Air quality and dementia

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The new High Air Pollution Alert System being announced today by the NHS in London will help protect our most vulnerable patients from acute exacerbations in cardiac and pulmonary conditions caused by spikes in atmospheric pollution.

A healthcare system that recognises and responds to the impact of acute environmental changes on health is a necessary part of adapting to and preventing climate change. But we also need to consider the effects of chronic exposure to air pollution. Evidence supporting a link between air pollution and dementia is growing rapidly. A major study from Harvard University published last year in the British Medical Journal combining research from multiple countries showed that exposure to higher levels of nitrogen dioxide (NO2) and particulate matter less than 2.5 micrometre (μm) in diameter (PM2.5) was associated with higher rates of dementia. PM2.5 are incredibly fine particles, about 3% the width of a human hair, that stay aloft for a long time, exposing more people to breathing them in, and then penetrate deep into the body. PM2.5 are emitted by multiple sources including vehicle exhausts, factories and wood-burning stoves.

The number of people living with dementia in London is already set to reach 108,000 by 2030, a 42% rise since 2019. The need for action to reduce this is urgent. According to the Lancet Commission on Dementia, up to 40% of dementia can be prevented or delayed if we optimally address just 12 modifiable risk factors. Notably, they estimated that air pollution accounts for one in 43 cases of dementia. This is a small fraction of the total but still equates to several thousand people in London alone.

Dementia prevention must be for everyone, not just those who can afford or accommodate changes to their lifestyle or circumstances. While addressing some dementia risk factors, such as stopping smoking, requires action from individuals themselves, it is very hard for people to reduce their long-term exposure to air pollution. People living in areas with cheaper housing and higher levels of pollution can't just move home to a more expensive area with cleaner air. It is central and local government, with their powers to regulate road use and industrial and domestic emissions that can make a difference.

Through initiatives such as the Ultra Low Emissions Zone (ULEZ), London has been leading the way in tackling air quality, with significant improvements in air quality in

recent years. Between 2016 and 2019 average London-wide NO2 concentrations fell by 22%, while PM2.5 concentrations fell by 19%. The gap in air quality between areas where Black and other racially minoritised Londoners and white Londoners are more likely to live also fell. These improvements will already have helped to prevent or delay dementia and a host of other diseases in thousands of people.

But we need to go further. All Londoners still live in areas that exceed World Health Organisation recommended limits for NO2 and PM2.5. It is estimated that average concentrations of NO2 are 17% higher and PM2.5 7% higher in the most deprived areas of London compared to the least deprived areas. People in racially minoritised communities are still more likely to live in areas with higher levels of air pollution. Moreover, forecasts show that our city cannot meet safe levels by 2030 without more action. Taking further steps to reduce air pollution is necessary not just to protect people from acute exacerbations of cardiopulmonary conditions but also to keep our brains and other organs healthy in the long term. It is an issue of social justice not only on high pollution days but on every day in every community in London.