for child restraints and other safety equipment.
Low level of education <i>E.g. people with lower levels of education might not be able to read safety instructions properly, or may have less opportunity to acquire safety skills</i>	<ul style="list-style-type: none"> • Increase the readability of safety instructions, especially among groups with low levels of education. • Offer appropriate training and opportunities (affordable to all) for the acquisition of skills such as swimming and driving. • Improve literacy levels.
Less resilience/support to cope with stressors	<ul style="list-style-type: none"> • Build social support networks in disadvantaged areas, with peers leading by example.
Higher rates of co-morbidities in certain groups <i>E.g. disadvantaged groups are more likely to have multiple noncommunicable disease risk factors, and poorer general health, making it more difficult to protect themselves from injurious events</i>	<ul style="list-style-type: none"> • Take a comprehensive approach to improving living conditions, as well as the financial and social well-being of disadvantaged groups. • Scale up population-based prevention measures (alcohol control, physical activity) for other preventable noncommunicable diseases. • Scale up access to universal primary health care, ensuring disadvantaged groups are supported to access preventive care.

Box 3. France: home counselling and free safety devices increase safe behaviours among the poor

Less-affluent families are more vulnerable to injuries and have fewer financial resources for prevention. A study conducted in France assessed the effectiveness of the distribution of free preventive devices, such as smoke detectors, phone stickers with the number of the poison control centre, electric outlet covers, protective table corners, and non-skid bathtub mats, combined with home counselling. Not only did the intervention enable families to change their behaviour and to implement safety measures in their homes, it also triggered a multiplying effect of additional safety improvements not related to the provided devices. In other words, the safety intervention increased safety consciousness (42).

Box 4. Incentives combined with education increase the use of booster seats

Booster seats are designed to be used by children aged 4 to 8 years, while travelling in motor vehicles. They aim to raise the child off the vehicle seat so that the adult seat belt fits correctly and the child can travel in greater comfort and safety. A Cochrane review showed that the distribution of free booster seats, combined with education on their use, had a marked beneficial effect, as did incentives (for example, booster seat discount coupons or gift certificates). While the use of booster seats increased, no investigation was made into the variation of the impact on safety in different social groups (37).

Differential health outcomes

In addition to differential exposures and vulnerabilities that put groups at greater risk of unintentional injuries, various health system factors can also cause certain groups to experience poorer health outcomes related to injuries.

Studies have shown that many deaths from injuries occur in a pre-hospital setting, especially among low-income areas and populations. Effective policies and actions to reduce differential health outcomes include improving response and delivery times in emergency trauma care, as well as strengthening the availability of and access to post-trauma care (43).

Differences have also been observed in Europe in the treatment received within the health system, based on socioeconomic factors, and this can also contribute to inequities in health outcomes.

Levelling up the health outcomes of the most disadvantaged would be beneficial to societies at large, because loss of productivity would be avoided. Table 5 shows ways in which differential health outcomes occur and interventions that should be considered to tackle the inequities that arise.

Differential consequences

Consequences of injuries are long-lasting and widespread, including, for instance, post-traumatic stress disorders. Not only is the risk of incurring an injurious event higher among the poorest, but the severity and long-term consequences of such events are unequally distributed in societies. Disadvantaged people not only have a higher probability of incurring injuries and having unfavourable health outcomes; they also suffer more severe consequences due to lack of social protection measures, or reduced or no access to rehabilitation services. Socioeconomic consequences can include, for instance, permanent disability, and exacerbation of household poverty. For severely injured children in the poorest families, consequences can include missing out on education, and can lead to marginalization and lack of peer support. Table 6 details the drivers for inequities and the interventions to be considered in order to combat them.

