# Balance and effectiveness of research and innovation spending inquiry

**To:** **Science and Technology Select Committee**

**By:** **The Intergenerational Foundation**

**Date:** **21 August 2019**

The Intergenerational Foundation (www.if.org.uk) is an independent think tank researching fairness between generations. IF believes policy should be fair to all – the old, the young and those to come.

## 1. Introduction

As an organisation which exists to advocate for the rights of younger and future generations in British policy-making, IF is very pleased to see that the Science and Technology Select Committee is investigating the balance and effectiveness of research and innovation spending. This submission asks the Committee to think about the stark inequalities that exist between different generations in Britain today.

1.1 This submission relates to the Committee's first term of reference, "The effectiveness of public spending on R&D" and "The rationale needed for deciding on the balance of public R&D funding between individual research disciplines, research councils and cross-disciplinary schemes."

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| 2. | **Summary** |
| 2.1 | i. The over-55s account for 2/3rds of the country's health burden<br>ii. Medical research and funding follows this age group, thereby focusing on older people<br>iii. However, the leading risk factors for illnesses are: diet; exercise; smoking; drinking; and educational attainment. These are habits formed when we are young<br>iv. Current medical research therefore focuses on treating symptoms not causes<br>v. Focusing on prevention and early treatment in young people is likely to be more effective and cost effective |
| 2.2 | The focus on older people discriminates against young people. A more equitable and more sensible distribution of medical research would increase funding for young people by £575m per year and likely save £billions for the NHS and the economy over the longer term. |
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| 3. | **Causes not symptoms** |
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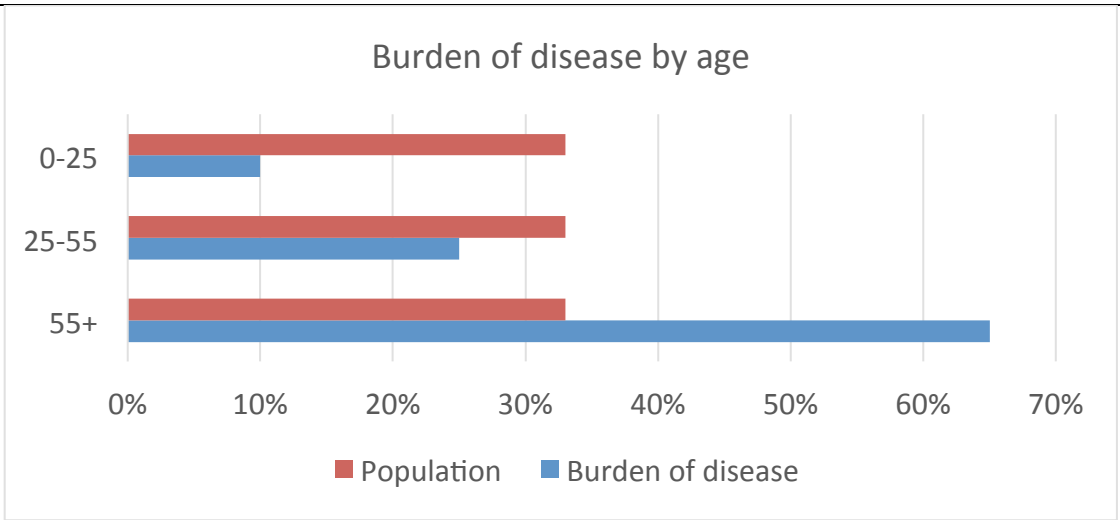
| 3.1 | When it comes to our health, the majority of ill health - or what the World Health Organisation (WHO) calls the burden of disease - occurs over the age of 55. However, the habits that are most likely to influence our future health (diet, exercise, educational attainment, and not smoking or drinking) are more likely to have been established under the age of 25. |
| 3.2 | If one splits the UK population broadly into thirds, the age breaks occur as follows: under-25s, 25–55 year-olds and over-55s. Combining this with the information from the WHO Global Burden of Disease[i] the graph below shows the burden of disease by age range. Approximately two-thirds of the burden of disease occurs in just one-third of the population, the over-55s. |

