Public Health England

Protecting and improving the nation's health

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By email

Michael Ryan
request-324954-6b0374e5@whatdotheyknow.com

Our ref: 25/04/lh/050

7 June 2016

Dear Mr Ryan

Re: internal review

Thank you for your email dated 25 April 2016 which asked for a review of Public Health England's response to your request for information. You asked:

> *I am writing to request an internal review of Public Health England's handling of my FOI request 'What evidence does Public Health England possess which demonstrates beyond any reasonable doubt a causal link between lower socio-economic status and higher infant mortality rates?'.*
>
> *Your reply avoids admitting no evidence and fails to provide evidence and therefore doesn't form an adequate response….*

The review below provides further explanation of the points you raised in your request.

The response to question 681 referred to case ref 4/1/lv/473 (sent on 28 Jan 2014) as it was considered that these questions while phrased differently were in essence the same question.

The response to 473 refers to the available data from the Office for National Statistics and a number of other sources of information on socio-economic status and infant mortality.

The ONS statistics referenced in the response to 473 were from 2011, and have subsequently been produced both for 2012 and 2013. The latest data are here: https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/childhoodinfantandperinatalmortalityinenglandandwales/2015-03-10. While the data are newer, the gradient by socio-economic status continues to be observed.

In addition to the Cooper (2001), Marmot (2010) and Oakley et al. (2009) references cited in the response to 473, the following references, all supported by a strong evidence base, make the links between lower socio-economic status and higher infant mortality rates:

- Frank Field. 2010. The Foundation Years: preventing poor children becoming poor adults: The report of the Independent Review on Poverty and Life Chances http://webarchive.nationalarchives.gov.uk/20110120090128/http:/povertyreview.independent.gov.uk/media/20254/poverty-report.pdf

- WAVE Trust. 2013. Conception to age 2 – the age of opportunity Addendum to the Government's vision for the Foundation Years: 'Supporting Families in the Foundation Years' http://www.wavetrust.org/sites/default/files/reports/conception-to-age-2-full-report_0.pdf

- CMO. 2013. Annual Report of the Chief Medical Officer 2012 Our Children Deserve Better: Prevention Pays https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/255237/2901304_CMO_complete_low_res_accessible.pdf

As stated in the response to 473, it is difficult to establish clear causality between socio-economic status and infant mortality; however, many of the factors known to influence fetal development and health are also linked with socio-economic status. The evidence is based on epidemiological studies which are observational rather than experimental research studies. There may be a number of possible explanations for an observed outcome. An observed association is not evidence of a causal relationship. The Bradford-Hill criteria are commonly used to establish causation in epidemiological studies. *The Bradford-Hill criteria (J Roy Soc Med 1965:58:295-300)*

Please note that you have the right to an independent review by the Information Commissioner's Office if a complaint cannot be resolved through the PHE complaints procedure. The Information Commissioner's Office can be contacted by writing to Information Commissioner's Office, Wycliffe House, Water Lane, Wilmslow, Cheshire SK9 5AF.

Yours sincerely

Freedom of Information Officer

Requests received

Original question 681 from 28/03/2016: ***Main question given here – further information discussed by correspondent in the email***

What evidence does Public Health England possess which demonstrates beyond any reasonable doubt a causal link between lower socio-economic status and higher infant mortality rates?

PHE reply to 681 on 21/04/2016: ***Referred to previous case 473:***

PHE responded to you on this subject on 28 January 2014 and our position has not changed since that date. You can view our response here: https://www.whatdotheyknow.com/request/what_evidence_has_public_health#incoming-475704

Original question 473 from 03/01/2014: ***3 parts of which part (b) was:***

I should also be grateful if you'd provide any evidence that demonstrates beyond any reasonable doubt that infant mortality rates are causally linked to socio-economic status.

PHE reply to 473 part (b) on 28/01/2014:

In accordance with regulation 5(1) I can confirm that Public Health England (PHE) does hold information in relation to this matter.

The link to the most recent data on the associations between infant mortality and socio-economic status, published by the Office of National Statistics, is here: http://www.ons.gov.uk/ons/rel/child-health/infant-and-perinatal-mortality-in-england-and-wales-by-social-and-biological-factors/2011/stb-infant-and-perinatal-mortality--2011.html#tab-Social-factors

The age at which women have children has been shown to be related to their socio-economic status (Cooper, 2001) and significant differences in infant mortality rates by socio-economic group persist in England and Wales (Oakley et. al., 2009).