Table 5. How differential health outcomes could occur and interventions to consider

Sources/drivers for inequities	Interventions to consider
Cost of accessing care	<ul style="list-style-type: none"> • Provide universal health services. • Remove financial barriers for those who cannot pay (user charges, transport costs, childcare provided to parents).
Non-financial barriers to accessing care	<ul style="list-style-type: none"> • Review the continuum of care pathway to ensure better linkages between health and social services for people at risk of poorer outcomes upon discharge. • Simplify eligibility requirements and support to those without documentation.
Different treatment within the health care system <i>E.g. insurance status is an important predictor of hospital admission and use of specialized post-hospital care</i>	<ul style="list-style-type: none"> • Provide training for primary health care professionals and increase awareness of the distribution of unintentional injuries by socioeconomic factors. • Identify high-risk groups and individuals with repeated injury events. • Monitor equity in service provision, along with effectiveness. • Follow up after injurious events, especially among deprived groups.
Groups with higher co-morbidities	<ul style="list-style-type: none"> • Improve access to primary health care for underserved or high-need groups. • Address causes of social exclusion, disempowerment, low levels of education, low income and poor living conditions, all of which contribute to poorer general health in disadvantaged groups.

Box 5. Vision Zero in Sweden: an example of a successful multisectoral approach

“It can never be ethically acceptable that people are killed or seriously injured when moving within the road system”. It was with this slogan that the Swedish Parliament adopted the Vision Zero approach, which represented a paradigmatic shift in addressing the issue of road safety. According to Vision Zero, crashes within the transport sector will always occur, due to human error; however, no crash should exceed the human tolerance to physical impact. The blame for fatalities in the road system is attributed to the failure of the road system rather than to the road user. Vision Zero requires a systematic approach based on four elements: ethics, responsibility, a philosophy of safety, and the creation of mechanisms for change. Vision Zero is now applied in many countries and is regarded as a safety tool for all, feasible in any type of road transport system and at any stage of development (44).

Table 6. How differential consequences could occur and interventions to consider

Sources/drivers for inequities	Interventions to consider
Impoverishment for lower income families resulting from loss of income	<ul style="list-style-type: none"> • Implement adequate social protection policies, including universal provision of high-quality early childhood education, free universal education and health care.
Cultural norms, stigma	<ul style="list-style-type: none"> • Implement programmes to reintegrate victims of unintentional injuries into the labour market and society. • Implement concerted multisectoral policies, such as Zero Vision (Box 5) in order to reduce severe consequences. • Make fire alarms and fire safety equipment mandatory in low-income housing.
Out-of-pocket payments <i>E.g. health care costs can cause households to incur catastrophic expenditures, which can in turn push them into poverty</i>	<ul style="list-style-type: none"> • Ensure health financing policies reduce catastrophic health expenditures. • Provide financial aid for those people not covered by health insurance.
Young deprived adults are more likely to be injured or killed when consuming alcohol than older adults, probably due to differences in risk-taking behaviour	<ul style="list-style-type: none"> • Raise the price of alcohol to induce a disproportionate effect on younger drinkers.

Key policy recommendations

- A comprehensive approach to reducing inequities in unintentional injuries requires action that includes a mix of long- and short-term impacts and knowledge of the social determinants of inequities, acting on both individuals and environments.
- Unintentional injuries are not accidents, but rather predictable and preventable events. Effective policies exist to decrease the burden of injuries and these are also cost-effective.
- Safety-for-all policies, such as legislation, regulation or community-based programmes aim to reduce exposure to hazards which are found in the home, workplace and in means of transport.
- Groups most at risk of injuries need targeted interventions. These should be based on the distinct pathways and mechanisms which lead to injury, and which can be different in each social group or area.
- Every policy and intervention tackling unintentional injuries should incorporate the equity dimension. Whether the intervention produced the intended effect in each social group should also be evaluated.

Key policy recommendations contd

- Differential access to and treatment within the health system contribute to inequities in injuries. Actions to increase accessibility and affordability of care and rehabilitation can mitigate differential health outcomes.
- Everyone should be given an equal opportunity to protect their health. Safety equipment, such as child restraints, smoke alarms and stair gates should be accessible to all, regardless of ability to pay.
- Comprehensive rehabilitation and support programmes should be implemented, particularly favouring the most disadvantaged. Such programmes should include multisectoral action on health, social and labour aspects (including gender).