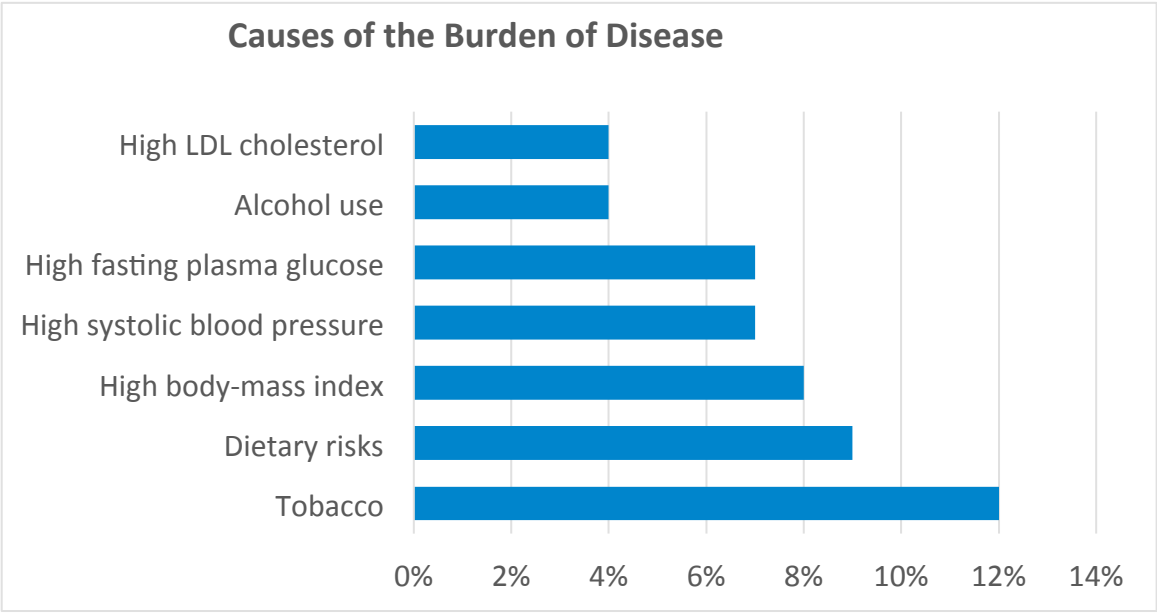
3.3




3.4 The major contributors to the burden of disease include: cancer, Alzheimer's and dementia, cardiovascular diseases and respiratory diseases and infections.

3.5 Using data from The Institute for Health Metrics and Evaluation (IHME),[ii] which Public Health England cite over 30 times in their Health Profile for England 2018 Report,[iii] the following are the top seven risk factors that cause disease.

3.6




3.7 High LDL cholesterol is a function of diet (high intake of saturated fats). High fasting plasma glucose is a defining feature of diabetes and is best controlled with diet and exercise. High systolic blood pressure, a key risk for cardiovascular disease, is best controlled by changes to diet, exercise, smoking and alcohol intake. And, high body-mass is a function of exercise and diet.

3.8 In summary the leading risk factors for illness are: smoking, poor diet, lack of exercise, and alcohol intake. All of these causes of illness in the over-55s are much more likely to have been formed by habits created in the under 25s and yet the focus of medical research is in the former not the latter.

3.9 Public Health England also discusses what it calls the "wider determinants" of health. These include the level of educational attainment, and income level, both of which are largely determined under the age of 25.

## 4. Behaviour not biology

4.1 It is also worth shining a light on the largest causes of threats to health. For the under-25s it is mental illness, for the over-55s it is cancer. According to the IHME, smoking and alcohol account for around a third of the risk, whereas adverse childhood experiences are likely to account for a third of the risk of mental illness.

4.2 However, the UK research establishment is heavily focused on biomedical research as evidenced in the Nesta report "*The Biomedical Bubble*".[iv] But what of "the wider determinants of health" or Nesta's "social, environmental, digital and behavioural determinants of health"?

4.3 Millions, if not billions, of pounds have been spent uncovering the secrets of cell biology and sequencing the genome. But why then do we not know how to unsequence the key determinants of the biggest cause of illness in young people, mental illness?

