Workshop report:
Aspirations and drivers of change

In contribution to the 'Health of the public in 2040' working group project

November 2014

Contents

Chair's foreword

The world is changing, and the changes that we will face over the next twenty-five years – be they technological, demographic, social, political, environmental or economic – will inevitably present significant challenges and opportunities for the health of the population.

The Academy's 'Health of the public in 2040' working group project aims to help secure future wellbeing by better understanding the factors which will affect the public's health and how they might be influenced to deliver the outcomes we desire.

This report represents the first stage in that process. It is the output of a workshop, held in November 2014, which brought together over forty key stakeholders to collectively explore aspirations for the health of the population and the drivers that may influence it over the coming years. The aim was not to predict the future, nor to develop a realistic set of objectives, but to describe an idealistic future and to identify the factors that might help us move in the direction of this aspirational vision.

The drivers of change identified by participants are wide-ranging, but they are not comprehensive; the likely impact of education, employment and the role of industry, for example, were only briefly discussed in this workshop, and additional factors such as family-life have since been added to our list. However, this workshop provided a crucial first step in developing the working group's own vision for the future and will play a key role in informing our deliberations over the coming months.

Our project is now moving into the next phase and we will shortly be publishing a 'call for input' from the wider community. We hope that stakeholders will take this opportunity to contribute to the project, offering thoughts on the aspirations and drivers set out in this document as well as the requirements for meeting the challenges and capitalising on the opportunities of the future. The results of the 'call for input' will form an essential step in informing the recommendations that will be set out in the final project report.

In the meantime, I would like to extend my thanks to all those who have contributed to this project to date; in particular, to the workshop participants, whose stimulating debate has led to this thought-provoking output.

Introduction

Project overview

Many of the health challenges of the future – such as an ageing population, pandemics, obesity, continuing health inequalities, and changing patterns of non-communicable and chronic diseases – can only be fully addressed through measures to improve the health and wellbeing of the population as a whole and by preventing disease before it reaches the clinic. The Academy's 'Health of the public in 2040' working group project aims to identify the main health challenges the UK population will face in the future, and the opportunities to address them. It offers a chance to introduce new thinking in this area, and to ensure that by 2040 multidisciplinary research underpins interventions to improve the health of the public, with an appropriately trained research workforce and strong links between evidence, service delivery and policy development across sectors.

The working group, chaired by Professor Dame Anne Johnson DBE FMedSci, will use evidence collected on factors affecting future trajectories, as well as anticipated opportunities and challenges, to develop a vision for the health of the public in 2040. This will inform strategies and recommendations – in terms of research evidence, research capacity, research infrastructure and the mechanisms for translating research into practice – both within health and related areas. The final report of the working group will be aimed at policymakers, funders, researchers (including trainees), professional and regulatory bodies, public health service providers, and the public.

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

Purpose and format of the workshop

In conjunction with the launch of the project, the Academy hosted a visioning and drivers analysis workshop on 24 November 2014. The workshop brought together a diverse, interdisciplinary mix of key stakeholders to explore visions for the desired state of the nation's health in 2040 and the drivers of change which are likely to affect the health of the public over the course of the next 25 years. It was chaired by Professor Dame Anne Johnson DBE FMedSci and facilitated by Ms Gill Ringland (SAMI Consulting).

Delegates were divided among six tables, with a broad spread of expertise represented on each. The participants first explored changes to the population's health since 1965 (described in part 1 of this report). They then developed an aspirational vision for the future health of the population (part 2) and finally identified the drivers of change which are likely to shape the health of the population in the future (part 3). Mr Nick Hillier (Academy of Medical Sciences) and Ms Susie Fisher (Susie Fisher Group) outlined a recent series of public engagement events which, supported by a Wellcome Trust People Award, used archive public health films from the Wellcome Collection

to stimulate discussion and debate about the past, present and future of health research and how it is translated into public health messages.

This report provides a summary of the points made across the six tables, and will inform the working group's deliberations and the development of practical recommendations.

Part 1: Looking back to 1965

Looking back

In the first session of the workshop, delegates were asked to think back and identify two major changes for the better and two major changes for the worse with respect to the health of the UK population since 1965. The objective was for delegates to think about the changes that have occurred over the past 50 years, to better enable them to think creatively about the changes that might occur by 2040.

