



# Transport Safety Commission Inquiry into UK Transport Safety: Submission from the Cochrane Injuries Group

## Executive Summary

### About the Cochrane Collaboration

The Cochrane Collaboration is an international network of over 30,000 contributors who produce systematic reviews of global research about the effects of public health and healthcare interventions. All publications are peer reviewed, and conducted according to predefined methodological criteria. The reviews are published on the Cochrane Library, which is free to access for anyone living in the UK. The Cochrane Library contains over 6,000 published reviews addressing most areas of medicine. Every review contains a plain language summary.

The Injuries Group editorial team helps authors complete reviews in relation to the prevention, treatment and rehabilitation of traumatic injury, including the emergency resuscitation of seriously injured and burned patients.

The National Institute for Health Research is the single largest supporter of the Cochrane Collaboration, and funds the Injuries Group editorial team in London.

### What our Group has to offer

The Injuries Group has published over 100 systematic reviews on the Cochrane Library. The reviews cover a variety of topics in relation to road safety and the prevention and treatment of injury.

A list of relevant reviews can be found in the appendix.

The findings of these reviews have been used by the National Institute for Health and Care Excellence, the World Health Organisation, and others, to inform public policy.

### The bottom line

1. The Group supports the use of evidence from controlled studies to inform policy decisions.
2. When high-quality research evidence is not available, randomised controlled trials of sufficient size and methodological rigour can be conducted to inform policy and practice.

## Inquiry Questions

- **Leadership, responsibility and coordination:** Are there clear lines of responsibility for transport safety? How is responsibility structured currently across the different modes and for different system providers? Is national leadership in transport safety evident in all the modes?
- **Objectives and targets:** What transport safety results are currently being sought for the different modes and which agencies are accountable on behalf of government for achieving them? What is the role and nature of aims and targets? Should the long-term *Safe System* goal and strategy be adopted for all transport modes?

It is beyond the scope of the Injuries Group to comment on these issues.

- How can road safety goals be aligned with other transport objectives such as sustainability, public health and active travel measures to achieve co-benefits?

The 'Physical activity and the environment' guideline was published by the National Institute for Health and Care Excellence (NICE) in 2008. This guideline led to numerous initiatives promoting physical activity, and is based on a considerable amount of research evidence showing the benefits of physical activity in reducing death and illness due to cardiovascular diseases, cancers, mental health, and various other conditions. By engaging in physical activity on the roads, it is inevitable that some people will become injured or die through a crash. Research has shown that in spite of an increase in injuries and deaths due to crashes on the road, the total number of injuries and deaths at the population level will be lower due to the benefits of physical activity saving lives.

As a society, we must reduce our carbon footprint in order to survive. Motorised travel and healthcare provision generate carbon emissions. Active travel results in lower carbon emissions and contributes to health benefits. It is a reality that with increasing numbers of people participating in active travel and physical activity on the roads, the absolute number of deaths and injuries due to road traffic crashes will increase. Implementing effective road safety measures, and promoting strategies for safe shared use of roads (including pedestrians, cyclists, and motorised vehicles) will contribute to injury prevention.

- **Perceptions and culture:** How do we gauge public perception of risk, public acceptability of effective measures; and public and corporate acceptance of liability?

It is beyond the scope of the Injuries Group to comment on these issues.

- How can a greater culture of safety be achieved among employers, transport users and others?

We should continue to send a clear message that at the population level, increasing physical activity through active travel leads to an overall reduction in death and illness due to the benefits of exercise.

Reviews relevant to the topic include:

[Organisational travel plans for improving health](#),  
[Interventions for increasing pedestrian and cyclist visibility for the prevention of death and injuries](#),  
[Safety education of pedestrians for injury prevention](#),  
[The 'WHO Safe Communities' model for the prevention of injury in whole populations](#)

- **Funding:** What are the current levels of funding for transport safety? Are annual funding mechanisms and resource allocation procedures appropriate?

It is beyond the scope of the Injuries Group to comment on these issues.

- Promotion: Is transport safety receiving adequate promotion and championing?

Published systematic reviews on transport safety have identified some effective interventions:

Effective interventions in transport safety	Link to the systematic review
Improving visibility	<a href="#">Street lighting for preventing road traffic injuries</a>
	<a href="#">Interventions for increasing pedestrian and cyclist visibility for the prevention of death and injuries</a>
Using bicycle and motorcycle helmets	<a href="#">Helmets for preventing head and facial injuries in bicyclists</a>
	<a href="#">Non-legislative interventions for the promotion of cycle helmet wearing by children</a>
	<a href="#">Bicycle helmet legislation for the uptake of helmet use and prevention of head injuries</a>
	<a href="#">Helmets for preventing injury in motorcycle riders</a>
Graduated driver licensing	<a href="#">Graduated driver licensing for reducing motor vehicle crashes among young drivers</a>
Reducing drink driving	<a href="#">Alcohol ignition interlock programmes for reducing drink driving recidivism</a>
	<a href="#">Interventions for preventing injuries in problem drinkers</a>
Reducing speeding	<a href="#">Speed cameras for the prevention of road traffic injuries and deaths</a>
Using booster seats in cars	<a href="#">Interventions for promoting booster seat use in four to eight year olds travelling in motor vehicles</a>

These effective interventions need better promotion. The promotion should explain that the benefit has been identified by research. The number of injuries will rise with increasing numbers of people engaging in active travel, and so the promotion of transport safety is of critical importance.