Using the father's occupation and employment status as a proxy for socio-economic status (and therefore excluding births registered solely by the mother), infant mortality rates were highest for babies of married fathers in routine occupations (5.2 deaths per 1,000 live births) and babies of unmarried father's in semi-routine occupations (5.0 deaths per 1,000 live births).

Fathers classified to the 'Other' category comprise a mixed group including those who have never worked, the long term unemployed, students and those individuals whose occupational details could not be classified. Although babies born in this group had the highest rates for stillbirths and perinatal deaths, these figures should be interpreted with caution because the rates may vary between the different sub-groups within this category (Table 7 in the ONS website data cited above).

Most causes of infant deaths show a socio-economic gradient. Maternal health, including stress, diet, drug, alcohol and tobacco use during pregnancy, has a significant influence on foetal and early brain development. Lower birth weight, earlier gestation and being small for gestational age are associated with infant mortality. An analysis of infant deaths in England and Wales showed that deprivation, births outside marriage, non-white ethnicity of the infant and maternal

age under 20 years old are all independently associated with increased risk of infant mortality. A trend of increasing risk of infant death with increasing deprivation persisted after adjustment for the other factors (Marmot, 2010).
It is difficult to establish clear causality between socio-economic status and infant mortality; however, many of the factors known to influence foetal development and health are also linked with socio-economic status.
References cited:

Cooper, N (2001) 'Analysis of infant mortality rates by risk factors and by cause of death in England and Wales' In: Griffiths, Clare. Fitzpatrick, Justine. (Eds) DS 16. Decennial Supplement: Geographic Variations in Health. Stationery Office
Marmot, M (2010), Fair Society, Healthy Lives: Strategic Review of Health Inequalities in England Post-2010. Available here: http://www.instituteofhealthequity.org/projects/fair-society-healthy-lives-the-marmot-review
Oakley L, Manochie N, Doyle P et al. (2009) Multivariate analysis of infant deaths in England and Wales in 2005-06, with a focus on socio-economic status and deprivation. Health Statistics Quarterly 42: 22-39

Request for internal review – case ref 50:
Dear Public Health England,
Please pass this on to the person who conducts Freedom of Information reviews.
I am writing to request an internal review of Public Health England's handling of my FOI request 'What evidence does Public Health England possess which demonstrates beyond any reasonable doubt a causal link between lower socio-economic status and higher infant mortality rates?'.
Your reply avoids admitting no evidence and fails to provide evidence and therefore doesn't form an adequate response.

Your reply of 28 January 2014 (Your ref: 04/01/lv/473) contains the following which shows that some effort must have been made before admitting an inability to establish "clear causality between economic status and infant mortality":
"It is difficult to establish clear causality between socio-economic status and infant mortality; however, many of the factors known to influence foetal development and health are also linked with socio-economic status."

The association between infant mortality and socio-economic status began with Dr William Farr (1807-1882), who was Superintendent of the Statistics Department at the Registrar General's Office.

Dr Rosemary Geller wrote the following about Dr Farr:
"He described the close relationship between socio-economic status and infant mortality and used statistics of health to help define social class in England and Wales. The five social classes he defined have become the major criteria for research on the need for social intervention….."

(Making the Connections: Annual Report of the Directot of Public Health for Shropshire, 2001)

Dr Farr didn't consider the impact of air pollution on mortality rates, nor on the fact that "the poor" have little choice where they live or work, but he and his colleagues should have realised the importance of air pollution on mortality from the following in the 1858 report by the Registrar-General Scotland:

"In Glasgow there died 13.08 children out of every 100 living under five years of age; in Aberdeen the mortality was only 4.83 out of 100 children. From whatever cause or causes it may arise, infantile mortality is nearly three times greater in Glasgow than in Aberdeen, and consequently Glasgow is a much more unhealthy town than Aberdeen; for it has been proved that, as a general rule, "the less the proportion of deaths among children under five years, the greater is the healthiness of a town or locality." The report, in stating the causes of death, shows that the deaths from consumption were much greater in the towns than in the country districts, and that among the towns the lowest proportion was in the more exposed, and, therefore, better ventilated towns, such as Edinburgh and Aberdeen."

(The Vital Statistics Of Scottish Towns. The Times, 28 February 1859)

A full history of my FOI request and all correspondence is available on the Internet at this address:

https://www.whatdotheyknow.com/request/what_evidence_does_public_health