

Health of the public in 2040: project update

Introduction

Project scope and objectives

We will inevitably face many changes over the next 25 years – be they demographic, environmental, technological, social, political or economic – that will present opportunities and challenges for the health of the UK population. Many of these can only be fully addressed through measures to improve the physical and mental health of the population as a whole and by preventing disease before it reaches the clinic. It is therefore crucial that we have appropriate evidence to inform decisions affecting the health of the public. We must also have the means to support the generation of this evidence and to ensure that it is effectively translated into policy and practice.

The Academy's 'Health of the public in 2040' project intends to address these issues, helping to secure future physical and mental health by better understanding the many factors that will affect it over the coming decades. By exploring how these factors might be influenced to deliver positive health outcomes, and by developing a vision of what we might want the health of the public to look like in 2040, the project will make practical recommendations about how the research environment can support the delivery of this vision. Recommendations will specifically consider requirements with regard to research evidence, research capacity, research infrastructure and mechanisms for its translation into public policy and practice. (The project's terms of reference can be seen at Annex A.)

The project is being led by a working group, chaired by Professor Dame Anne Johnson DBE FMedSci, which comprises 17 experts from a broad range of disciplines and sectors, including public health, primary care, economics, environmental sciences, design and local government. (A full list of working group members is available at Annex B.) Input has been collected from an equally wide range of stakeholders and is summarised in the document below.

The final report of the working group will be published in spring/summer 2016 and will be aimed at policymakers, funders, researchers, practitioners, public health service providers, professional and regulatory bodies, and the public. It offers an opportunity to introduce new thinking in this area, and to ensure that, by 2040, multidisciplinary research underpins interventions to improve the health of the public. Support for the project is provided by the Wellcome Trust and the Medical Research Council.

Structure of this document

This document provides an update on the working group's progress to date. It first gives a summary of past, current and future project activities, then presents a draft of the working group's aspirational vision for the health of the public in 2040. Following this, it provides a summary of the input received so far, which has been instrumental in informing this vision and will continue to shape the working group's thinking as it begins to develop concrete recommendations. Finally, it gives a broad overview of the drivers of change identified throughout the project so far.

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Activities to date

The project was formally launched in November 2014 with a **one-day workshop**. This brought together a diverse, interdisciplinary mix of stakeholders to explore aspirations for the desired state of the nation's health in 2040 and the drivers likely to influence the direction of change over the next 25 years. This workshop significantly informed the working group's early discussions. [A report¹](#) summarising the event has since been published.

Shortly after the launch, the medical journal *The Lancet* published a [call for mini essays²](#) in support of the project, asking its readership to submit 250 words on what they considered to be the main challenges that the health of the UK public will face in 2040 and the opportunities that exist to address them. Around 25 responses were received, discussing topics ranging from climate change and antimicrobial resistance, to health-related behaviours and loneliness.

A **call for written input** was launched in early March to build on the findings of the initial workshop and other research conducted by the working group, which included a 'scenarios' exercise³ held in late January. (The questions posed in the call for input can be seen at Annex C.) This formally closed in May and almost 50 submissions were received from a wide range of individuals and organisations, including the Landscape Institute, Innovate UK, the Office for National Statistics and Arts Enterprise with a Social Purpose.

Subsequently, the Academy hosted **seven roundtable discussions** to supplement the written input and explore particular topics of interest. These sessions spanned the built and natural environment, education and working life, technological change, demographic change, political and economic factors, and health behaviours, systems and protection. Each discussion engaged experts from across a variety of fields and allowed working group members to probe particular drivers of change and better understand how they might be influenced through research.

Throughout the project, the working group's activities have also been complemented by a **programme of public dialogue**. This workstream, entitled 'Health, lies and videotape,' involves a combination of film screenings and public discussion workshops. The screening events present old public health films provided by the Wellcome Library to promote discussion about the past, present and future of health research, while the workshops facilitate more in-depth discussion to further test the working group's aspirational vision for the health of the public in 2040. This programme of events and workshops has been structured to allow iterative discussion between the working group and members of the public and will continue throughout the coming months. A summary of the input received through these activities is provided in the following pages.

