

K&MAQP Health sub group briefing for the way forward.

Mission Statement

The Kent & Medway Air Quality Partnership Health Sub Group will seek to raise the awareness of the impacts of Air Quality on Health to both the general public and health professionals. This will be delivered by developing supporting material and attending networking events in order to communicate both the health and financial benefits that improving air quality can deliver and influence beneficial change.

Executive Summary

It has been estimated that poor air quality causes up to 50,000 deaths per year and probably causes more mortality and morbidity than passive smoking, road traffic accidents or obesity. The financial burdens of the health impacts in the UK are considerable. In 2005, estimates for man-made particulate pollution alone in the UK were £8.5-£20.2 billion a year (Defra Air Quality Strategy, 2007). This is likely to be an under-estimate as it ignores the impact on morbidity, costing only mortality.

There are also additional costs to the NHS from respiratory hospital admissions triggered by air pollution. For example, in 2007/08, there were over 74,000 emergency admissions to hospital because of asthma and the NHS's non-elective spell tariff¹ was £612 million for 2007/08. There are clear links between asthma and air quality; Asthma UK estimate the annual cost of asthma to society at £2.3 billion..." (EAC, March 2010).

Improving public education on the health effects of poor air quality will allow reasoned choices to be made by the public to take the necessary steps to improve their own health. The Public Health Outcomes Framework (January 2012) sets out desired outcomes for public health and provides a framework to help deliver this and the Kent & Medway Air Quality Partnership Health Sub Group aim to support health professionals deliver those health benefits.

Background

Nationally, up to 50,000 deaths per year are linked to poor air quality, and poor air quality probably causes more mortality and morbidity than passive smoking, road traffic accidents or obesity. The financial burden of the health impacts of air quality in the UK are considerable. The 2007 Air Quality Strategy estimates that the health impact of man-made particulate air pollution experienced in the UK in 2005 cost between £8.5 billion and £20.2 billion a year. This is likely to be an under-estimate as it ignores the impact on morbidity, costing only mortality. There are also additional costs to the NHS from respiratory hospital admissions triggered by air pollution. For example, in 2007/08, there were over 74,000 emergency admissions to hospital because of asthma and the NHS's non-elective spell tariff² was £612 million for

^{1&2} Non-elective spell tariff. Reference doc: http://www.brit-thoracic.org.uk/Portals/0/Delivery%20of%20RespCare/resp_tariffs_guide.pdf

2007/08. There are clear links between asthma and air quality; Asthma UK estimate the annual cost of asthma to society at £2.3 billion..." (EAC, March 2010)

The Air Quality Management Resource Centre note that the health impacts of air quality in the UK are almost twice those of physical inactivity, estimated to be £10.7 billion per annum and are comparable to the cost of alcohol misuse to society, estimated to be £12–£18 billion per annum. However, the effects of poor air quality on our health fails to receive the same level of attention as the latter within medical circles (EAC, March 2010).

"The burden of particulate air pollution (specifically PM_{2.5}) was estimated to be an effect equivalent to about 29,000 deaths, or a loss of life expectancy from birth of 6 months. COMEAP³ speculated that it was reasonable to consider that air pollution may have made at least some contribution to the earlier deaths of up to 200,000 people (the number dying of cardiovascular causes) with an average loss of life of about two years. COMEAP also reported, in November 2010 that, as well as exacerbating asthma in those already having the condition, air pollution might also play a role in the induction of new cases of asthma amongst those living close to busy roads with a lot of lorry traffic... (House of Commons, EAC, Oct 2011)

Elimination of man-made particulates has been estimated to show a gain in life expectancy of 7-8 months compared to only 1-3 months for the elimination of road traffic accidents or 2-3 months for passive smoking (Table 1: EPUK, 2011).

Table 1: Comparison of the benefits of reducing PM_{2.5} by 10 µg/m³ (equivalent to eliminating man-made PM_{2.5} in 2005), the elimination of motor vehicle traffic accidents and the elimination of exposure to passive smoking⁴

	Reduction in PM _{2.5}	Elimination of road traffic accidents	Elimination of passive smoking
Expected gain in life expectancy	7-8 months	1-3 months	2-3 months
Estimated equivalent gain in life years in England and Wales from 2005-2110 for the whole population (including people born during that time)	39,058,000	8,126,000	13,194,000

Studies (Defra, 2006 and Shaleen Sutaria 2010) show that in the UK the deprived communities are generally located in inner urban areas, where the air quality is generally poorer.

