8 January 2013

London Health Commission urged to consider separately exposures, health impacts and outcomes. Prevention is better than cure and protection is not just about treating the unwell

Clean Air in London commissioned the Office for National Statistics to rank the top 10 death categories for every borough in London for the first time ever

Air pollution is one of the exposure categories causing all the top four male death categories and four of the top five female death categories in London i.e. Ischaemic heart diseases; Malignant neoplasm of trachea, bronchus and lung; Chronic lower respiratory diseases; and Cerebrovascular diseases. Air pollution has also been linked to cognitive decline in older people

'Heatmaps' show that every London borough except Bexley and Camden appears at least once in the top three worst boroughs for one of the top 10 death categories in the last three years

Clean Air in London encourages Londoners, Health and Wellbeing Boards, local authorities, Clinical Commissioning Groups, the London Health Commission and others to consider the data and adjust their priorities accordingly

At its simplest, in public health terms, 'invisible' air pollution is where smoking was 30 years ago in terms of the scale and certainty of the risks and the lack of public understanding of them

Clean Air in London (CAL) commissioned the Office for National Statistics (ONS) to rank the top 10 death categories in England, Greater London and each London borough for each year between 2001 and 2012 inclusive. See Note 1 for the top 10 rankings for males and females in London in 2012.

For each category, area and year the ONS has provided:

- number of deaths defined using the International Classification of Diseases [Note 2]; and
- top 10 ranking of age standardised death rate per 100,000 population (standardised to the 1976 European Standard Population) (ASR) which allows comparison between populations which may contain different proportions of people of different ages [Note 2].

The ONS has also provided the population numbers for each area in each year. The City of London is not included because its population is small.

CAL understands this information has never before been published at a local level. CAL is therefore publishing the five tables received from the ONS with this media release and sending them to the Mayor.

CAL's investigation is timely given the Mayor established the London Health Commission (LHC) as an independent inquiry in September 2013 to examine how London's health and healthcare can be improved for the benefit of the population.

The LHC has issued a Call for Evidence which closes on 17 January:

http://www.london.gov.uk/priorities/health/london-health-commission

CAL is therefore submitting the results of this investigation to the LHC's Call for Evidence and offering to give oral evidence.

Key findings

The ONS has provided a wealth of information. Most important, the ONS has provided the first official, high quality and consistent ranking of death categories in every London borough and for London as a whole for each of the last 12 years.

When considering the data it is essential to understand that exposure categories (e.g. air pollution, alcohol, obesity and smoking) cause health impacts (e.g. hardening and thickening of the arteries) which lead to death categories (e.g. heart attacks, strokes and lung cancer). In other words, exposures cause impacts and then outcomes. The ONS has provided 'outcome' data only.

Key findings include:

i. top five male death categories in **London** in 2012 were: 1. Ischaemic heart diseases; 2. Malignant neoplasm of trachea, bronchus and lung; 3. Chronic lower respiratory diseases; 4. Cerebrovascular diseases; and 5. Dementia and Alzheimer's disease;

ii. top five female death categories in **London** in 2012 were: 1. Ischaemic heart diseases; 2. Dementia and Alzheimer's disease; 3. Cerebrovascular diseases; 4. Malignant neoplasm of trachea, bronchus and lung; and 5. Chronic lower respiratory diseases;

iii. air pollution is one of the exposure categories known to cause all four of the top four male death categories and four of the top five female death categories. Air pollution has also been linked to cognitive decline in older people e.g. Dementia and Alzheimer's disease. At a borough, London or national level, no one cause of death will be responsible for all the deaths in a death category or even most of them;

iv. four 'heatmaps' produced by CAL, show the ranking of the top male and female death categories for each inner and outer **London** borough in each of the last three years relative to the **London** ranking of death categories in 2012. These reveal stark differences between **London** boroughs;

v. every London borough except **Bexley** and **Camden** appears at least once in the ranking by CAL of the top three worst boroughs in **London** for each death category for males and females in each of the last three years (with outer and inner **London** boroughs represented equally though in different death categories);

vi. on average, **Londoners** are half as likely to die of Ischaemic heart diseases and Cerebrovascular diseases now as they were 12 years ago but twice as likely to die early from Dementia and Alzheimer's disease in the last two years;

vii. there are massive variations between boroughs. For example, why were males in **Tower Hamlets more than twice** as likely to die in 2012 of Chronic lower respiratory diseases than males in **Brent** (63.3 vs 26.1 per 100,000 population)? For example, why were females in **Greenwich nearly four times** more likely to die of Dementia and Alzheimer's disease than females in **Harrow** in 2012 (61.0 vs 17.4 per 100,000 population)?; and

viii. there are also important differences between London and England. For example for males in 2012: why do more males die of Malignant neoplasm of trachea, bronchus and lung in London than England (even though smoking rates are lower in London)?; and why is Heart failure and complications and ill-defined heart disease in the top 10 ranking for London but not Aortic aneurysm and dissection? For example, why were females in London in 2012 almost twice as likely to die from Heart failure and complications and ill-defined heart disease as females in England?