A **second one-day workshop** is being held on 29 July. This will enable further discussion of the working group's vision and will provide an opportunity for stakeholders to support the development of recommendations. The event will be attended by around 50 individuals, with a particular focus on existing public health researchers, practitioners and funders.

¹ <http://www.acmedsci.ac.uk/download.php?f=file&i=30963>

² <http://www.thelancet.com/health-challenges-2040>

³ By considering four different future scenarios, the working group were prompted to think creatively about how the drivers of change will play out in different settings, identifying common themes and the areas of greatest uncertainty. The scenarios presented four snapshots of the future based on two drivers of change – social values and systems of governance – and were taken from the '[Foresight Futures 2020](#)' document.

Towards the end of the year, the working group will draw on the information gathered to develop a draft set of practical, research-focused recommendations. These will be tested with various stakeholders throughout the coming months ahead of report publication in spring/summer 2016.

The vision

Over the course of the project, the working group has drawn on a variety of input to develop a vision of what we might want the health of the public to look like in 2040. This will be used as a desired 'end-point' from which to work back in order to identify appropriate recommendations. This vision is currently in draft form and will continue to evolve over the coming weeks and, in particular, in light of the upcoming stakeholder workshop.

The vision consists of an overarching **primary aspiration**, supported by a series of **ten statements of ambition**. These statements can be considered to be the 'building blocks' on which the primary aspiration is built, and the working group's recommendations are likely to span several of the drivers implicated in these statements.

The vision

Primary aspiration

The UK trend is towards improved physical and mental health for all, with a narrowing of the gap between those groups with the best and worst outcomes.

Supporting ambitions

1. The health of the population is treated as a key indicator of societal success, and is therefore consistently measured and monitored.
2. The natural and built environment supports healthy living for all.
3. The social and political environment supports healthy living for all.
4. The economic and commercial environment supports healthy living for all.
5. The knowledge, educational and digital environment supports healthy living for all.
6. Every person experiences a start to life that enables them to realise their full potential over the life course.
7. Every person experiences an end to life shaped by shared decision-making, in which their views and values have been discussed and used to inform interventions.
8. Resources are allocated more proportionally to interventions with the best prospect of beneficially affecting the health of the public.
9. National resilience has been increased and the health of the public is better able to withstand the effects of uncertainties, shocks and disruptive events.
10. The health of the public is improved by a health workforce and an interdisciplinary research capability equipped to understand and address the health needs of the population.

Summary of input received

Written input

The purpose of call for written input was to hear the wider community's views on the working group's high-level vision, the drivers identified as being relevant to the future health of the public and the implications for research. (A full list of the questions posed can be seen at Annex C.)

Below is a summary of some of the key themes emerging from this call.



Figure 1: A visualisation of the most common words across all responses (excluding over-represented words such as 'health' and 'population')

- **The vision and drivers of change**

There was strong support for the working group's high-level vision and broad consensus that the drivers of change identified were accurate, although not necessarily comprehensive.

- **A broader church**

A key message permeating through the responses was that delivering a step-change in the health of the public will require us to go beyond what has been traditionally conceptualised as the field of 'public health.' The responses indicated that significant shifts in the way that members of society view and interact with each other, the environment, technology, the economy and the health system will be needed if the ambitions set out are to be achieved. In this respect, the working group's approach was acknowledged to be the correct one.

- **Complexity and interdisciplinarity**

Given the variety of drivers identified and the complex connections that exist between them, respondents also stressed the importance of interdisciplinarity and collaboration. To address this complexity, it appears that new approaches to research and practice are necessary.

- **Health inequalities**

There was strong consensus that we should aspire to a future in which health inequalities are reduced. While we have some understanding of the factors driving such inequalities, responses indicated that more work is needed to develop solutions and ensure that economic and social policies aimed at tackling health outcomes are evidence-based. Close relationships between researchers, practitioners and policymakers were considered to be central to achieving this, and new models will likely be needed to ensure that solutions are developed and rolled-out across the system.