Generally, participants noted that no change occurs in isolation; that changes to the population's health are the result of a complex web of determinants. It was also noted that it is difficult to qualify changes as better or worse, as any given change may have both positive and negative outcomes. In nutrition, for example, a rise in the quality and availability of food and resulting improvements in health has been seen alongside a rise in obesity.

Changes for the better, changes for the worse
Life expectancy has increased over the last 50 years. Causes cited included reduced rates of smoking, in part through legislation such as the smoking ban and restrictions on tobacco advertising, as well as improvements to work patterns, air quality, nutrition, hygiene, and biomedical interventions. Health protection measures have also changed for the better. For example, there are now fewer traffic fatalities, in part as a result of seatbelt and drink driving laws.

While certain lifestyle changes have impacted health for the better, others have had the opposite effect, particularly as regards the rise of non-communicable diseases (NCDs). Such changes include the impact of cities, transport, television, and changing work patterns on sedentary lifestyles, as well as the impact of fast food, sugar and marketing on diets. Moreover, what may be regarded as increasingly stressful lifestyles could be associated with worsening mental health. There are continuing social inequalities in both life expectancy and patterns of health behaviour, and while life expectancy has increased across all socioeconomic strata, inequalities have persisted.

Participants highlighted that, for various reasons, women's health has improved since 1965: changes to the role of women in the workplace; improved education; shifts in values and a move towards gender equality; and safe contraception, abortion and childbirth. More broadly, changes in attitudes to health – including attitudes towards disabilities, sexuality, personal responsibility, mental health and suicide – are considered to have resulted in a healthier public, while better education and access to information has improved the population's health literacy. Other attitudes, however, may have changed for the worse. Some delegates considered that attitudes towards body image have been influenced by the rise of 'celebrity culture', and attitudes towards death have been influenced by desensitisation through entertainment and the media. Attitudes to, and uptake of, vaccinations have been compromised both by health scares and decreasing awareness of the diseases they prevent.

A widening income gap, persisting intergenerational inequalities and a reduction in welfare are also said to have had a negative impact on health inequalities, as has social fragmentation, with fewer people knowing their neighbours and more people suffering from loneliness, for example.

The world has seen rapid technological change over recent decades. Democratisation of IT (including the rise of the internet and social media), advances in medical technologies, and improved processing power and communications have all contributed to improvements in the population's health. However, technological change is also regarded as being potentially associated with over-investigation, -diagnosis, and -medicalisation, and with novel health challenges presented by complex technological systems (including healthcare systems).

According to delegates, today's health system is better-funded, less paternalistic and more diverse than it was 50 years ago. Improvements in medical care and the health system are said to have yielded significant improvements to the population's health, through, for example, a greater availability of health screening, improved diagnostics and improved treatment services. Conversely, health service changes – including financial constraints, increasing demand and the decline of personal GP-patient relationships – are believed to have had a negative effect. As a result, it was suggested that some decline of trust in the healthcare system has been observed since 1965, while trust in doctors themselves remains high.

While some delegates noted that, on the whole, the environment has changed for the better, others suggested that changes have occurred for the worse, with health outcomes likely to become increasingly shaped by environmental degradation, pollution and rising consumption of both energy and processed foods.

Part 2: Aspirations for the health of the public in 2040

An aspirational vision for health in 2040

Having thought about the past, delegates were asked to look towards 2040 and discuss the optimal health of the UK population in the future. Each table described a utopian scenario. These have been aggregated and are summarised below. It should be noted that this combined vision does not present a realistic picture of the year 2040; it describes the delegates' view of an ideal future; a future to strive towards, rather than one it would be realistic to expect to attain in its entirety, or in the short- to medium-term.

Managing the relationship between human health and the environment
The UK is a low-carbon nation and has learned to cope with climate change and the subsequent impact on migration. The co-benefits of climate change mitigation policy are fully exploited, renewable energy is prevalent across the globe, smart technologies reduce the consumption of resources, and access to water is universal. More generally, the relationship between human health and planetary boundaries is increasingly well-understood. At an individual level, people live conservational lifestyles and enjoy the benefits of regular access to healthy, pleasant environments. Food production is less resource-intensive than it was in 2014 – in part due to reduced meat consumption – and the use of antibiotics in this process has been significantly curtailed.

Transport and infrastructure
Transport is more active: journeys that do not require a car are made on foot, by bicycle or by public transport. Car use is becoming increasingly obsolete. Within cities, more and more transport is low-carbon and based underground, minimising the impact of pollution. Travel times have also improved, meaning commuters have more free time and less stress. Infrastructure is increasingly designed with health and wellbeing in mind.