More examples are included in Note 2 below. All the underlying data are being published as part of this investigation.

Quotes

Dr John Middleton, Vice President for Policy, Faculty of Public Health said:

"How long Londoners live for should not be determined by where they live. Useful data like this is part of a range of information that public health specialists are trained to understand and use to tackle health inequalities as well as improve and protect people's health. Local communities need to be confident that everything is being done to help people live longer, healthier lives. That's why we need the right data in the hands of public health teams in councils across England, working closely with partners like clinical commissioning groups."

Simon Birkett, Founder and Director of Clean Air in London, said:

"It is astonishing the Government has never published this information. It is even more astonishing the Mayor does not even hold this information.

"Clean Air in London encourages Londoners, Health and Wellbeing Boards, local authorities, Clinical Commissioning Groups, the London Health Commission and others to consider the data and adjust their priorities accordingly. Clean Air in London thanks the ONS for providing this valuable data.

"In London and across Europe, air pollution is killing more than 10 times the number of people dying from road traffic accidents. The known health effects of air pollution have rocketed in recent years with the World Health Organisation classifying outdoor air pollution as carcinogenic to humans in October 2013 as it did smoking in February 1985. At its simplest, in public health terms, 'invisible' air pollution is where smoking was 30 years ago in terms of the scale and certainty of the risks and the lack of public understanding of them.

"The huge variation in death rates for different death categories across boroughs may raise serious questions about inequalities and the competence and culpability of London authorities. Politicians and officials must stop saying behind closed doors they don't want to frighten the public about air pollution and do something to warn and protect people and reduce air pollution quickly.

"CAL urges the London Health Commission to consider separately exposures, health impacts and outcomes and seek specialist technical advice where necessary. Air pollution, alcoholism, obesity and smoking cause serious health impacts which may often result in death. Prevention is better than cure and protection is not just about treating the unwell.

"For example, are there more direct links between air pollution and the death categories than we expected with **Bromley** (the least polluted borough) and **Westminster** (the most polluted borough) categorising 61.0% and 70.6% respectively of top 10 ranked males deaths in 2012 as Ischaemic heart diseases, Malignant neoplasm of trachea, bronchus and lung, Chronic lower respiratory diseases and Cerebrovascular diseases? The **London** and **England** equivalents are both 62.3% for males. Great care is needed when answering such questions, particularly for a single year and single boroughs, since, for example, the equivalent percentages for females were the 'opposite' at 54.8% (**Bromley**) and 49.9% (**Westminster**) compared to 52.3% (**London**) and 53.9% (**England**) respectively in 2012.

"In the 20th Century, 25 of the 30 year gain in United States life expectancy was attributable to advances in public health not medical treatment.

"At a global level CAL urges the World Health Organisation to include air pollution in its Non-Communicable Diseases Model and the United Nations to include free access to clean air as a fundamental human right alongside water."

Notes

1. Top 10 death categories in Greater London in 2012

Male

1. Ischaemic heart diseases e.g. heart attacks
2. Malignant neoplasm of trachea, bronchus and lung e.g. lung cancer
3. Chronic lower respiratory diseases
4. Cerebrovascular diseases e.g. strokes
5. Dementia and Alzheimer's disease
6. Influenza and pneumonia
7. Malignant neoplasm of prostate
8. Malignant neoplasm of colon, sigmoid, rectum and anus e.g. bowel cancer
9. Malignant neoplasm of lymphoid, haematopoietic and related tissue e.g. Hodgkin's Disease and leukaemia
10. Heart failure and complications and ill-defined heart disease

Female

1. Ischaemic heart diseases
2. Dementia and Alzheimer's disease
3. Cerebrovascular diseases
4. Malignant neoplasm of trachea, bronchus and lung
5. Chronic lower respiratory diseases
6. Malignant neoplasm of breast
7. Influenza and pneumonia
8. Heart failure and complications and ill-defined heart disease
9. Malignant neoplasm of colon, sigmoid, rectum and anus
10. Diseases of the urinary system