- **Assessment and evaluation of interventions**

Respondents noted that there was also a need to more robustly assess and evaluate the effectiveness of population-level interventions. This may require the development of new approaches, methodologies and skills across research, policy and practice.

- **Data, analytics and bioinformatics**

The importance of data, analytics and bioinformatics emerged as a strong theme, with respondents noting the potential of emerging forms of 'big' and 'real world' data to drive improved health outcomes if current issues can be resolved. Respondents also highlighted the continued need for more traditional data, such as those generated by large longitudinal and observational studies, and the associated requirement for long-term, stable research funding.

- **Translating research into policy**

Respondents highlighted that individual health behaviours, and known issues such as antimicrobial resistance, are likely to continue to be significant drivers of the health of the public in 2040. While research questions remain, many respondents suggested that the primary focus should now shift to translating research into effective, evidence-based policy.

Roundtable discussions

To complement the written input, the Academy hosted a series of seven roundtable discussions to explore specific areas of interest in greater depth. These covered:

1. The built and natural environment
2. Education and working life
3. Technological change
4. Demographic change, family life and relationships
5. Economic and political systems
6. Health-related behaviours
7. Health protection and health systems

Some of the overarching themes which cut across these discussions are summarised below.

- **Paternalism vs. liberty**

Participants noted a tension between personal freedom and the state's role in introducing top-down interventions and policies aimed at positively influencing the health of the public. It was suggested that facilitating the co-existence of paternalism and liberty could be considered a role of public health professionals.

- **Trust and co-production of health outcomes**

In light of the so-called 'information revolution' and the increasing democratisation of knowledge, participants pointed out that many relationships and interactions are changing — between individuals, communities, healthcare professionals, industry, the media and the government. It was suggested that delivering the working group's vision will require greater levels of trust between these various agents, and that co-production and shared decision-making present opportunities to foster this and enable people to become active participants in shaping their own health outcomes. Several discussions converged on the need to move away from thinking of health as a primary goal, and to start thinking of it as a resource for, and an outcome of, living life in a way valued by the individual.

- **Identifying effective interventions**

While recognising the importance of additional research into specific factors which influence the population's health, participants stressed the need to identify and subsequently evaluate

effective interventions, projects and policies. For example, several discussions cited the importance of developing effective interventions to reduce health inequalities, while others explored the need to understand what constitutes a 'good' health and social care system, and what conditions need to be established to ensure that such a system can develop.

- ***Systems-based thinking and bringing the right disciplines to the table***

In most discussions, specific disciplines were identified in which research should be stimulated, ranging from economics to data science to the humanities. However, it was recognised that there is also a need for a range of disciplines to work together to understand the interacting and dynamic drivers of population health outcomes. Delegates therefore stressed the need to consider practical ways of fostering interdisciplinary working and more systems-based and dynamic approaches; for example, by creating incentives for interdisciplinary careers or by encouraging intellectual sharing and the physical co-location of institutes, schools and organisations. Discussions also explored the need to balance the relationship between specialists and generalists across disciplines relating to the health of the public, as it is crucial that those with depth of expertise in specific areas work alongside those who are able to communicate and bridge the gap between multiple disciplines.

- ***Translating research into policy***

Effective communication between researchers, policymakers and the public emerged as a key requirement for effectively translating research evidence into societal benefit. It was argued that the research community needs to be able to better demonstrate the implications of the evidence it generates and to frame its arguments in terms that resonate with policy-makers. It was felt that this would require the development of better long-term relationships, improved structures to facilitate them across the policy environment, as well as strengthened communication and social skills across all disciplines. The need to influence policy from the 'bottom up', for example through local councils, as well as from the 'top down' through national government, was also discussed at length.