Checklist: are you on track?

1. Do you routinely measure the burden of unintentional injuries by socioeconomic group (e.g. gender, ethnicity, education level)?
2. Have you implemented safety-for-all strategies, such as legislation and enforcement on key risk factors for road traffic injuries or safety requirements for home appliances?
3. Have you identified which groups were most at risk of each category of injury, and are they clearly prioritized in your strategies and plans?
4. Do you routinely assess the equity impact of injury policies and plans before they are implemented?
5. Can the most marginalized groups in society meaningfully participate in decision-making processes about injury prevention policies?
6. Do you have robust policies in place with the following specific goals?
 - To set safety standards for buildings, public places, recreational areas, and so on.
 - To regularly conduct safety audits on existing and new roads.
 - To increase availability and affordability of safety equipment.
 - To improve access to health care among less-affluent societal groups.
 - To reduce harmful consequences from injuries in vulnerable groups.
 - To protect vulnerable road users, such as pedestrians, cyclists and motorcyclists.
7. Do you have effective policies in place to address the root social determinants of unintentional injuries? Such measures should include:
 - social protection, especially for families with children and the unemployed;
 - high-quality early childhood education and parenting support;
 - policies to reduce social exclusion;
 - improving psychosocial working conditions for low-income workers.

Checklist: are you on track? contd

8. Do you evaluate the impact of all unintentional injury interventions on different social groups?
9. Have you set targets for reducing unintentional injuries in different social groups?
10. Is there clear accountability and leadership for reducing inequities in unintentional injuries?

Where to find out more

Unintentional injuries in Europe

- European facts and “Global status report on road safety 2013” (11).
- European status report on road safety. Towards safer roads and healthier transport choices (45).
- World report on road traffic injury prevention (46).
- European report on child injury prevention (12).
- Preventing injuries in Europe: from international collaboration to local implementation (47).

Policy options to address unintentional injuries

- Global Plan for the Decade of Action for Road Safety 2011–2020 (6).
- Youth and road safety in Europe. Policy briefing (48).
- Addressing the socioeconomic safety divide: a policy briefing (3).
- Child and adolescent injury prevention: a WHO plan of action 2006–2015 (49).
- A WHO plan for burn prevention and care (50).
- Developing policies to prevent injuries and violence: guidelines for policy-makers and planners (51).
- Preventing injuries and violence. A guide for ministries of health (52).
- European inventory of national policies for the prevention of violence and injuries. WHO Regional Office for Europe online database to facilitate national monitoring and reporting (53).
- Evidence for gender responsive actions to prevent and manage injuries and substance abuse. Young people’s health as a whole-of-society response (54).

Actions to reduce health inequities through action on SDH

- Equity, social determinants of health and public health programmes (35).
- Review of social determinants and the health divide in the WHO European Region: final report (55).
- Strategic review of health inequalities in England post-2010 (Marmot Review). Task group 8: priority public health conditions. Final report (56).

- **Resource of health system actions on socially determined health inequalities.** WHO Regional Office for Europe online database (57).
- **Action:SDH.** A global electronic discussion platform and clearing house of actions to improve health equity through addressing the SDH (58).
- **European Portal for Action on Health Inequalities.** An Equity Action partnership information resource on health equity and SDH in Europe, including a database of policy initiatives (59).

Policy equity assessment tools

- **Health inequalities impact assessment.** An approach to fair and effective policy making. Guidance, tools and templates (60).
- **Methodological guide to integrate equity into health strategies, programmes and activities** (61).
- **Tools and approaches for assessing and supporting public health action on the social determinants of health and health equity** (62).

Data disaggregation and tools

- **Equity in Health project interactive atlases.** WHO Regional Office for Europe online resource (63).

