

Case-study 8.3.3

Health impact assessment of transport

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Rationale

Transport is an important determinant of health. In June 1999, at the World Health Organization Third European Ministerial Conference on Environment and Health in London, the UK Minister of Public Health and the Minister of Transport signed, on behalf of all ministers of all 50 Member States in the WHO European Region, a Charter on Transport and Health. The document had undergone two years of preparation and involved working groups from many different countries, including contributions from non-governmental organisations (NGOs) and academic institutions.

In the Conference Declaration, it was stated that:

“We are determined at international and national levels to effectively reduce the significant adverse effects and barriers to community development created by transport-related air, soil and water pollution, accidents and noise, greenhouse gases emissions and damaging of forests, and to increase the health benefits of physically active transport modes, notably cycling and walking (including to and from means of public transport).”

These aims are to be achieved by:

- assessing the environmental health impacts and costs of transport;
- developing policies to protect populations at extra risk of health effects from transport;
- investigating further the health risks from transport that are not yet fully clarified;
- monitoring the links between transport and health and progress made towards the targets identified in the plan of action.

(www.who.dk/london99/WelcomeE.htm)

The Government's public health strategy described in The White Paper *Saving Lives: Our Healthier Nation* includes health targets for coronary heart disease and accident reduction, and describes how “local players and communities” can:

- implement the Integrated Transport Policy - *A new deal for transport: Better for everyone* - including a national cycling strategy and measures to make walking more attractive (p. 147);
- provide safe cycling and walking routes (p. 147);
- provide facilities for physical activity and reliable transport for people to gain access to them (p. 148);
- develop traffic calming and other measures for local safety schemes as part of local transport plans (p. 149);
- adopt school travel and green transport plans (p.149).

Influential publications

A national lobby group, the Transport and Health Study Group, described the key relationships between transport and health a decade ago in the seminal publication *Health on the Move*. More recently, the British Medical Association (BMA) have confirmed the effects of transport on health, the Health Education Authority (HEA) has shown the links to the Government's "Integrated Transport" Policy and the Transport 2000 Trust has described good practice in the NHS.

Work on transport led by Camden and Islington Health Authority

In 1996, at Camden and Islington Health Authority, we undertook three actions in the field of transport and health.

A review of transport and health in local NHS providers

We invited the three acute hospital Trusts within the district - The Royal Free Hospital, University College Hospital, and Whittington Hospital - to provide information on their transport policies, and we visited a small sample of health centres and community clinics. None of the hospitals had a policy for transport and health, nor made efforts to promote walking or cycling. Staff and visitor travel patterns varied markedly. All three hospitals are well served by public transport, but two had large car parks for staff, and parking in roads around the hospital; the third had little parking space (reserved mainly for senior doctors and administrators) and most of the travel was by public transport. In the community sector, private cars were the norm and there were no incentives for walking or cycling.

Collaboration with local authorities

This work was supported by the agreement, and participation, of the health and local authority chief executives and chief officers through joint working arrangements (subgroups of the Joint Consultative Committees). Meetings were held with the transport planning departments of the two local authorities. They each had accident reduction plans and pedestrian plans, and they acknowledged the Government's target to increase cycling from 2.5% to 10% over the forthcoming decade. Traffic management, however, was directed towards maintaining traffic flows through road schemes, and parking control. Responsibility for some of the roads ("red routes"), and public transport (bus, tube, rail), was held separately by central government. The local authorities, however, welcomed the transfer of NHS funds from ambulance services to increase social services department funding for "community transport", as they had previously welcomed NHS funds for joint care for elderly disabled people who need nursing care.

An analysis of the transport expenditure budget of one local authority showed that £7 million was spent on road renewal and bridge strengthening (for 44-tonne lorries to meet European Union standards) whereas less than 1% (£60,000) was allocated to cycling schemes. The local authorities did not regard this as an imbalance. There was no health criterion in applying to the Department of the Environment, Transport and the Regions (DETR) for road funding.