Public dialogue

Running alongside and informing the working group project is a programme of public engagement entitled 'Health, lies and videotape'. Screenings of old public health films, provided by the Wellcome Library, have been used to promote discussion across the audience about the past, present and future of population health research and messaging. In addition, a series of in-depth workshops have been held across the country with specific groups of people who might not otherwise have engaged closely with the project. These have so far included young, digitally engaged people in Sheffield and older people with faith values in Newcastle. Further screening events and workshops will take place later in the year.

Participants generally expressed enthusiasm for the project and support for the working group's vision, prioritising ambitions which relate to child health, national resilience and equal access to health outcomes and health information. A recurring theme across discussions was an enthusiasm for sharing health data, with participants noting that the linking of this data should be a priority for the future. However, there was some divergence of opinion between groups. The digitally engaged participants, for example, expressed an expectation that digital technologies will be central to future health treatments and interventions, while those with faith values were more focused on face-to-face engagement with health professionals.

A more detailed summary of the findings of public engagement activities will be published as part of the final report.

Drivers of change

Below is a brief overview of the drivers of change explored so far during the project. They have been categorised according to the topics of the seven roundtable discussions held earlier in the year. This list is not exhaustive, but it does offer a representation of the wide range of factors which are likely to shape the population's health over the next 25 years. The list will continue to be updated as the project continues. At present, these drivers are offered as a single list and are not ordered in any specific hierarchy.

The built and natural environment

- Food (e.g. quality, availability, patterns of consumption)
- Agriculture (e.g. land use, use of technology, food quality)
- The availability and sustainability of resources (e.g. food, energy, and water)
- Ecosystems and sustainability
- Ecological and biological change
- Rapid global environmental change and associated migration (e.g. relationship with infectious disease, extreme weather, associated migration and conflict)
- Security of critical infrastructure
- Perceived sense of environmental security among the wider population
- Effectiveness of climate change mitigation and adaptation measures
- Pollution (air, water, soil)
- Global, national and local supply chain
- Urban population growth and the nature of future cities
- Urban design
- Housing (e.g. availability, size, quality, location)
- Travel and transportation systems
- Green space and green infrastructure
- Rural/urban relationships
- Communications infrastructure (e.g. availability of broadband, 'digital divide')
- Other physical infrastructure (e.g. water and sewage)

Education and working life

- The role of schools in promoting healthy lifestyles
- School lunches
- Schools and education as drivers of social cohesion
- The use of technology in education
- Social media and bullying
- Access to and engagement with good education
- Public attitudes to social support
- Physical education
- The teaching of life skills (e.g. personal, social, health and economic education)
- Health in the workplace
- The balance between active and sedentary employment
- Use of technology in the workplace
- Short- and long-term employment levels, and distribution across the country
- Quality of employment and working conditions
- Occupational health
- Job security and job satisfaction
- Work-life balance
- Workplace stress and mental health
- The impact of redundancy and retirement

Technological change

- Public acceptance of new and emerging technologies
- Privacy concerns and debates about the personal ownership of data
- The extent to which individual and real-time health monitoring is adopted and utilised
- The extent to which disruptive technological change is expected and planned for
- Developments in the automated analysis of data
- Our ability to link and analyse big data, and derive value from the relationship between individual and population-level data sets
- The threat of cyberterrorism
- Specific areas of technology to which these drivers might apply include:
 - Genomics
 - Gene editing
 - Applications emerging from the field of epigenetics
 - Regenerative medicine
 - Screening technologies
 - Diagnostics
 - Personalised medicine
 - Proteomics
 - Human enhancement technologies
 - The Internet of Things
 - Virtual reality
 - Assisted reproductive technology
 - Surgical techniques and technologies
 - Robotics
 - Agricultural technologies
 - Autonomous vehicles and other transportation technologies
 - E-health
 - Mobile devices
 - Mobility devices
 - Machine learning