References

1. Holder Y, Peden M, Krug E, Lund J, Gururaj G, Kobusingye O, editors. Injury surveillance guidelines. Geneva: World Health Organization; 2004 (<http://whqlibdoc.who.int/publications/2001/9241591331.pdf>, accessed 4 December 2013).
2. Davis RM, Pless B. BMJ bans “accidents”. Accidents are not unpredictable. *BMJ*. 2001;322:1320.
3. Laflamme L, Sethi D, Burrows S, Hasselberg M, Racioppi F, Apfel F. Addressing the socioeconomic safety divide: a policy briefing. Copenhagen: WHO Regional Office for Europe; 2009 (http://www.euro.who.int/__data/assets/pdf_file/0004/96457/E92197.pdf, accessed 4 December 2013).
4. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – Solidarity in health: reducing health inequalities in the EU (SEC(2009) 1396) (SEC(2009) 1397). Brussels: European Commission; 2009 (http://ec.europa.eu/health/ph_determinants/socio_economics/documents/com2009_en.pdf, accessed 4 December 2013).
5. White paper. Together for health: a strategic approach for the EU 2008–2013. Brussels: European Commission; 2007 (COM(2007) 630 final) (http://ec.europa.eu/health-eu/doc/whitepaper_en.pdf, accessed 4 December 2013).
6. Global plan for the decade of action for road safety 2011–2020. Geneva: World Health Organization; 2011 (http://www.who.int/roadsafety/decade_of_action/plan/plan_english.pdf?va=1/, accessed 4 December 2013).
7. Dahlgren G, Whitehead M. European strategies for tackling social inequities in health: levelling up part 2. Copenhagen: WHO Regional Office Europe; 2007 (http://www.euro.who.int/__data/assets/pdf_file/0018/103824/E89384.pdf, accessed 4 December 2013).
8. Injuries in Europe: a call for public health action. Copenhagen: WHO Regional Office for Europe; 2013 (<http://www.euro.who.int/en/health-topics/disease-prevention/violence-and-injuries/publications/2012/injuries-in-europe-a-call-for-public-health-action>, accessed 4 December 2013).
9. Sethi D, Racioppi F, Baumgarten I, Vida P. Injuries and violence in Europe: why they matter and what can be done. Copenhagen: WHO Regional Office for Europe; 2006 (http://www.euro.who.int/__data/assets/pdf_file/0005/98762/E88037.pdf, accessed 4 December 2013).
10. Sethi D, Racioppi F, Bertollini R. Preventing the leading cause of death in young people in Europe. *J Epidemiol Community Health* 2007;61(10):842–843.
11. Mitis F, Sethi D. European facts and “Global status report on road safety 2013”. Copenhagen: WHO Regional Office for Europe; 2013 (http://www.euro.who.int/__data/assets/pdf_file/0010/185572/e96811.pdf, accessed 4 December 2013).
12. Sethi D, Towner E, Vincenten J, Segui-Gomez M, Racioppi F. European report on child injury prevention. Copenhagen: WHO Regional Office for Europe; 2008 (http://www.euro.who.int/__data/assets/pdf_file/0003/83757/E92049.pdf, accessed 4 December 2013).
13. Rogmans W. Home and leisure accidents in young persons under 25 years of age in the European Union: challenges for tomorrow. *Santé Publique* 2000;12:283–298.

