"Every breath we take, every move we make"[1]

Worldwide, ambient air pollution causes 4.2million premature deaths (www.who.int/airpollution/ambient/health-impacts/en/), accounting for one in nine deaths globally in 2012. Importantly, 91% of the world's population exposed to air pollution levels that exceed World Health Organization guideline limits (www.who.int/airpollution/ambient/en/). Pollution levels are higher in Africa, Asia and the Middle East than elsewhere in the world (WHO, 2016) yet even in Europe there are almost half a million air pollution-related deaths each year (Dey et al, 2018). Outdoor air pollution has been known for many years to cause cancers, asthma, chronic obstructive pulmonary disease (COPD), heart disease and stroke but more recently has been linked with the development of obesity, diabetes, and dementia (RCP, 2017). The cost of air pollution in the UK was estimated last year as £20billion (RCP, 2018).

Globally, transport accounts for a major portion of air pollutant emissions (European Commision, 2015; Veetil). Shaw et al (2018) showed that fuel price increases led to short-term falls in air pollution. However, pressure from drivers and the auto-oil lobby led to an abandonment of the previous commitment to raise tax annually on petrol (gasoline) and a freezing of tax on petrol [gasoline] in the UK in 2011 (Begg and Haigh, 2018). Begg and Haigh (2018) have calculated that consequences of this decision include an increase in motor traffic since then of 4%, leading to worse congestion and pollution. They calculated that 12,000 additional tonnes of NOx, 816 tonnes of PM_{10}, and 4.5million tonnes of CO_2 have been produced by this additional traffic. In addition, UK Treasury [Ministry of Finance] tax revenue has been about £7billion less than it would have been.

Kumar and Kumar (2018) have estimated the number of excess deaths and hospital admissions due to air pollution along major transport corridors in Delhi, India. They found that hospital admissions were increased, particularly for COPD and circulatory diseases. However, not all postulated associations between air pollution and health risks are supported by all studies; for example, Pierotti et al (2018) found no evidence in Great Britain of air pollution being associated with solid organ transport failure.

So what can be done to reduce the health impacts of air pollution? My PhD research hypothesis was that reducing air pollution in central London through technical measures to reduce emissions from private motor cars would improve health less than changing travel patterns to reduce motor vehicle use. My main finding was that the data did not exist to test the hypothesis adequately. Since then, there is an emergent body of evidence to explore these issues, as evidenced by three papers published in this edition of JTH.

Behaviour change – though not modal change – was the basis of a study by Liu and colleagues (2018). They modelled different routes for pedestrians and found that their exposure to fine particulates, $PM_{2.5}$ air pollution when walking could be reduced by up to 48% by modifying their route, with only a 2% increase in the distance walked. However, reduced exposure was found for only 4% of their modelled walks, suggesting that there are limited opportunities to reduce exposure by modifying routes without changes in the overall walking environment. Other relevant articles on this key topic of behaviour change are published in this volume as a Special Issue on Behaviour Change, edited by Kiron Chatterjee, Rachel Carey and Ian Walker (Chatterjee and Carey, 2018).[2]

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[1] Sumner G. Every breath you take, every move you make' . The Police. Released 1983.

[2] From now on, special issues in this journal will be available as online collections (see https://www.sciencedirect.com/journal/journal-of-transport-and-health/special-issues) rather than all being published together in a single volume or part volume. This will enable us to publish accepted articles more speedily, without waiting for other manuscripts for the special issue to be ready for publication.

A second modelling study, by Dey et al (2018) explored the economic impacts of banning diesel vehicles more than 20 years old, and banning all diesel vehicles from 2025 onwards in Ireland. They conclude that each scenario would result in emissions of oxides of nitrogen (NO_x) and fine particulates ($PM_{2.5}$) being around 50% less in 2030 compared with 2015. These reductions would also save around 300 disability-adjusted life years (DALYs), saving €43.8 million.

Although Bigazzi and Rouleau (2017) had concluded from their review of the evidence that traffic management systems had little effect on urban air quality, Garceau (2018) has demonstrated that roadway infrastructure modifications can also change air pollution levels: replacing signalised junctions with roundabouts, with the intention of reducing congestion, can reduce particulate levels substantially in the immediate vicinity but can also cause lesser reductions in neighbouring areas.

These important papers contribute to the emerging evidence base on effective interventions for improving air quality, and the need for comprehensive strategies that encompass behaviour change, fiscal measures, vehicle design and road layout.

Finally, I should like to thank Takemi Sugiyama for his work and support during his five years as an Associate Editor. You can read his editorial elsewhere in this volume (Sugiyama and MacKillop, 2018).

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