Kent Focus:

Kent's position between London and the continent brings health challenges associated with its unique pollution profile.

As a gateway to the continent Kent & Medway's extensive transport network carries a disproportionate number of HGVs, with their associated carcinogenic diesel emissions⁴. This cross channel traffic is continuing to increase (Kent County Council 2011). Around the coasts and ports shipping also brings an impact from marine diesel.

Even away from local urban and traffic sources pollution impacts on the population. Easterly winds can bring pollution, from continental sources, which affect the whole of Kent & Medway raising levels of particulate and/or ozone. Winds from the opposite

³ The Committee on the Medical Effects of Air Pollutants (COMEAP), the Government's official advisory panel.

⁴ WHO August 2012 <http://www.who.int/bulletin/volumes/90/7/12-010712/en/>

westerly direction can bring London's urban pollution plume drifting across western Kent.

On top of the urban pollution problems seen everywhere this unique combination of additional factors exacerbates pollution, and hence health and inequalities in Kent & Medway.

The research (European Respiratory Society, 2003) suggests that COPD is likely to be the third largest cause of death worldwide. The research (Susanna Lagoria *et al*, 2006; Antonella Zanobetti *et al*, 2008) has also established air pollution as one of the potential causes and exacerbating factor for COPD.

Shailen Sutaria (2010) estimated that there were 963 excess deaths per year due to long term exposure, and 91 excess deaths per year due to short term exposure to air pollution in Kent and Medway; this estimate again ignores the larger effects on morbidity due to air pollution and shows that interventions to reduce air pollution have co-benefits on health, climate change and the economy.

In 2012 a new estimate of 1180 early deaths as a result of just PM_{2.5} air pollution across Kent & Medway in 2010 was calculated by the K&MAQP Health Sub Group. This was using the methods recommended in the statement (Aug 2012) 'Estimating the mortality burden of particulate air pollution at the local level' from the Committee on the Medical Effects of Air Pollutants (COMEAP), the Government's official advisory panel.