Economy
Economic priorities have shifted. In the participants' vision for 2040, the growth agenda has been superseded by a wellbeing agenda: non-economic drivers are highly valued and society is driven by wellbeing, not only GDP. That said, various economic incentives still exist, encouraging large corporations to be competitive, efficient and innovative.

A more equal society
Absolute poverty has been abolished and socioeconomic inequalities are decreasing. Each member of society has a 'satisfactory' income and lives in a safe, healthy, 'adequately sized' home. Local social support is growing and the public is instilled with a sense of social responsibility and community. What's more, there is a universal feeling of being treated fairly and a belief that incipient ill health can be speedily addressed. Society is largely cohesive. There is less of a technology-based generational gap.

A good start to life
Every child is a wanted child. Delegates described a world where childhood inequalities – including access to health and education – are a thing of the past, and where childhood obesity has halved since 2014.

Policy

As the health of the population is seen as a high priority, health impact assessments are incorporated into the development and implementation of policies across government departments. Novel mechanisms have therefore been developed to evaluate the impact and success of existing and new policy and development initiatives, such as city planning schemes and health strategies in schools. Healthcare advice, to both the Government and the public, is now led by clinicians and researchers free of vested interests.

Education, employment and the workplace

By 2040, work is well-distributed, work culture is sustainable and employment is secure. Employees are able to find a good work-life balance and benefit from a healthy working environment. There are many options available to those approaching retirement age, including reduced hours or transfer to a less demanding career. Of course, comfortable retirement at a reasonable age is also an option. There is universal access to good education and the syllabus is broader than it was in 2014, with subjects relating to life skills and personal, social, health and economic education (PSHE) forming part of the core curriculum.

The health system

The healthcare system is integrated and driven by the needs of the public, with a strong focus on disease prevention and wellbeing. Evidence-based public health is continuously improving and is a high public priority. There has been a major shift from treatment to prevention, with the health budget more equitably split between the two. Preventable mortality and morbidity is increasingly avoided. However, new drugs, treatments and technologies help address health problems which cannot be tackled by prevention. People are keen to prevent over-medicalisation and to ensure that when medicines are prescribed the benefits always outweigh the harms. Moreover, there are no counterfeit drugs on the market, both globally and in the UK. Healthcare is universal and personal, and the burden of both physical and mental chronic disease is lower than ever. This is aided by quick, effective and evidence-based screening, diagnosis and treatment.

The use of big data and machine learning – linking health, environment and food, for example – has yielded a dynamic healthcare system which learns in real-time from every result. The use of technologies in healthcare, including the use of self-monitoring devices, is greatly but responsibly increased, based on individual preferences as well as robust evidence about their effectiveness and utility.

Social healthcare networks and communities are well-established, social prescribing is common practice (supporting patients with non-medical, community-based activities such as volunteering or artistic pursuits), and both formal and informal carers have the tools to provide good health and social care at home. Strong partnerships exist between patients, clinicians, scientists and policymakers.

Health behaviours: the way we care for ourselves

Participants envisioned a future where it is far easier to be in good health: healthy diets are prevalent and affordable, and exercise is an enjoyable, fulfilling part of everyone's daily routine. As well as being physically active, the population is intellectually stimulated. Less than 5% of the population smoke, and there are no smokers under the age of 18. People get more sleep than they did in 2014.

Health literacy

People have a better understanding of risk and are equipped to make well-informed, rational choices about their own health. The public is more science-literate, and takes ownership and responsibility for its health. However, individuals are still free to follow riskier paths if they wish. Dialogue around health is prevalent, including around regulation, population-level determinants of health, the capabilities and limitations of the health system, and global affordability of health, research and treatment.

A good end to life

The gap between life expectancy and *healthy* life expectancy has narrowed significantly over the past 25 years. More years than ever are spent in good health – being older no longer presents a barrier to active, healthy living. This is a result of many factors, including the aforementioned improvements to diet and the workplace, as well as more effective pharmaceuticals, an ability to manage complex diseases and co-morbidities, and better integration of health and social care combined with healthier active lifestyles.