2. Key findings nationally and within London

National and London-wide findings include:

i. **exposures** (e.g. air pollution, alcoholism and smoking) **cause impacts** (e.g. thickening and hardening of the arteries) and **outcomes** (e.g. deaths categorised as ischaemic heart diseases);

ii. air pollution is one of the causes of all the top four male death categories and four of the top five female death categories in **London** i.e. Ischaemic heart diseases; Cerebrovascular diseases; Malignant neoplasm of trachea, bronchus and lung; and Chronic lower respiratory diseases. Air pollution has also been linked to cognitive decline in older people e.g. Dementia and Alzheimer's disease. At a borough, London or national level, no one cause of death will be responsible for all the deaths in a death category or even most of them;

iii. Ischaemic heart diseases; Cerebrovascular diseases; Malignant neoplasm of trachea, bronchus and lung; and Chronic lower respiratory diseases comprised 62.3% and 52.3% of the male and female death rates respectively of the top 10 death categories in **London** in 2012 i.e. death categories linked particularly to air pollution. For **England** the percentages are 62.3% and 53.9% respectively;

iv. male and female death rates for Ischaemic heart disease (e.g. heart attacks) and Cerebrovascular diseases (e.g. strokes) halved in **London** and **England** between 2001 and 2012;

v. males were more than twice as likely to die in 2012 of Ischaemic heart diseases as females in **London** and **England** (91.5 vs 40.1 per 100,000 **London** population) and (95.4 vs 42.6 per 100,000 **England** population);

vi. male and female death rates for Dementia and Alzheimer's disease nearly doubled in **London** and **England** between 2010 and 2012;

vii. males were much more likely to die in 2012 of Malignant neoplasm of trachea, bronchus and lung than females in **London** and **England** (45.0 vs 27.5 per 100,000 **London** population) and (44.2 vs 29.8 per 100,000 of **England** population);

London borough findings include:

viii. inner and outer **London** boroughs appear equally in the top three worst boroughs for the top 10 death categories between 2010 and 2012 (though in different death categories);

ix. Malignant neoplasm of trachea, bronchus and lung is the top death category among women in some boroughs and bladder cancer – also now linked to air pollution – is in the top 10 death categories among males in many boroughs;

x. **Barking and Dagenham**, **Greenwich**, **Hackney**, **Haringey**, **Hammersmith and Fulham**, **Islington**, **Lewisham**, **Newham**, **Southwark** and **Tower Hamlets** appear most often in the worst three boroughs for the top 10 death categories between 2010 and 2012;

xi. Ischaemic heart diseases; Cerebrovascular diseases; Malignant neoplasm of trachea, bronchus and lung; and Chronic lower respiratory diseases in **Bromley** and **Westminster** comprised 61.0% and 54.8% and 70.6% and 49.9% of the male and female death rates respectively of the top 10 death categories in **London** in 2012 i.e. death categories linked particularly to air pollution. The Department of Health estimates **Bromley** (6.1%) has the lowest death rate in London attributable to air pollution and **Westminster** (8.3%) has the highest (see Note 8);

xii. males in **Tower Hamlets** were **much more than twice** as likely as males in **Kensington and Chelsea** to die of Ischaemic heart diseases in 2012 (130.5 vs 48.4 per 100,000 population);

xiii. females in **Greenwich** were **nearly four times** more likely to die of Dementia and Alzheimer's disease than females in **Harrow** in 2012 (61.0 vs 17.4 per 100,000 population);

xiv. females in **Hammersmith and Fulham** were **more than twice** as likely to die in 2012 of Malignant neoplasm of trachea, bronchus and lung as females in **Redbridge** in 2012 (36.5 vs 17.0 per 100,000 population);

xv. males in **Barking and Dagenham** were **much more than twice** as likely to die in 2012 of Malignant neoplasm of prostate as **males** in Enfield (37.9 vs 14.5 per 100,000 population);

xvi. males in **Tower Hamlets** were **more than twice** as likely to die in 2012 of Chronic lower respiratory diseases than males in **Brent** (63.3 vs 26.1 per 100,000 population); and

xvii. females in **Camden** were **more than twice** as likely to die in 2012 of Malignant neoplasm of breast than neighbouring **Islington** (25.7 vs *12.8* per 100,000) though note the latter number is in italics because it is small so less reliable.

3. Definitions used by the Office for National Statistics

Five tables provided to CAL by the ONS are being published as part of this investigation.

- Age-standardised rates per 100,000 population (ASR) are standardised to the 1976 European Standard Population. Age-standardised rates are used to allow comparison between populations which may contain different proportions of people of different ages.

- Underlying cause of death was defined using the International Classification of Diseases, Tenth Revision (ICD-10) codes in Health Statistics Quarterly 28, Winter 2005, Annex A

- ASR was not calculated where there were less than 10 deaths in a year. ASR based on less than 20 deaths were italicised and must be interpreted with caution.

The ONS ranked the death categories by the grand total number of deaths in each area between 2001 and 2012 inclusive.