14. Borrell C, Plasencia A, Huisman M, Costa G, Kunst A, Andersen O et al. Education level inequalities and transportation injury mortality in the middle aged and elderly in European settings. *Inj Prev*. 2005 Jun;11(3):138–142.
15. Laflamme L, Burrows S, Hasselberg M. Socioeconomic differences in injury risks: a review of findings and a discussion of potential countermeasures. Copenhagen: WHO Regional Office for Europe; 2009 (http://www.euro.who.int/__data/assets/pdf_file/0012/111036/E91823.pdf, accessed 4 December 2013).
16. Laflamme L. Explaining socioeconomic differences in injury risks. *Int J Inj Contr Saf Promot*. 2001;8:149–153.
17. Laflamme L, Hasselberg M, Burrows S. 20 years of research on socioeconomic inequality and children's unintentional injuries – understanding the cause-specific evidence at hand. *Int J Pediatr*. 2010 Jul;2010:819687.
18. Roberts I, Green J, Lutchmun S. Deaths from injury in children and employment status in family: analysis of trends in class specific death rates. *BMJ*. 2006 Jul;333(7559):119.
19. Willson AE. “Fundamental causes” of health disparities: a comparative analysis of Canada and the United States. *Int Sociol*. 2009;24(1):93–113.
20. Preventing unintentional injuries among the under-15s in the home. NICE public health guidance 30. London: National Institute for Health and Clinical Excellence; 2010 (<http://publications.nice.org.uk/preventing-unintentional-injuries-among-the-under-15s-in-the-home-ph30>, accessed 4 December 2010).
21. Kendrick D, Coupland C, Mulvaney C, Simpson J, Smith SJ, Sutton A et al. Home safety education and provision of safety equipment for injury prevention. *Cochrane Database Syst Rev*. 2007 Jan 24(1):CD005014.
22. Diderichsen F, Evans T, Whitehead M. The social basis of disparities in health. In: Evans T, Whitehead M, Diderichsen A, Bhuiya A, Wirth M, editors. *Challenging inequalities in health: from ethics to action*. New York (NY): Oxford University Press; 2001:12–23.
23. Whitehead M, Dahlgren G. Levelling up (part 1): a discussion paper on concepts and principles for tackling social inequities in health. Copenhagen: WHO Regional Office for Europe; 2006 (http://www.who.int/social_determinants/resources/leveling_up_part1.pdf, accessed 4 December 2013).
24. Mulvaney C, Kendrick D. Engagement in safety practices to prevent home injuries in preschool children among white and non-white ethnic minority families. *Inj Prev*. 2004;10(6):375–378.
25. O'Dowd A. Fight to tackle unhealthy lifestyles has widened gap in health inequalities. *BMJ*. 2012;345:e5707–e5707.
26. White M, Adams J, Heywood P. How and why do interventions that increase health overall widen inequalities within populations? In: Babones S, editor. *Social inequality and public health*. Bristol: The Policy Press; 2009:65–82.
27. Jones SJ, Lyons A, John A, Palmer SR. Traffic calming policy can reduce inequalities in child pedestrian injuries: database study. *Inj Prev*. 2005;11:152–156.
28. Haddon W. The basic strategies for preventing damage from hazards of all kinds. *Hazard Prev*. 1980;16:8–11.
29. Kendrick D, Royal S. Cycle helmet ownership and use; a cluster randomised controlled trial in primary school children in deprived areas. *Arch Dis Child*. 2004;89(4):330–335.