- **Monitoring and evaluation:** How should trends in safety be monitored and by whom? What is the case for an independent road safety or collision investigator?

It is beyond the scope of the Injuries Group to comment on who should monitor safety, or to make the case for an independent road safety investigator.

- How should trends in safety be monitored?

The evidence for road safety interventions can be improved by conducting research alongside changing the road design. Randomised controlled trials (RCTs) can be incorporated into construction projects.

Controlled before and after (CBA) studies have sometimes been conducted to study the effects of road design. For example, measurements (such as traffic speed) can be made before and after a change has been made to a road, or system of roads, and the results are compared. Unfortunately a cause and effect relationship cannot be made using CBA study designs because known and unknown confounding factors have not been randomly allocated between the before and after periods. In this example, traffic speed may change between the before and after periods due to reasons unrelated to the intervention (and this would be considered confounding).

RCTs enable conclusions to be made about cause and effect. Through randomisation, known and unknown confounders are randomly distributed between the study groups, so they cannot distort the results very much. Our knowledge of the causal effects of interventions in road safety is better when RCTs are conducted, compared with CBA studies.

Two RCT designs that can be used in road design and safety research include:

**Standard RCT** – Interventions are randomly allocated to study areas.

For example, two or more comparable sections of roadway are included as the study areas. A randomisation procedure is used to allocate the sections of roadway to different interventions. Measurements are made across all areas, with results analysed by intervention.

**Stepped-wedge design** – Randomised roll-out of one intervention across a study area.

This randomisation procedure is useful when an entire area will be changed. For example, once it has been decided that a group of roads will all be changed in some way, the order in which the changes are made is randomised. Data are recorded across all sites during the whole construction period. Data from before the changes are made serve as the control. This randomisation enables researchers to examine the effects of the new road design through an RCT even though the entire area receives the intervention by the end of the study.

It is important that new studies be registered, with their results published in indexed journals. Failure to publish the results of research is a major problem world-wide.

- **Research:** What provision is made for keeping abreast of effective global practice? What provision is made for transport safety in R&D budgets?

The Cochrane Injuries Group's core function is to synthesise research from around the world in relation to the prevention, treatment and rehabilitation of injury. These injuries may be due to any cause, including the effects of transportation.

The National Institute for Health Research is the largest single funder of the Cochrane Injuries Group, and has approved funding for the editorial team through March 2020.

### **Additional questions for the Injuries Group**

#### **Who you are, how you are funded, how you fit in with global Cochrane What kinds of reviews you do**

The Cochrane Collaboration is an international network of collaborators who produce systematic reviews which are published on the Cochrane Library. The Cochrane Injuries Group is part of this collaboration, and is a network of review authors, patients, editors, and doctors who have an interest in its topic areas (the prevention, treatment and rehabilitation of traumatic injury, including the emergency resuscitation of seriously injured and burned patients).

A systematic review is type of research in which all relevant studies on a specific topic are gathered together and summarised, in order to have an overview of all research findings on the topic. Data from a number of relevant studies may be combined to calculate an average treatment effect. This often requires understanding how different data relate to each other, and combining them using a common framework. Having an overview of all studies is useful because individual studies may have different results, and it is time consuming to read many studies. Every Cochrane review is completed according to predetermined methodological criteria, for example which statistical model will be used in the analysis, which helps to ensure objectivity in the interpretation of results. A plain language explanation of what a systematic review is, by the charity Sense about Science, can be found [here](#).

The Cochrane Injuries Group editorial team helps authors to conduct their systematic review to a high standard, undertakes peer review of draft manuscripts, and promotes the findings of the reviews in its portfolio. The Group has published more than 120 reviews, and an additional 50 reviews are currently in development.

The Cochrane Injuries Group editorial team is based at the London School of Hygiene & Tropical Medicine in London, and is funded by the National Institute for Health Research. The National Institute for Health Research is the single largest supporter of the Cochrane Collaboration, as describe [here](#).