Demographic change, family life and relationships

- Population growth and the changing demographic balance of society
- Emigration and immigration
- Ethnic diversity
- Ageing and its effects at the individual and societal level
- Dementia and our ability to prevent and treat it
- Frailty and multimorbidities
- The contribution that 65-105 year-olds make to the workforce
- Political and societal attitudes to death and dying
- Guidelines and legislation related to end-of-life care and decision-making
- Loneliness and isolation
- Carers and caring roles
- Intergenerational relationships
- Early years services
- The creativity of young people and the extent to which this is nurtured and harnessed
- Societal values and the ways in which these differ between demographic groups
- Child poverty and the poverty cycle
- Geographic dispersal of families
- Changing family size
- Changing ages at which people decide to have a family
- Attitudes to, and opportunities for, working parents
- Changing family structures
- Friendships and social connections
- The impact of social media and other technologies on relationships
- Changing senses of identity

Economic and political systems

- The interaction between government and private corporations, particularly sectors such as food, alcohol, tobacco, energy and the media
- The regulatory environment
- The societal impact of national and international fiscal policy
- Prevailing political narratives (as related to education, migration and healthcare, for example)
- The balance between political short- and long-termism
- Levels of public trust in authority
- Political diversification
- Approaches to foreign policy (isolationism, interventionism etc.)
- International trade agreements
- Rates of economic growth and levels of national debt
- The extent to which GDP is considered the primary measure of national success
- The emergence of a sharing economy (product-service systems, redistribution markets etc.)
- The emergence of new economic sectors, as related to new materials, new energy, information technology and the 'Internet of Things', for example
- The relationship between global corporations and small, local businesses
- Assessing and understanding the health outcomes of business decisions
- Attitudes to corporate social responsibility and penalties for poor behaviour

Health-related behaviours

- The relationship between health-related behaviours, non-communicable diseases and co-morbidities
- The relationship between the media and health-related behaviours
- The relationship between industry and health-related behaviours
- The relationship between the environment (natural, built, digital) and health-related behaviours
- The relationship between healthcare structure and funding and health-related behaviours, in particular any costs associated with seeking preventative or curative care
- Levels of trust between various agents (such as individuals, communities and government)
- Specific health-related behaviours, including smoking, diet, physical activity, alcohol consumption and recreational drug use
- Divergence/convergence in values among different communities
- Divergence/convergence in health-related behaviours (leading to a possible 'healthy motivated' subset of the population and a 'health underclass')
- Changes in health-related behaviours across the lifecourse
- Healthcare literacy and life-long education
- Public understanding of risk and uncertainty
- The democratisation of knowledge
- Self-reliance resulting from access to information and support
- Culture and values that may affect health-related behaviours, for example attitudes towards innovation and failure, cultural (de-)normalisation of stress
- Expectations of the health service, in particular the balance between preventative and curative services
- Levels of voluntary work and social care

Health-systems and health protection

- Healthcare infrastructure (physical, virtual, social and otherwise)
- The extent to which different parts of the health system are siloed or joined up
- The efficiency of the health system
- State funding of the healthcare system

- The extent to which the health system is equipped to deal with severe shocks, such as natural disasters, antimicrobial resistance, outbreaks of infectious diseases and conflict
- The balance between the roles of generalists and specialists
- Experimental healthcare
- Risk-aversion/risk-appetite within the health system
- The rate at which the health system learns from previous results
- The interface between personalised healthcare services, social care and population health services
- The extent to which the health system adopts a lifecourse approach to health
- The extent to which the health system moves from being an 'illness service' to a 'prevention service'
- The relationship between insurance and health-related behaviours
- Remote consultations and remote access to healthcare
- Computer-driven diagnosis and real-time diagnostics
- Patient-centred care
- The acceptance of alternative treatments and social prescribing
- Costs of specific medications and treatments
- Management of co-morbidities

Annex A: Terms of reference

The project's terms of reference are as follows:

1. To recommend to relevant decision-makers the requirements for supporting the health of the UK population in 2040 – in terms of research evidence, research capacity, research infrastructure and the mechanisms for translating research into practice. Specifically, the project will consider how to:
 - a. Capitalise on the opportunities created by advances in all areas of science and technology
 - b. Bring together and ensure necessary research capacity across the full range of disciplines required to address future challenges.
 - c. Ensure an appropriate interface between researchers, policymakers and practitioners.
2. In pursuit of this aim, to address the following questions in the context of the future health of the UK population:
 - a. What are expected to be the main challenges by 2040, and what are the opportunities to address them?
 - b. What are the research and research infrastructure requirements to address these challenges and realise these opportunities?
 - c. How can we effectively train and link researchers and practitioners?
 - d. How can we ensure that the development of public policy and practice is informed by evidence (including from evaluation)?