30. Kendrick D, Marsh P. How useful are sociodemographic characteristics in identifying children at risk of unintentional injury? *Public Health* 2001 Mar;115(2):103–107.
31. Parkin PC, Khambalia A, Kmet L, Macarthur C. Influence of socioeconomic status on the effectiveness of bicycle helmet legislation for children: a prospective observational study. *Pediatrics* 2003;112:192–196.
32. Kendrick D, Mulvaney C, Watson M. Does targeting injury prevention towards families in disadvantaged areas reduce inequalities in safety practices? *Health Educ Res.* 2009;24(1):32–41.
33. DiGuseppi C, Roberts I, Wade A, Sculpher M, Edwards CG, Pan H et al. Incidence of fires and related injuries after giving out free smoke alarms: cluster randomised controlled trial. *BMJ.* 2002; 325:995–998.
34. Farley C, Laflamme L, Vaez M. Bicycle helmet campaigns and head injuries among children. Does poverty matter? *J Epidemiol Community Health* 2003;57(9):668–672.
35. Blas E, Kurup A, editors. *Equity, social determinants and public health programmes.* Geneva: World Health Organization; 2010 (http://whqlibdoc.who.int/publications/2010/9789241563970_eng.pdf, accessed 4 December 2013).
36. Hawton K, Bergen H, Simkin S, Dodd S, Pocock P, Bernal W et al. Long term effect of reduced pack sizes of paracetamol on poisoning deaths and liver transplant activity in England and Wales: interrupted time series analyses. *BMJ.* 2013;346:f403.
37. Ehiri JE, Ejere HO, Magnussen L, Emusu D, King W, Osberg JS. Interventions for promoting booster seat use in 4–8 year olds traveling in motor vehicles. *Cochrane Database Syst Rev.* 2006 Jan 25;(1):CD004334.
38. Towner EM, Jarvis SN, Walsh SS, Aynsley-Green A. Measuring exposure to injury risk in schoolchildren aged 11–14. *BMJ.* 1994;308(6926):449–452.
39. Dowswell T, Towner E. Social deprivation and the prevention of unintentional injury in childhood: a systematic review. *Health Educ Res.* 2002;17(2):221–237.
40. Zambon F, Sethi D, Orlov S, Polurotov P, Peden M. Understanding for changing: how to design successful social marketing campaigns targeting unsafe behaviours. The experience of the “road safety in 10 country” project, Russia. *Inj Prev.* 2012;18: Suppl.1:A217–A218.
41. Ma S, Tran N, Klyavin VE, Zambon F, Hatcher KW, Hyder AA. Seat belt and child seat use in Lipetskaya oblast, Russia: frequencies, attitudes, and perceptions. *Traffic Inj Prev.* 2012;13 Suppl.1:76–81.
42. Sznajder M, Leduc S, Janvrin MP, Bonnin MH, Aegerter P, Baudier F et al. Home delivery of an injury prevention kit for children in four French cities: a controlled randomized trial. *Inj Prev.* 2003;9(3):261–265.
43. Sacks GD, Hill C, Rogers SO Jr. Insurance status and hospital discharge disposition after trauma: inequities in access to postacute care. *J Trauma* 2011 Oct;71(4):1011–1015.
44. Tingvall C, Haworth N. Vision zero: an ethical approach to safety and mobility. Paper presented to the 6th Institute of Transport Engineers International Conference on Road Safety and Traffic Enforcement: beyond 2000. Melbourne: 6–7 September 1999.
45. European status report on road safety. Towards safer roads and healthier transport choices. Copenhagen: WHO Regional Office for Europe; 2009 (<http://www.euro.who.int/document/e92789.pdf>, accessed 4 December 2013).