Special attention was given to arrangements at one transport interchange (Kings Cross) which was the focus of a large single regeneration budget (SRB) bid. At this interchange, there are two major rail termini, more underground lines than anywhere else in London, and many bus routes. There is also a six-lane road, and a one-way gyratory system. At both a private meeting of local authority, central government and public health department officers, and a public meeting attended by 60 people, regional and local officials explained that:

- traffic flow would **not** be changed on health grounds;
- SRB funds would **not** be directed towards changing the road transport system.

Developing a model of the effects of transport on health

We were asked to make a presentation on London's transport and health at an international conference. We collected information from a range of sources and learned about the transport planning mechanisms for London. The latter proved to be poorly integrated, competing, and without public health input. Using the evidence-base initially drawn together by the Transport and Health Study Group, we made a detailed study of the available evidence on accidents, air pollution, exercise and community severance and published the results in the report *Transport and Health in London* (see references).

In this report, we suggested four areas of action:

- to ameliorate and reduce motor vehicle use;
- to enhance pedestrian and cyclist journeys;
- to improve public transport;
- to encourage NHS involvement in transport and health.

The press launch of the report was covered by regional television. The Minister for Transport and for London (a combined post at the time) said the Government was already doing what we had proposed. The Department of Health, which has no section directly concerned with transport, did not respond.

In an appendix to this report, we made an epidemiological assessment of the health impact of transport. The model we developed has four health status outcomes - accidents, coronary heart disease, respiratory illnesses and mental health. For this Case-study, the estimates used originally have been updated (see *Matrix 1*).

Matrix 1

	<i>Current number of events (UK)</i>	<i>Proportion attributable to transport</i>	<i>Effect of 20% transport reduction</i>
<i>Accidents</i> <i>[see Note 1]</i>	Road deaths: 3.6/100,000	100%	e.g. 10% fewer deaths
<i>Coronary heart disease</i> <i>[see Note 2]</i>	Deaths, e.g.: 1300/100,000	60% of population do not take moderate exercise	e.g. 1% fewer deaths
<i>Respiratory illnesses</i> <i>[see Note 3]</i>	Deaths brought forward, e.g.: 20/100,000	70% of urban air pollution is due to transport	e.g. 20% fewer deaths brought forward
<i>Mental health</i> <i>[see Note 4]</i>	Noise; bereavement; community severance	Unquantified	e.g. reduced mental illness episodes
<i>Global warming</i> <i>[see Note 5]</i>	<i>UK</i> : flooding <i>Tropical areas</i> : migration; famine; war	Unquantified	e.g. effects on sub-Saharan Africa
<i>Total</i>			<i>Calculate</i>

Notes to the matrix:

1. About 60% of individual journeys are by car, 30% by walking, and 10% by public transport. By distance, however, there are more than 80% by car, only 3% by walking, and 15% by public transport. Road accident deaths are recorded by the police in STATS 19 records and available to local authorities through the DETR. Death miles travelled are lower in urban areas than outside them, mainly because death is related to speed of the vehicle. Of the transport deaths (>3000) and non-fatal casualties (>300,000) that occur each year in the UK, vehicle drivers account for more than half of them. In descending order of frequency, the next group to experience transport deaths and non-fatal casualties is pedestrians, followed by motor cyclists, and then pedal cyclists. About 1% of deaths and casualties are associated with public transport.
2. Exercise is the single most effective protective factor for coronary heart disease. Regular moderate exercise can cut the death rate to two-thirds, and vigorous exercise to half, that of people who do not take any exercise. A simulation model of a 25% increase in moderate physical activity for adults aged 15-64 years indicated a 1% overall population reduction in death rates, an effect equivalent to a 2% reduction in smoking.
3. The Committee on the Medical Effects of Air Pollutants (COMEAP) has estimated that 12,000-24,000 deaths (mainly of elderly people) are "brought forward" by respiratory problems.
4. The mental health effects are difficult to establish, and do not equate so readily to "deaths". There are effects of bereavement (which in some cases may only have been brought forward). There are effects from community severance of traffic (lower levels of social contacts) with possibly less mental health support. There are possible effects from noise.
5. Global warming is probably the biggest single factor for reducing road transport. Energy use in the UK is rising slightly, but this is due to the increase in the number and use of motor vehicles; energy use resulting from the demands of UK industry has fallen steadily over three decades. To achieve global equity in energy use will require a substantial reduction in car usage by the West. The health impacts of global warming have not been fully explored, but it is likely to be greater on developing countries (drying out of sub-Saharan Africa, and worsening weather systems in the Americas and Asia) than in north Europe (flooding from rising sea levels, and worsening weather systems).