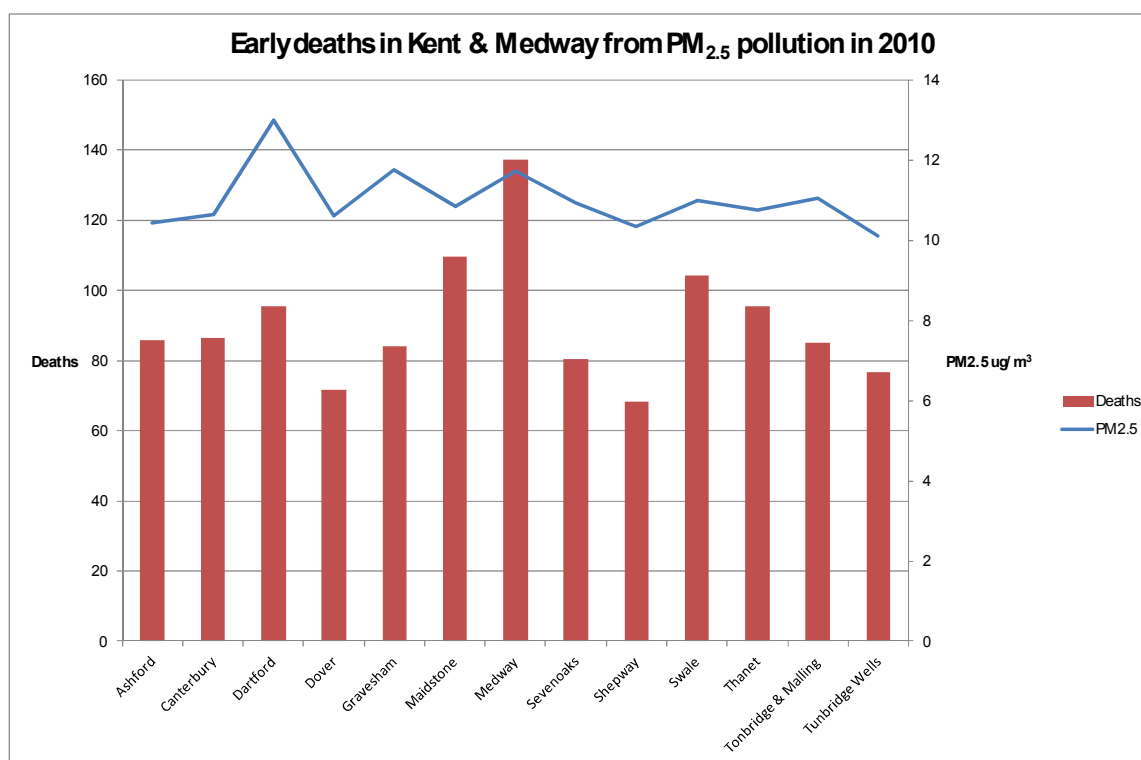


Figure 1 Early deaths from PM_{2.5} in 2010⁵

⁵ The PM_{2.5} deaths were based on the COMEAP finding that death rates rise by 6% for each 10ug/m³ of PM_{2.5}, and used a 5 year average deaths figure in the calculation. PM_{2.5} levels were taken from the Defra published background figures for 2010, and the median (50th percentile) of the levels across each district used as the representative figure.

Additional deaths would have occurred from other pollutants as well but these calculations have not been completed at this time. It should be noted that this estimate is likely to be on the low side since it is based on background levels and does not take into account the higher population densities in urban areas where exposure to higher levels of pollution is experienced.

The growing concern as to the impact of air pollution on the health of the population is reflected in the increasing estimates of attributable deaths as new evidence becomes available.

Way Forward

“The Government must take full advantage of public health reforms to improve local authorities’ abilities to improve air quality. In particular the Government should introduce indicators to measure public health improvements from better air quality in its public health reforms.” (EAC, Feb 2012)

We will be working with colleagues in the Health Protection Unit and the emerging clinical commissioning groups to support the government’s vision for Public Health England. There is now an opportunity to engage with the Directors of Public Health to use “their influence to bring air pollution into the mainstream public health conversation” (Client Earth , 2012).

The Marmot Strategic Review of Health Inequalities in England – Fair Society Healthy Lives (Feb 2010), provided the backbone to the vision for the future; Public Health England. The technical guidance for the Public Health Operating Framework (PHOF) consists of 4 domains measured by 66 factors. The 2 domains that overlap directly with the work of the K&MAQP are Domain 3; Health protection (3.1 Air Pollution, using a PM_{2.5} indicator) and Domain 4; Healthcare public health and preventing premature mortality (4.3, 4.4 and 4.7). (tech spec, public health indicators, Jan 2012)

In a recent BBC Radio 4 broadcast (BBC Radio 4, Aug 2012), Professor Frank Kelly of King’s College ERG stated that air pollution is invisible and its affects are most often long term and chronic. As such, the health effects of air pollution are not as effectively linked with Domain 4 (above) as they should be. In the same broadcast, Professor Mark Everard indicated that his recent study in Sheffield appears to indicate that the worst episodes of bronchiolitis in small babies directly correlates with rises in the pollutant nitric oxide (a constituent of diesel emissions). He further indicated that his evidence supports that nitric oxide not only triggers outbreaks of bronchiolitis but also reactivates the virus in dormant cells.

The Marmot Review states;

“What a child experiences during the early years lays down a foundation for the whole of their life” Public awareness of this invisible threat to health needs to be raised now.

Despite the focus for most Local Authority work resting with oxides of nitrogen (under the direction of LAQM and prospective financial burden), the PHOF is the first government directed document indicating that our partnership working must look at the broader remit of air quality and public health, redirecting our focus to particulates.

In June this year the World Health Organisation, stated that diesel particulates are carcinogenic (WHO 2012). All of our most valued sources of public health information are giving us the most direct statements produced to date that action on (and education about) particulate emissions is required now. We must work in co operation with our partners in the emerging Public Health England to ensure that lifestyle adjustments required by changing pollutant levels are promoted with equal importance to public health messages on taking more exercise, eating "5 a day" and reducing smoking.

There are opportunities for taking advantage of the cross over between the health and wellbeing agenda, climate change and carbon reduction initiatives and air quality programmes. For example, walking and cycling have the potential to improve fitness, diminish obesity, and reduce noise, air pollution, and greenhouse gases associated with travel. Just half an hour a day of walking or cycling can halve the risk of developing heart disease (Dora C, 1999). Over half of the daily trips that people make are short and provide an opportunity for physical activity that is free and accessible (Dora C, 1999).

Conclusion

This document aims to raise awareness of the serious health risks posed by current levels of air pollution and the potential benefits of tackling these. The necessary action to tackle this requires cooperation across all stakeholder bodies. To optimise the health and well-being of residents in Kent and Medway this matter needs to be addressed systematically at strategic and operational level across all statutory authorities.

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(also provide Medway death figures)