Individuals are far less likely to suffer premature death as, for example: improved personalised treatments for cancer and chronic diseases exist; new classes of antimicrobial drugs have been developed; human enhancement technologies (such as neural implants or gene therapy) are safe and well-regulated; pandemics are less likely due to improved international health protection and cooperation; and we are able to manage existential risks – those which threaten the existence of our species – associated with technology (as potentially related to artificial intelligence, geoengineering and biotechnology, for instance).

Finally, participants wanted to see a future where a more rational, thoughtful approach is taken to palliative care and death; where people are better able to choose the context of their own death, with dignity and minimal discomfort.

Part 3: Drivers and influencing factors of health

The Three Horizons

In the latter half of the workshop, delegates were asked to consider the drivers of change which may affect the health of the population over the course of the next 25 years. The facilitator introduced the Three Horizons model, which explores the prominence of drivers over three time periods: the present (c. 2015), the medium-term (c. 2030), and the long-term (c. 2040). Delegates identified the factors they believe will most strongly influence the health of the public across each of these time horizons. The summary below has been divided into four sections:

- Wider external forces
- Technological change
- UK politics, economics, health systems and government
- Research capacity, infrastructure and translation into policy and practice

Wider external forces

The natural environment
Delegates considered that changes that are made now – in terms of reducing carbon emissions and meeting water efficiency and reduction targets, for example – are likely to have health implications reaching to 2040 and beyond. In the coming decades, the population's health will increasingly be shaped by changes to agriculture, the state of ecosystems (including ecosystem services), supply chain changes and the availability of food, energy and water. Given its impact on the environment and the possibility of factory production, meat consumption may be an important driver of change over this period. The co-benefits and co-costs of both climate policy and behaviour change will also likely drive health in the medium-term, depending on mitigation activity. Energy deficits and changes in migration (including whether there are unified plans for increased migration) may come into play as we approach 2040, and may coincide with increasing climate stresses. Indeed, it may be argued that our ability to cope with the impacts of rapid global environmental change, and to reduce any societal disruption, will significantly shape health outcomes.

The built environment
Cities currently drive the health of the public in a number of ways: urban population growth; the incorporation of safety into urban design; housing standards; demand for and availability of housing; air quality; sustainable design and resource use; and so on. In the near future, mental health and wellbeing may be impacted by the way transportation systems are designed. The relationship between cities and the countryside (including the migration of people from one to the other), as well as the incorporation of green spaces in cities, is likely to be of increasing importance throughout this period, as will relationships between cities themselves. In the longer-term, health may be shaped by the funding of sustainable infrastructure, the dementia-friendliness of cities, the way technology is incorporated in urban design to promote healthy living, and the impact of urban settlements on isolation and the spread of infectious diseases. It could be argued that the population's health can only be maximised if a tailored approach to the design of cities, and future megacities, is taken across the UK and beyond.

Demographic change

In view of an ageing population and the prevalence of chronic conditions, the way we behave towards and care for the elderly is likely to be a major driver of the population's health over the next 25 years. It was argued that the balance between life expectancy and *healthy* life expectancy be critical in the near future, as will the way we approach death, dying and palliative care, particularly regarding the legality, ethics and approach to assisted dying. The extent to which there is a continuum of care, from active treatment through to palliation, will likely also be key. Health outcomes may be increasingly impacted by the intensification or abatement of intergenerational tension, as well as the way technology is used to manage increasing demands for care. An ageing population is likely to increase public demand and need for health and social care.

The way young people are engaged and the way their creativity is harnessed may drive health outcomes in the future. Young people's relationships with, and attitudes to, alcohol, recreational drugs, tobacco, the criminal justice system and mental health, for example, will also continue influencing health outcomes. The extent to which every child has the best start to life – putting an end to child poverty and thereby breaking the poverty circle – may also be crucial. Come 2040, today's young people will be in middle age, and their values will likely drive and be driven by the changes that occur over the coming decades.

Infectious diseases

Infectious diseases will very likely continue to impact health out to 2040, particularly considering the possibility of emerging infections and viral pandemics, as well as the changing effects of globalisation and environmental change. Antimicrobial resistance (AMR) is also likely to have continued effects on health. In the immediate-term, this is likely to be impacted by the extent to which good infection control practices are implemented, and prescription rates and the wider use of antibiotics are reduced; in the medium-term, by research and development into new antibiotics. The future of both vaccine development and global health protection systems are expected to be critical over the coming decades.