Impact of the HIA

The initial impacts of our work with the local authorities were minimal. In part, this was because the agenda was "new", and at the time it did not accord with Government priorities; accordingly the local authorities did not feel "legitimated". However, transport is now an issue in London for the recently formed NHS Executive London Region as a result of pressure from different groups. An HIA for transport was one of several fields commissioned by the London Regional Office in September 1999 in preparation for the London Health Strategy. The report focused almost exclusively on air quality, and there was very little information on the effects of transport on accidents and coronary heart disease.

It is of note that the Member of Parliament for South Camden was opposition spokesmen on health and on environment, and became Minister of Health before stepping down as London mayoral candidate. Also, the MP for Camden was Minister for Transport before stepping down as London mayoral candidate. Neither MP expressed an interest in transport / health in their capacity as MP for the local population, as Ministers with direct responsibility in this field or as candidates for Mayor of London.

Hot tips !

- In my experience, the elected members of local authorities, and voluntary groups, are often fixated on the idea that traffic fumes cause asthma in children. The evidence for this is weak (see *Handbook on Air Pollution and Health*, 1997 - Section 7.2 Bibliography). You may find it difficult to move beyond this to accident reduction and exercise promotion, so working with local authority air pollution control departments may be the most politically sensible avenue.
- The NHS is spending money on “prescription for exercise” through general practices. This will help only a minority and is costly of personnel time. It is more logical to incorporate exercise back into daily life for everyone through travel.
- Big policies that have both national and local effects - transport, housing, environment, food/nutrition, economic regeneration - all have positive and negative health effects. There is, however, great resistance to acknowledging this, from the top of organisations downwards, if it threatens self-interests. A common joke among hospital administrators used to be dealing with consultants and car parking. Nowadays, try discussing car parking with managers ...
- In the Independent Report on Inequalities in Health chaired by Sir Donald Acheson, transport was specifically identified as an opportunity for reducing inequalities - not only the strong social class gradient in road accidents but also the importance of investment in public transport for disadvantaged communities.

References and summaries

- Ferguson, J. and McCarthy, M. (1996) Transport in London and the implications for health. In: Fletcher, A. and McMichael, A. (eds) *Health at the Crossroads - transport policy and urban health*.
- Soderlund, N., Ferguson, J. and McCarthy, M. (1996) *Transport in London and the implications for health*. Health of Londoners Project, London.

These two reports complement each other: the first takes a broad sweep at the trends in transport and health in London; the second has more detail on health data and policy interventions. At the back of Soderlund et al, there is a short “quantification” of the possible health effects of a 10% change from car usage as a mode of transport to walking and cycling.

- McCarthy, M. (1999) Transport and health. In: Marmot, M. and Wilkinson, R. (eds) *The social determinants of health*. Oxford University Press, Oxford.

This book arose from a collaboration between University College London and the World Health Organization Regional Office for Europe to develop the scientific basis of the determinants of health. The ten topics chosen were within the current work of the university’s staff (the reason why there are no chapters on housing and economic regeneration). Several authors were also participants in the Independent Inquiry on Inequalities in Health. The chapter on transport and health covers transport patterns and health impacts, but also has sections on health-promoting transport policies and the politics of change.

- McCarthy, M. and Ferguson, J. (1999) *Environment and Health in London*. King’s Fund, London.

The WHO held an international Ministerial Conference on Environment and Health in London in June 1999, sponsored by the Department of Health. In line with current practice for international UN meetings, an NGO parallel meeting was also held - the Healthy Planet Forum. This sought to give expression to the many environment groups that have concerns about health, and attracted about 1000 participants over 3 days. To contribute to the event, and considering ourselves to be hosts in London, we organised an international meeting of people working for local municipal health and environment departments in Central and Eastern European countries. This report was written to give visitors to the Forum a graphic view of environment and health in London. Transport is included. Preparing this report drew attention to the difficulty of collecting together

information across many fields. It is possible that the new Public Health Observatories in the UK will do this kind of work in the future.