4.4 "Poor mental health is… both a cause and a consequence of the experience of social, economic and environmental inequalities. Mental health problems are more common in areas of deprivation, and poor mental health is consistently associated with unemployment, less education, low income or material standard of living, in addition to poor physical health and adverse life events." [v]

## 5. Intergenerational fairness

5.1 With its symptom-led, biomedical focus (when in fact behaviour change has had more benefit to society than biological investment) it is very likely that government medical research funding across the UK, c.£2.5bn, is distributed according to the burden of disease. Neither UK Research and Innovation (UKRI) nor National Institute for Health Research (NIHR) however could verify this. But what if research funding was prevention- and early treatment-focused, behaviour-led and distributed by age?

5.2

| **Age range** | **0-25** | **25-55** | **55+** |
|---|---|---|---|
| | | | |
| Population | 33% | 33% | 33% |
| Burden of disease | 10% | 25% | 65% |
| Spend by burden of disease | £250m | £625m | £1,625m |
| Spend by population | £825m | £825m | £825m |
| **Difference** | **+£575m** | **+£200m** | **(£800m)** |

5.3 This would shift funding to younger people, thereby increasing the level of funding in the under-25s by £575 million.

## 6. Legal sense

6.1 Not only does it make ethical sense and medical sense to distribute funding by age but it makes legal sense too. Since 2011 when s.149 of the Equality Act, the Public Sector Equality Duty, was enacted, the UK government research funders have had an equality duty imposed upon them. The Equality Act (2010) states:

> (1) A public authority must, in the exercise of its functions, have due regard to the need to:
>
> (a) eliminate discrimination, harassment, victimisation and any other conduct that is prohibited by or under this Act;
> (b) advance equality of opportunity between persons who share a relevant protected characteristic and persons who do not share it;
> (c) foster good relations between persons who share a relevant protected characteristic and persons who do not share it.

The Equality and Human Rights Commission writes:

"Compliance with the general equality duty is a legal obligation, but it also makes good business sense."

## 7. Common sense

7.1 Even with the £15bn invested in cancer research between 1970 and 2009, the *What's it worth?* report on the return on investment for spend on cancer research[vi] states that 65% of the benefit of all interventions from 1991 to 2010 came from smoking cessation and 24% from cervical screening. The former is prevention, the latter is in effect early treatment. Both represent examples of behaviour change.

7.2 UK Research and Innovation has spent the last year preparing the delivery plans of its Research Councils and along with NIHR we would hope that they have considered the issues of:

- Treating causes not symptoms
- Funding behaviour not biology
- And treating different generations equitably

7.3 Age is a characteristic protected by the Equality Act. However, we have found no evidence of compliance with the Public Sector Equality Duty at NIHR or UKRI. Instead, whilst research of all kinds is welcomed, an opposite approach to intergenerational fairness seems to be being taken by UKRI with this £98m "Healthy Ageing" challenge.[vii]

7.4 Please can you ask UKRI, NIHR and other funders to explain their approach to intergenerational fairness, how they justify any funding disparities by age, and their application of ethical, legal, business and just plain common sense when researching symptoms and not cause.

If you would like to learn more about the work of the Intergenerational Foundation please contact:

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[i] World Health Organisation (2019): *Disease burden 2010–2016*: https://www.who.int/healthinfo/global_burden_disease/estimates/en/index1.html [Accessed 21 August 2019]
[ii] Institute of Health Metrics and Evaluation (2019): http://www.healthdata.org/ [Accessed 21 August 2019]
[iii] Public Health England (2018): *Wider Determinants of Health*: https://www.gov.uk/government/publications/health-profile-for-england-2018/chapter-6-wider-determinants-of-health [Accessed 21 August 2019]
[iv] Jones, R and Wilsdon, J. (2018): *The Biomedical Bubble: Why UK research and innovation needs a greater diversity of priorities, politics, places and people*: https://www.nesta.org.uk/report/biomedical-bubble/ [Accessed 21 August 2019]
[v] Friedli, L. (2009): *Mental Health, Resilience and Inequalities*: http://www.euro.who.int/__data/assets/pdf_file/0012/100821/E92227.pdf [Accessed 21 August 2019]
[vi] *The 2014 Medical Research: What's it worth? Estimating the economic benefits of cancer-related research in the UK*: https://www.cancerresearchuk.org/sites/default/files/policy_june2014_medical_research_whats_it_worth_briefing_document.pdf [Accessed 21 August 2019]
[vii] UK Research and Innovation (2019): https://www.ukri.org/innovation/industrial-strategy-challenge-fund/healthy-ageing/ [Accessed 21 August 2019]