Non-communicable diseases

Diabetes, cardiovascular diseases, cancer, musculoskeletal disorders and other non-communicable diseases, including mental health conditions, are common chronic conditions which affect the health and wellbeing of the population. In turn, NCDs are driven, exacerbated or alleviated by many factors. In the immediate-term, these include food supply and consumption, lifestyle, sedentary behaviour, smoking, advertising, and potentially fragmented health care provision. Behaviour change and improved treatments could be considered factors in the medium-term, while the possibilities of integrated care managed at a personal level may contribute in the longer-term. The role of interventions cuts across all three time horizons. Although health will always be determined by both upstream and downstream influences, current interventions to alter health tend to be downstream in focus. Delegates considered that the outcome of debates about tax levers and fiscal measures will likely be increasingly relevant in the near future. The implementation of specific measures – including tobacco packaging, food labelling, sugar taxation, minimum unit pricing for alcohol, and measures to promote physical exercise – may also drive changes to health. The prospect of the UK being a post-smoking society by 2040 has substantial health implications.

Global economy

Global markets are major drivers of change, with the health of the population driven by international trade agreements, rates of economic growth and the influence of large multinational corporations. Moving towards 2040, delegates felt that the extent to which the UK has survived the debt crisis, or has responded to high national debt and austerity, will likely be key. Emerging economic sectors – as related to new materials, information technologies, new energy and the 'Internet of Things', for example – may also be pivotal in the medium- and long-term.

Conflict

Delegates highlighted that the availability of resources and levels of support for global institutions such as the United Nations and the World Health Organisation may influence future health-related outcomes. In the longer-term, the occurrence of religious conflict and radicalisation may have a distinct effect on wellbeing and, ultimately, health. Conflict, violence and disruption resulting from climate change, specifically as regards water, food and migration, may also drive health outcomes in the future, as will possible conflict resulting from socioeconomic inequality and unstable cities.

Technological change

General technologies

Technologies outside the direct realm of healthcare will likely drive the health and wellbeing of the public. As we approach 2040 examples are expected to include the development of machine learning, virtual reality and human enhancement technologies, as well as the role of ethics in the implementation of these technologies. The advancement of robotics and artificial intelligence are also expected to have significant impact on future lifestyles and healthcare systems, while agricultural technologies will likely have an effect on nutrition, obesity and food security. That said, there is significant uncertainty as to the trajectory and speed of technological innovation. In the medium-term, the availability of self-driving cars and other autonomous vehicles may affect the population's health, as may the ways in which health and wellbeing are supported by remote, electronic distribution of health resources and care. New technologies of various kinds are increasingly used in health and social care systems; the way these technologies are used and evaluated is crucial. In general, scientific and technological developments could be considered key drivers of disease prevention and management.

Use and ownership of data

Ownership and sharing of data is currently an important issue; it can be argued that health is influenced by the behaviours associated with public acceptance of or opposition to data sharing, particularly in view of recent privacy concerns. Towards 2040, big data and data analysis could drive the population's health in a number of ways, including through real-time health monitoring, automated analysis of clinical and other data, its use in clinical trials, and the relationship between individual and population-level data sets. However, the extent to which there is a workforce (or artificial intelligence) to support the use of big data will likely be critical, as will the way commercial interests are managed and whether individuals have ownership of their own records. In the coming decades, health may be impacted by greater monitoring of potential health determinants and consistent longitudinal monitoring alongside a general increasing in the use of data sets and the mobility of information.

New drugs and healthcare technologies

According to participants, genomics is beginning to transform healthcare. The move towards personalised medicine may soon start to drive health, while regenerative medicine and gene editing technology may shape health in the longer-term. Alongside potential health benefits, such developments also carry a risk of over-medication. The growth of epigenetics, yielding a deeper understanding of the effect of the environment on our genes, is also expected to have a significant impact over the coming decades. Currently, the use of both mobile and mobility devices, and the increase in individual healthcare monitoring, is contributing to changes in the health of the public. The associated movement of power and knowledge from experts towards patients is also likely to drive health in the near-term.