4. Letter from the Mayor of London stating he does not hold this data

The Mayor wrote to CAL on 12 December 2013 stating that all the public health data relating to mortality held by the Greater London Authority is published on the London Datastore and can be accessed using the following link:

http://data.london.gov.uk/search/node/mortality

http://www.ons.gov.uk/ons/rel/vsob1/death-reg-sum-tables/2011--provisional-/index.html

Additional datasets may also be held by Public Health England's London team.

5. World Health Organisation ranking of the top 10 death categories in the World in 2011

http://who.int/mediacentre/factsheets/fs310/en/

6. Scientific evidence about causes, health impacts and outcomes

General summary

http://www.kphe.ca/air-pollution.php

World Health Organisation

http://www.euro.who.int/__data/assets/pdf_file/0004/193108/REVIHAAP-Final-technical-report-final-version.pdf

Ischaemic heart disease (page 8)

The risk of ischaemic heart disease, which includes heart attacks, has particularly strong and consistent associations with $PM_{2.5}$.

Cerebrovascular (page 9)

A large study in the United States reported significant associations with hospital admissions for a variety of cardiovascular diseases, including ischaemic heart disease, cerebrovascular disease and heart failure (Dominici et al., 2006)

Malignant neoplasm of trachea, bronchus and lung

http://www.iarc.fr/en/media-centre/iarcnews/pdf/pr221_E.pdf

http://www.iarc.fr/en/media-centre/pr/2012/pdfs/pr213_E.pdf

Chronic lower respiratory diseases

http://www.who.int/gard/publications/Risk%20factors.pdf

Dementia and Alzheimer's disease

http://www.sciencedaily.com/releases/2012/02/120213185121.htm

http://alzheimers.about.com/od/prevention/a/Does-Air-Pollution-Increase-The-Risk-Of-Developing-Alzheimers-Disease.htm

7. Committee on the Medical Effects of Air Pollution

http://www.comeap.org.uk/documents/reports/39-page/linking/51-the-mortality-effects-of-long-term-exposure-to-particulate-air-pollution-in-the-united-kingdom

http://www.comeap.org.uk/documents/statements/39-page/linking/46-mortality-burden-of-particulate-air-pollution

8. Public Health Outcomes Framework website

http://www.phoutcomes.info/public-health-outcomes-framework#gid/1000043/par/E12000004/ati/102/page/3

9. London Health Observatory

http://www.lho.org.uk/

Indicator Portal of the Health and Social Care Information Centre:

https://indicators.ic.nhs.uk/webview/

To find data on cancer, for example, from the panel on the left hand side select:

- 'Compendium of population health indicators'; then select
- 'Illness or condition' then 'Cancer'.

See the list of cancer sites, including lung and bladder.

Within these sites there is a range of tables, providing data on cancer incidence and mortality e.g. lung cancer rates for London boroughs, from the table 'Mortality from lung cancer: directly standardised rate, all ages, 3 year average, MFP'. This provides rates for 2008-10, and the number of deaths, for all English local authorities. There are other tables which provide trends in annual rates, and rates for premature deaths (under 75s).

10. Clean Air in London ranking of exposure categories by number of attributable deaths

http://cleanairinlondon.org/health/clean-air-in-cities-index/

11. Other publications from the Office for National Statistics

Leading cause of death figures for 2012:

http://www.ons.gov.uk/ons/rel/vsob1/mortality-statistics--deaths-registered-in-england-and-wales--series-dr-/2012/stb-deaths-registered-in-england-and-wales-in-2012-by-cause.html#tab-Leading-causes-of-mortality-in-2012

ONS reports annually on the leading causes of death in England, but CAL is not aware of anyone who has done this analysis before at the local authority level. ONS also reports the leading causes by sex for broad age groups in England.

Figures on smoking prevalence and numbers of smoking related deaths for local authorities are available from the Local Tobacco Control Profiles:

http://www.tobaccoprofiles.info/

The underlying data can be downloaded from the tool above.

Indicators of smoking prevalence and smoking-related deaths in our local authority Health Profiles:

http://www.apho.org.uk/default.aspx?RID=49802

The underlying data can also be downloaded. It may be easier to download figures for individual indicators from the Health Profiles than using the tobacco profile data.

12. Ten Great Public Health Achievements, United States, 1900-1999

"During the 20th century, the health and life expectancy of persons residing in the United States improved dramatically. Since 1900, the average lifespan of persons in the United States has lengthened by >30 years; 25 years of this gain are attributable to advances in public health. To highlight these advances, MMWR *will profile 10 public health achievements in a series of reports published through December 1999."*

http://jama.jamanetwork.com/article.aspx?articleid=189663

13. World Health Organisation's Non-Communicable Diseases Model

Document attached.

14. United Nations Fact Sheet about the right to 'clean water'

http://www.ohchr.org/Documents/Publications/FactSheet35en.pdf