46. Peden M, Scurfield R, Sleet D, Mohan D, Hyder AA, Jarawan E et al. World report on road traffic injury prevention. Geneva: World Health Organization; 2004 (<http://whqlibdoc.who.int/publications/2004/9241562609.pdf>, accessed 4 December 2013).
47. Sethi D, Mitis F, Racioppi F. Preventing injuries in Europe: from international collaboration to local implementation. Copenhagen: WHO Regional Office for Europe; 2010 (http://www.euro.who.int/__data/assets/pdf_file/0011/96455/E93567.pdf, accessed 4 December 2013).
48. Sethi D, Racioppi F, Mitis F. Youth and road safety in Europe. Policy briefing. Copenhagen: WHO Regional Office for Europe; 2007 (http://www.euro.who.int/__data/assets/pdf_file/0003/98454/E90142.pdf, accessed December 2013).
49. Scott I, Peden M, Krug E, Hesemans L, Branche C, Fathey El-Sayed H et al. Child and adolescent injury prevention: a WHO plan of action 2006–2015. Geneva: World Health Organization; 2006 (http://whqlibdoc.who.int/publications/2006/9241593385_eng.pdf, accessed 4 December 2013).
50. Mock C, Peck M, Peden M, Krug E, Ahuja R, Albertyn H et al. A WHO plan for burn prevention and care. Geneva: World Health Organization; 2008 (http://whqlibdoc.who.int/publications/2008/9789241596299_eng.pdf, accessed 4 December 2013).
51. Schopper D, Lormand J-D, Waxweiler R, editors. Developing policies to prevent injuries and violence: guidelines for policy-makers and planners. Geneva: World Health Organization; 2006 (http://www.who.int/violence_injury_prevention/publications/39919_oms_br_2.pdf, accessed 4 December 2013).
52. Kellerman GR, editor. Preventing injuries and violence. A guide for ministries of health. Geneva: World Health Organization; 2007 (http://whqlibdoc.who.int/publications/2007/9789241595254_eng.pdf, accessed 4 December 2013).
53. European inventory of national policies for the prevention of violence and injuries [online database]. Copenhagen: WHO Regional Office for Europe; 2013 (<http://data.euro.who.int/injuryprevention/>, accessed 4 December 2013).
54. Evidence for gender responsive actions to prevent and manage injuries and substance abuse. Young people's health as a whole-of-society response. Copenhagen: WHO Regional Office for Europe; 2011 (http://www.euro.who.int/__data/assets/pdf_file/0005/158081/316637_WHO_brochure_226x226_8.9-SubAbuse.pdf, accessed 4 December 2013).
55. Review of social determinants and the health divide in the WHO European Region: final report. Copenhagen: WHO Regional Office Europe; 2013 (http://www.euro.who.int/__data/assets/pdf_file/0006/215196/Review-of-social-determinants-and-the-health-divide-in-the-WHO-European-Region-final-report-Eng.pdf, accessed 4 December 2013).
56. Bamba C, Joyce K, Maryon-Davis A. Strategic review of health inequalities in England post-2010 (Marmot Review). Task group 8: priority public health conditions. Final report. London: University College London; 2009 (<http://www.instituteofhealthequity.org/projects/priority-public-health-conditions-task-group-report>, accessed 4 December 2013).
57. Resource of health system actions on socially determined health inequalities [online database]. Copenhagen: WHO Regional Office for Europe; 2013 (<http://data.euro.who.int/equity/hidb/Resources/List.aspx>, accessed 4 December 2013).
58. Action:SDH [website]. Geneva: World Health Organization; 2010 (<http://www.actionsdh.org/>, accessed 4 December 2013).

59. European portal for action on health inequalities [website]. Brussels: EuroHealthNet and Equity Action; 2013 (<http://www.health-inequalities.eu/HEALTHYQUITY/EN/home/>, accessed 2013).
60. Health inequalities impact assessment. An approach to fair and effective policy making. Guidance, tools and templates. Edinburgh: NHS Health Scotland; 2011 (<http://www.healthscotland.com/uploads/documents/17227-0%20HIIA%20-%20GUIDANCE.pdf>, accessed 4 December 2013).
61. Methodological guide to integrate equity into health strategies, programmes and activities. Version 1. Madrid: Ministry of Health, Social Services and Equality; 2012 (http://www.msssi.gob.es/profesionales/saludPublica/prevPromocion/promocion/desigualdadSalud/jornadaPresent_Guia2012/docs/Methodological_Guide_Equity_SPAs.pdf, accessed 4 December 2013).
62. Mendell A, Dyck L, Ndumbe-Eyoh S, Morrison V. Tools and approaches for assessing and supporting public health action on the social determinants of health and health equity. Montréal: National Collaborating Centre for Determinants of Health (NCCDH) and National Collaborating Centre for Healthy Public Policy (NCCHPP); 2012 (www.ncchpp.ca/docs/Equity_Tools_NCCDH-NCCHPP.pdf, accessed 4 December 2013).
63. Interactive atlases [website]. Copenhagen: WHO Regional Office for Europe; 2012 (<http://www.euro.who.int/en/what-we-do/data-and-evidence/equity-in-health/interactive-atlases>, accessed 4 December 2013).

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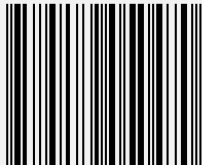
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ISBN 978-9-289-05047-0



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