### **Your ability to use grey literature**

Cochrane reviews include any study meeting the inclusion criteria. Studies may be published or unpublished, undertaken in any country, published in any language, and published in any format – for example as a medical journal article, conference abstract, or online. Our staff Information Scientist works with every team of authors to develop a unique search strategy to identify studies. In addition to bibliographic databases, trial registries and other sources are searched with the intent of identifying every single study on the topic. One of the unique features of Cochrane reviews is that the search for studies is conducted by a specialist information scientist, rather than the authors themselves. The comprehensive search, which is the backbone of a systematic review, results in Cochrane reviews often including more studies than other literature reviews on the same topic because superior methods have been applied to identify relevant studies.

### **How you identify research gaps**

Cochrane reviews aim to summarise the findings of all trials on a given topic. Research gaps are identified through finding out there is little or no research on a topic, or that the existing research is of insufficient quality or quantity to answer the question under study.

### **Brief summary of accident prevention measures in your reviews**

Effective interventions include street lighting, increasing visibility of pedestrians and cyclists by wearing reflectors, use of bicycle and motorcycle helmets, graduated driver licensing, and reducing speeding and drink driving.

Continuing education for licensed drivers has no effect on preventing road traffic injuries or crashes (good evidence of no effect).

All our transport safety reviews are listed in the appendix. The Cochrane Library [Special Collection on Road Safety](#) also describes the relevant reviews. For many interventions, there is uncertainty surrounding effectiveness. New research would clarify the uncertainty.

### **Brief summary of measures after accidents, to increase survival rates**

Effective treatments include the use of antifibrinolytic drugs, such as tranexamic acid, fibrin sealants, and reducing unnecessary blood transfusion. The use of corticosteroids in head injury patients is harmful.

A complete list of trauma treatment reviews is in the appendix. As with most medical research, there is uncertainty surrounding the effects of many treatments. New research would clarify the uncertainty.

### **Perception of risk, raising awareness of risk**

The analyses included in our reviews describe the actual risk of injury as reported in the included studies. None of the reviews currently published include perception of risk or raising awareness of risk, though these are topics that could be covered in future reviews.

Broadly relevant reviews include:

[Interventions for increasing pedestrian and cyclist visibility for the prevention of death and injuries](#)  
[Increasing motorcycle and rider conspicuity for preventing death and injury in motorcyclists](#)

### **Cost-effectiveness of interventions**

Cochrane reviews can include assessments of cost-effectiveness, though none of the Injuries Group's reviews include this information at the moment.

### **Any differences you have identified between transport modes (road, rail, air, maritime)**

The Injuries Group would conduct research on any mode of transport. To date all the reviews have been about transportation by road.

### **How you interact with policy-makers**

The editorial team interacts with policy-makers in various ways, which in the past year have included:

- being directly contacted by the National Institute of Health Research about the findings of specific reviews. The NIHR requested information in order to inform its commissioning of new research.
- being directly contacted by NICE about relevant reviews for guidelines in development.
- formally registering as a NICE stakeholder and submitting a response to a public inquiry about the update of three guidelines: 'Guidance on preventing injuries in under-15s: Safety on the Road' PH29, 'Preventing unintentional injuries among the under-15s in the home' PH30, 'Preventing unintentional road injuries among under-15s' PH31.
- sending paper copies of new reviews to leaders of government agencies.
- open dialogue over social media (Twitter and LinkedIn) about review findings.
- through in-person meetings with individual policy-makers about the findings of relevant reviews on an ad hoc basis. Such a meeting with an Admiral of the British Army in 2011 resulted in the successful uptake of tranexamic acid (TXA) across the armed forces (<https://www.youtube.com/watch?v=oj6P2cwwRYw&list=PLD51B1B7A087EC125&index=3>). The successful uptake of TXA by the British military directly led to its uptake among other NATO and coalition forces. The adoption of TXA by the military has widely been reported as one of the major advances in the treatment of injured soldiers in recent years.
- individual author teams are encouraged to interact directly with policy makers. We are aware of a number of partnerships initiated by review authors and can provide further information about this.

### **Dissemination of your work (e.g. use of lay summaries, how you publicise...)**

- All reviews published through the Cochrane Injuries Group are published on the Cochrane Library, which is a free online library, available to anyone in the UK. The abstract of every review will be translated into all the UN official languages, with much of the work having been completed and published online already.
- Every review includes a plain language summary, which is also available at no cost on the websites [summaries.cochrane.org](http://summaries.cochrane.org) and PubMed Health, an online patient-focused database of healthcare treatment information.
- The Cochrane Library, the UK Cochrane Centre, and the London School of Hygiene & Tropical Medicine employ teams of health journalists and bloggers to write about our reviews for a wide variety of sources.
- The Injuries Group editorial team publicises the findings of its reviews on social media, including Twitter, LinkedIn, and Wikipedia.
- New reviews undertaken starting in 2015 will be disseminated according to the Group's dissemination strategy which is on our website: <http://injuries.cochrane.org/business-plan-2015-20>

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