The project will consider the research and mechanisms needed to support decisions about different interventions to address challenges to the health of the public. However, it will not make recommendations about specific interventions. It may occasionally draw comparisons between the current public health structures in the UK with an ideal scenario, but it will not assess the strengths and weaknesses of the current system. The project will draw on international experience and knowledge, but will focus primarily on the UK.

Annex B: Working group membership

Professor Dame Anne Johnson DBE FMedSci [Chair of the working group] Chair of the Population and Lifelong Health domain, and Vice Dean for External Relations, Faculty of Population Health Sciences UCL

Professor Carol Brayne FMedSci Director of the Cambridge Institute of Public Health, University of Cambridge

Professor Rachel Cooper OBE Professor of Design Management, University of Lancaster

Professor Yvonne Doyle Regional Director for London, Public Health England

Professor David Ford Professor of Health Informatics and Chair of the College of Medicine, Swansea University

Professor Sarah Harper Director, Institute of Population Ageing, University of Oxford

Dr Vittal Katikireddi Clinical Lecturer in Public Health, MRC/CSO Social and Public Health Sciences Unit, University of Glasgow

Professor Catherine Law CBE Professor of Public Health and Epidemiology, UCL Institute of Child Health

Professor Paul Little FMedSci Professor of Primary Care Research, University of Southampton

Professor Dame Sally Macintyre DBE FMedSci Director of the Institute of Health and Wellbeing, University of Glasgow

Professor Johan Mackenbach Chair of the Department of Public Health at Erasmus MC, University Medical Centre, Rotterdam

Professor Theresa Marteau FMedSci Director of the Behaviour and Health Research Unit, University of Cambridge

Councillor Jonathan McShane Cabinet Member for Health, Social Care and Culture, London Borough of Hackney

Dr Geoff Mulgan CBE Chief Executive of the National Endowment for Science Technology and the Arts (Nesta)

Baron Peter Piot CMG FMedSci Director of the London School of Hygiene & Tropical Medicine

Professor Jules Pretty OBE Deputy Vice-Chancellor and Professor of Environment & Society, University of Essex

Professor David Stuckler Professor of Political Economy and Sociology, University of Oxford

Annex C: Call for written input questions

The call for input published in March asked the following questions:

1. The working group and various stakeholders have collectively articulated their **aspirations** for the future health of the UK population. These are described in the background document (page 2). Do you share these aspirations? If not, why? What other aspirations do you have?

In answering the following two questions, you may wish to draw upon the drivers of change set out in the background document (page 2) and the scenarios used by the working group to test these drivers (page 6). When considering these scenarios it should be noted that they are not predictions, but imaginative descriptions intended to be used as a tool for deliberation.

2. What do you think will be the major **drivers of change** which will influence the population's health over the next 25 years and what are the key **uncertainties** surrounding these drivers?
3. What are the potential **shocks** or **disruptive events** that might need to be taken into consideration in planning for the future?
4. What **research evidence** is (or will be) needed to address these aspirations and reduce these uncertainties, and to what extent is the required research currently taking place?
5. Given the above, what needs to be done to support, deliver and realise the value of this research? Particular consideration should be given to:
 - a. **Research capacity** (e.g. training, workforce, skills, relevant academic disciplines and funding)
 - b. **Research infrastructure** (including physical, virtual and institutional infrastructure)
 - c. Mechanisms for **translating research** into policy and practice
6. Please add any **additional comments**, not covered by the above, which may be of benefit to the Working Group.

Note: respondents were directed to two documents in preparing their submission: a background document, which summarised the aims of the project and its findings to date, and the report of the stakeholder workshop held in November 2014