UK politics, economics, health systems and government

The role of the state

The political system drives health in many ways: the impact of austerity measures, particularly on publicly funded resources; the extent to which an isolationist approach is taken to foreign policy; short-termism and the five-year political cycle in the UK; prevailing political narratives, such as immigration; and decreasing levels of trust in authority resulting from seemingly inconsistent health messages and perceptions of public investment as a 'drain'. What's more, the outcomes of any tough political decisions made in the near future are likely to have protracted, far-reaching health implications. Other medium-term drivers include the possibilities of political diversification and a greater incorporation of the public in decision-making processes. In the longer-term, localism and political decentralisation may promote the growth of sharing communities and societies, while also resulting in greater exposure to global pressures. The extent to which government departments take a joined-up approach to decision-making, overcoming systemic silos, will likely be a key factor in the years to come. The possibility of the UK becoming a middle-income country may also come into play by 2040.

New economic models

In the medium- and long-term, changes to the health of the public will likely be driven by trends in prosperity in the UK, in both absolute and relative terms. It may also be driven by possible new economic models, including the implementation of wellbeing as a measure of societal success and the movement towards a low-carbon, shared-benefit economy, where data sharing is the basis of collaboration, all views are given equal consideration, and there is more efficient distribution of resources (such as healthcare provision).

Business

The use of intelligent models for investing, and the way health outcomes of different business models are assessed and understood, may act as business-related drivers of change. Corporate social responsibility may play a greater role in the population's health as we move into the medium-term, as may the balance of benefits to business and benefits to wider society (of workplace health, for instance). Approaching 2040, health may be influenced by the role of global corporations and their relationship with small, local businesses and with national governments.

Inequality

Currently, the population's health is influenced by socioeconomic-, gender-, and other forms of inequality, as well as social segregation, perceptions of fairness, and the effects of social class and postcode on access to and quality of healthcare. Moving into the medium-term, differential access

to technology and health-related resources is likely to be a key influencing factor, along with the extent to which the wealthy gain or lose influence and there is more equitable distribution of wealth and resources.

Public perception and engagement

Delegates suggested that the NHS and the wider environment had nurtured a 'cure-me' health culture in which people have increasing and sometimes unrealistic expectations of the services that can be provided. Looking forward, better access to information and better support could facilitate a move towards a more self-reliant public. Moreover, increasing public discussion and awareness may lead to health-impacting changes in a number of areas: social collaboration, health behaviours (including alcohol consumption and recreational drug use), and the use of energy and resources. The role of the media in shaping public discourse and opinion is likely to be crucial in this regard. People's ability to determine reputable sources of information may also be important in the medium-term. Changes in health literacy – resulting from education, responsible media, understanding of risk, and democratisation of knowledge – may drive health in the future, as might a cultural normalisation of stress. Finally, it is likely that health will continue to be influenced by attitudes towards innovation, including the extent to which risk, failure and entrepreneurship are culturally accepted.

Health systems

Health systems are currently led by treatment-based healthcare delivery, as opposed to prevention. Participants pointed out that health outcomes are influenced by the healthcare infrastructure and by attitudes towards risk, and argued that an aversion to risk in the UK health system had apparently led to a relative absence of entrepreneurs (in comparison with the US). Changes to the healthcare system across the next 15 years will probably be instrumental in driving health outcomes. The interface between clinical medicine and population health may become increasingly important over this period. Also of importance might be the efficiency of the system, including whether or not it is based on a broad understanding of health, where co-morbidities are better managed, systemic silos are bridged, and the roles of generalists and specialists are well-balanced, with health and social care more closely aligned. The future of experimental healthcare and remote consultations are likely to come to the fore over this period. Also of note is the possibility of a shrinking state-funded healthcare system and the subsequent impact on insurance and health behaviours. Moreover, the way health systems continue to respond to different moral and cultural values and practices will be important. Moving closer to 2040, the population's health may be shaped by patient-centred care; computer-driven diagnosis; a healthy lifecourse approach; the acceptance of alternative treatments and social prescribing; remote access to healthcare; and the rate at which the health system learns from previous results. The implications of a 'healthcare debt' – whereby individuals are in charge of paying off their own healthcare bill in various ways – would also be substantial.

Education and working life

The role of schools and workplaces in promoting 'healthy lifestyles' and social cohesion may be significant drivers of the population's health over the next 25 years, as may work-life balance and the extent to which there is equal access to good education and subsequent employment. The impact of obsolete industries may be significant in the medium-term, with the possibility of redundancies affecting entire communities or ethnic groups

Research capacity, infrastructure and translation into policy and practice

It is likely that evidence will be crucial for tackling the challenges and meeting the opportunities of the future. In supporting and realising this evidence, health will be driven by research capacity (e.g. training, workforce, skills and funding), research infrastructure (e.g. physical, virtual and institutional) and the mechanisms that will exist for translating research into policy and practice. As the Academy's 'Health of the public in 2040' project develops, it will be the working group's role to explore these evidence and research requirements in order to make practical recommendations for the future.