- Transport and Health Study Group (1991) *Health on the move*. Public Health Alliance, Birmingham.

The Transport and Health Study Group was initiated by a core of academics, public health doctors and campaigners who wanted to share their perspectives and understanding of the links between transport and health. The original material in this book framed the debate on transport and health in the 1990s. Only one other country in Europe (Finland) developed a similar book.

- Hamer, M. (1987) *Wheels within wheels: a study of the road lobby*. Routledge, London.

This book gives great insights into the ways in which the road lobby (i.e. manufacturers of cars, tyres, and electronics, car sales and advertisers, motoring organisations, motorway builders, and petroleum companies) co-ordinate their activities to promote the car and stifle public policies about less profitable modes of transport such as walking, cycling and public transport.

- British Medical Association (1997) *Road transport and health*. BMA Publications, London.

The BMA's Board of Science supports walking and cycling, and reducing car use.

- Health Education Authority (1998) *Transport and health: a briefing for health professionals and local authorities*. HEA, London.

An easy read, linking health with the national Integrated Transport Strategy.

- Transport 2000 (1999) *The healthy transport toolkit*, Transport 2000, London.

Full of practical examples of how to develop healthier transport in the NHS.

Air pollution

- Committee on the Medical Effects of Air Pollutants (COMEAP), Department of Health (1999) *Quantification of the effects of air pollution on health in the United Kingdom*. The Stationery Office, London.

COMEAP advises the Department of Health, and has calculated an estimate of the short-term deaths that could be attributed to particulate and sulphur dioxide air pollution. As the effects of air pollution are said to be experienced mainly by people who are already ill, the shortening of life may be by a few months only.

- Kumzli, N., Kaiser, R., Medina, S., Studnicka, M., Oberfield, G. and Horak, F. (1999) *Air pollution attributable cases: technical report on epidemiology*. Report 326. Swiss Federal Department for the Environment, Transport, Energy and Communications, Bureau for Transport Studies, Bern.

In this document, a different approach is taken. A consortium from Austria, France and Switzerland use epidemiological data from cohort studies undertaken in the USA and apply them to European populations. The effects of different levels of excess pollution from air particles are considered. Although no single figure is given, it is suggested that there is an average of 250 extra cases of respiratory disease per million population due to road traffic.

Exercise and coronary heart disease

- Berlin, J. A. and Colditz, G. A. (1990) A meta-analysis of physical activity in the prevention of coronary heart disease. *American Journal of Epidemiology* 132(4); 612-28.

The results of this meta-analysis suggest a relative risk for coronary heart disease for sedentary people, when compared with those who exercise, of almost twofold.

- Wannamethee, S. G., Shaper, A. G. and Walker, M. (1998) Changes in physical activity, mortality, and incidence of coronary heart disease in older men. *Lancet* 351(9116); 1603-8.

Data from a recent UK study; the results suggest that moderate physical activity improved relative risk of both cardiovascular mortality (0.66) and non-cardiovascular mortality (0.48).

- Haapinen Niemi, N., Vuori, I. and Pasanen, M. (1999) Public health burden of coronary heart disease risk factors among middle-aged and elderly men. *Prev-Med* 28(4); 343-8.

Theoretical estimates of population-attributable risks for coronary heart disease were derived from data in published studies, as follows: smoking 10-33%; high total cholesterol levels 9-21%; hypertension 6-15%; overweight 3-6%; low level of leisure-time physical activity 22-39%.

- Naidoo, B., Thorogood, M., McPherson, K. and Gunning-Schepers, L. J. (1997) Modelling the effects of increased physical activity on coronary heart disease in England and Wales. *Journal of Epidemiology and Community Health* 51(2); 144-50.

The computer model, *Prevent*, was adapted for the English and Welsh populations and used to simulate the effect of a 25% increase in the proportion of those aged 15-65 years who were moderately active with respect to coronary heart disease mortality over 25 years. The results of the simulation showed a reduction in coronary heart disease death rates of 0.15% for men and 0.06% for women. The strategy would be more effective if it was targeted on men rather than women, those over the age of 45 years rather than those who are younger, and on the least active members of the population rather than those already taking some exercise.

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