

Adapting to Climate Change at Barts NHS Trust & London Boroughs Cleaner Air Project

Air quality is a subject of huge importance for public health, with the health impacts of poor air quality continuing to be a significant challenge in many parts of the country. The effects of poor air quality can include the exacerbation of asthma, lung cancer and cardiovascular disease. In addition to taking action now, it's also important to understand how changes in our climate may affect air quality in the future. It is vital that local leaders in the health and care system understand both current and future health risks in order to safeguard health and wellbeing.

Challenge

- Particulate Matter (PM), ambient ground-level ozone (O₃), and Nitrogen Dioxide (NO₂) constitute the three most prevalent air pollutants with the greatest population health burden¹
- Increased airtightness of dwellings is required, in pursuit of energy efficiency to mitigate climate change. In the absence of adequate ventilation, the highly energy efficient homes, may pose risks to health by (1) increasing the concentrations of indoor air pollutants derived from indoor sources and biological contamination and (2) increasing the risk of overheating, with exposure to higher indoor temperatures.
- The health impacts of air quality in the future will largely be dependent on our ability to reduce harmful emissions to air. Changes in our climate are also expected to interact with harmful pollutants, potentially increasing the health risks.

	Ground level ozone (O ₃)	Particulate Matter (PM):	Nitrogen Dioxide (NO ₂)
Source(s)	A secondary pollutant, formed through reactions with sunlight, carbon monoxide (CO), volatile organic compounds	Construction activities; roadworks; diesel engines such as cars, busses and trucks; forest fires; gas emitted from power plants	Mostly from motor vehicle exhausts, also from industry, shipping and the use of nitrogen-based fertilisers in agriculture
Health effects	Short-term acute effects on the respiratory system, chronic disease and death.	Main effects are those on cardiovascular and respiratory health. Adverse health outcomes are observed following both short and long-term exposures.	Inflames lining of lungs; reduced immunity; reduced lung function growth in children, increased likelihood of respiratory problems.
In a changing climate	Impacts of O ₃ in urban, rural and suburban areas are expected to increase with climate change	Enhanced by poor dispersion conditions (winter and summer). Will depend largely on future emissions reduction	Will depend largely on future emissions reduction

Response

- In order for health protection measures to effectively reduce harm from exposure to air pollution, it is important to target vulnerable populations, those with pre-existing illness, the elderly and very young.
- Air pollution alert systems will be a critical part of the response. In the UK, DEFRA compiles the daily air quality index from automated monitoring stations from local authorities. A 24 hour forecast is provided and health advice is published when thresholds are exceeded.²
- There are a number of local services providing alerts and warnings to vulnerable populations, a good example being the London airTEXT service³

¹ World Health Organization (2006) Air quality guidelines: global update 2005, Regional Office for Europe, Copenhagen. Accessed Online: http://www.euro.who.int/_data/assets/pdf_file/0005/78638/E90038.pdf

² Department for Environment Food and Rural Affairs (Defra) <http://uk-air.defra.gov.uk>

³ <http://airtext.info/>

Air quality strategy: The Barts vision

Achieving their vision to become the most sustainable NHS Trust by 2020, Barts Health aims to cut emissions that contribute to poor air quality around its hospital sites and to help at-risk community groups to cope better with air pollution. The programme will support Barts Health in achieving their vision to better serve the needs of our community, demonstrating leadership in public and preventative health. Adapting services to become more climate ready is at the core of Barts' ambition.

How the work began:

This work began following mounting evidence suggesting that air quality is a significant risk in London and will worsen in a changing climate. This was a clear health risk facing local communities and for healthcare services. A recent paper⁴ suggested that particulate matter is responsible for 4000 premature deaths in London each year.

"Within our communities we see widespread prevalence of both health and social inequality. By actively engaging with our communities and empowering individuals to take action the 'Barts Health Cleaner air for east London project' we can start to tackle some of these significant issues, which currently result in a significant numbers of premature death each year."

Ian Basnett, Director for Public Health, Barts NHS Trust

Action taken and the results:

- Initial action involved working through the air quality leads within four local boroughs: City of London, Tower Hamlets, Newham and Waltham Forest. Working in partnership with these leads and with the Greater London Authority (GLA) allowed all partners to develop a three-year strategy focussing on this important issue.
- Submitted and won a bid to the London Mayor's Air Quality Fund, focussing on the health impacts of air quality (primarily cardiovascular and respiratory disease) now and in the future, covering an area of 1200 people living close to the hospital. Also worked with King's College London on measuring the impacts of air quality in and around the hospital, also in partnership with the GLA.
- Linked up with behaviour change charity *Global Action Plan* to better understand the steps which can be taken to encourage healthier behaviours amongst staff and local communities.
- Started a communication campaign to improve understanding of the issue, this included targeted work with over 1000 staff, patients, and visitors to hospitals in the Barts Health NHS Trust to engage them around the GLA Cleaner Air survey and inform them of the key risks and actions
- The programme is working with cardiovascular and respiratory staff at Barts Health to communicate to patients how to reduce their exposure to air pollution and protect themselves from its impacts, thereby helping patients manage their health and aiming to reduce readmission rates to hospital.
- Putting in place low/no emissions zones, introducing no engine idling policies, supporting suppliers to consolidate deliveries and develop air quality improvement policies, campaigning for staff, patients and visitors to make smarter travel choices and to use airTEXT service.
- Improved engagement and health intervention: raising awareness of this issue with local authorities in neighbouring boroughs such as engagement with Health and Wellbeing Boards, enabling them to consider Air Quality issues now and into the future in local Joint Strategic Needs Assessments.

For more information about this project please contact: Fiona.daly@bartshealth.nhs.uk

⁴ Miller, B (2010) – Report on estimation of mortality impacts of particulate air pollution in London. Accessed at: http://www.london.gov.uk/sites/default/files/Health_Study_%20Report.pdf



The climate is changing. Are you?

A support service led by the Environment Agency
www.gov.uk/government/policies/adapting-to-climate-change