Surprises

To end the day, each table was asked to identify one aspect of their discussion which they found particularly surprising or interesting. These are as follows:

- **Multi-dimensionality**: There is not 'one big driver of change'. History shows that the population's health is dependent on the complex interaction of myriad smaller factors. Moreover, many of the factors that were relevant in 1965 are still relevant today.

- **Technology and compassion:** The importance of bridging the development and implementation of high technology (and the use of data) with community, empathy and compassion.

- **Health service models**: A thought experiment regarding the funding of the health service, whereby individuals have a recorded 'health bill', the payment of which could be dependent upon various factors: tokens for exercise or maintaining a healthy diet, discounting, and loyalty cards.

- **The highest law:** The idea that by 2040 the health and wellbeing of the public will be the 'highest law'.

- **Design of cities:** The impact that the design and implementation of cities will have on health and wellbeing. This includes layout; population density; work, life and play areas; and transportation networks.

- **Fragmentation:** The extent of the negative impact of the fragmentation of public health and NHS delivery.

Several tables identified additional surprising outcomes. For example, one table noted that global sustainability is of particular importance for the future health of the population, while another table was surprised that their discussion did not focus on climate change. A third table was surprised that healthcare delivery featured so prominently throughout the day; another was interested in learning that regulation can be found underpinning many changes for the better, such as healthier eating.

Annex I: Programme

Arrival	
09.30	**Registration and coffee**
Welcome and background	
10.00	**Chair's introduction: project background** Professor Dame Anne Johnson DBE FMedSci, *Professor of Infectious Disease Epidemiology, UCL*
10.10	**Facilitator's introduction: workshop process** Ms Gill Ringland, *CEO & Fellow, SAMI Consulting*
Morning session: setting the scene	
10.20	**Looking back** • Looking at what has changed the health of the public over the last 50 years • Considering the pace of change in the world over the last 25 years
11.15	**Feedback from public engagement events** Ms Susie Fisher, *Director, The Susie Fisher Group* Mr Nick Hillier, *Director of Communications, The Academy of Medical Sciences* • Video: hopes and fears for the future • Overview of recent public engagement events in London and Birmingham • Q&A
11.45	**Tea/coffee break**
12.00	**Visioning** • Exploring aspirations for the optimal health of the UK population in 2040
Afternoon session: drivers of change	
12.40	**Drivers of change and the Three Horizons Model** • Introduction by Gill Ringland
13.00	**Working lunch** • Identify the key drivers in the immediate-term
13.45	**Drivers: circa 2040** • Exploring future drivers of change
14.30	**Drivers: circa 2030** • Exploring medium-term drivers of change
15.15	**Tea/coffee break**
15.30	**Discussion: what are the surprises?** • Table discussion: surprises among the drivers of change over the next 25 years
15.55	**Thanks** Professor Dame Anne Johnson DBE FMedSci
16.00	**Close**

Annex II: Workshop participants

Delegates

- **Professor Dame Anne Johnson DBE FMedSci [Chair]**
  Professor of Infectious Disease Epidemiology; Chair of Grand Challenges for Global Health, University College London
- **Dr Aaron Reeves**
  Postdoctoral Researcher in Quantitative Sociology, University of Oxford
- **Dr Rob Aldridge**
  Public health doctor; research training fellow in epidemiology, University College London
- **Professor Carol Brayne FMedSci**
  Director of the Cambridge Institute of Public Health, University of Cambridge
- **Ms Amitti CanagaRetna**
  Strategy Advisor, Department of Health
- **Mr Martin Champion**
  Portfolio Manager, Healthcare Technologies Theme, Engineering and Physical Sciences Research Council
- **Ms Rowan Conway**
  Director of Connected Communities, Royal Society for the encouragement of Arts, Manufactures and Commerce
- **Professor Rachel Cooper**
  Professor of Design Management, University of Lancaster
- **Professor Michael Depledge**
  Chair of Environment and Human Health, University of Exeter Medical School
- **Professor Yvonne Doyle**
  Regional Director for London, Public Health England
- **Ms Jacqui Farnham**
  Producer/Director, BBC Factual
- **Ms Susie Fisher**
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