Improving the health of the public by 2040: Progress on implementation one year on

Cambridge Institute of Public Health: November 2017

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Improving the health of the public by 2040

Optimising the research environment for a healthier, fairer future

September 2016

Download the report at acmedsci.ac.uk/2040

Join the discussion on social media using #health2040

View our summary animation at youtube.com/acmedsci
Aims of the project

• To explore the health challenges the UK population will face by 2040, and the opportunities to address them

• To develop a vision for the health of the UK population by 2040

• To ensure that by 2040:
  – Transdisciplinary research underpins interventions to improve the health of the public
  – There is a highly skilled research workforce
  – Strong links exist between evidence, policy development, and service delivery

Thanks to our funders:
Our vision

Primary aspiration for 2040

Substantial and ongoing reductions in health inequality, and improvements in mental health, physical health and health-related quality of life across the UK population

Five supporting ambitions

Environmental
All elements of the UK environment support healthy living for everybody.

Empowerment
People are empowered to actively contribute to their own and other people’s health.

Values
All sectors of society value health and health equity, and they are indicators of societal success.

Sustainability
Improvements to UK health are gained in ways that are economically, environmentally and socially sustainable.

Resilience
The UK has developed resilience to potential health crises and is a major contributor to global health security.

One underpinning requirement

The UK has the transdisciplinary research capacity, capability and infrastructure to generate evidence to improve the health of the public.
Looking back: the impact of public health

10 great public health achievements in the 20th century

1. Vaccination
2. Motor-vehicle safety
3. Safer workplaces
4. Control of infectious diseases
5. Decline in deaths from heart disease and stroke
6. Safer and healthier foods
7. Healthier mothers and babies
8. Family planning
9. Fluoridation of drinking water
10. Recognition of tobacco use as a health hazard

- Developing the randomised controlled trial
- Identifying foetal origins of health in later life
- Establishing epidemiological studies to identify social, environmental and genetic determinants of health and health inequalities
- Assessing impact of multiple interventions

*Source: US CDC*
Cervical cancer: screening and vaccination. First-generation HPV vaccines will reduce incidence by around 50%. Second generation likely to be up to 90%.
UK population projected to grow by 9.7 m in next 25 years

By mid 2039, more than 1 in 12 projected to be 80 or over

Significant gains in life expectancy, but healthy life expectancy not increased at same rate....
Obesity. Over 2 decades from 13% to 26% men, 16-24% women.

Evidence for these risks come from the basic sciences of population health, epidemiology, big data, statistics and intervention trials.

Prevention has a major role in reducing illness but many of the interventions lie outside the health service (environmental, fiscal etc).

Major social inequalities in exposures and outcomes.
‘Transdisciplinary research activities need urgent and rapid expansion’
‘Health of the public’ research: a new paradigm

There is still **much we do not know**

- Interlinking factors that influence health
  - *Confluence of social determinants, behaviour, and biology*

- How to solve the many challenges at a population level
  - *Delivering on the promise of a comprehensive prevention agenda*

**Realising our vision depends on a shift from ‘public health’ to ‘health of the public’**
Prevention Research Spend (2014)

Data: UK Health Research Analysis (UKCRC, 2014)

Total spend (2014) = £2.03bn; prevention spend = £105m
Our vision

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Implementation workshop

Workshop in January 2017

• Brought together key stakeholders for implementation of recommendations

• Explored three priority areas:
  o Optimising research
  o Linking research and delivery
  o Training and capacity building

‘Future of Public Health research’ workshop 2017

• Results of responses to NIHR Future of Health review (Chris Whitty) https://www.nihr.ac.uk/news/rand-publishes-futures-of-health-report/6918

• Focus on working with practitioners and identifying stretching but tangible outcomes

• Follow-up with Local Authorities and others
Optimising research

UK Strategic Co-ordinating Body for Health of the Public Research (SCHOPR)

- Bring together a broad range of research funders and stakeholders – beyond the traditional biomedical sphere
- Provide strategic direction
- Enhance co-ordination
- Identify key priorities (‘Big questions’ and infrastructure)
- To be established as a sub-board of OSCHR
- Ensure co-ordination with UK Prevention Research Partnership (UKPRP)
- Working with NIHR on emerging strategy
Optimising research

UK Prevention Research Partnership (PRP)

- Call published October 2017
- Multi-funder partnership of Research Councils, Health Departments & Charities
- Addresses many of concerns and principles in AMS report
- £40-50 million over 6-7 years
- Long-term investment to bring together a range of disciplines and stakeholders to build multidisciplinary teams addressing and answering big questions
- Current competition for Consortia and Networks. Applications due January 2018
Harnessing the digital revolution

The digital revolution offers a chance to understand the full spectrum of the determinants of health. Embracing these opportunities requires us to collectively address issues of data access and management; ethics, regulation and governance; community engagement and trust.

National Investment in Health Data Research UK.
Significant training needs to upskill a digital workforce.
Harnessing the digital revolution

New therapeutic interventions
Precision Medicine
Real Time HTA
Public Health
Discovery Science
Integration in real time

Medical Informatics
People
Populations
Agents
Systems

EBI Sanger
Farr Institute
Administrative Data RC

Physical data
Personal data
Organisational data

Machine learning
Robotics
Sensors
Speech processing
Natural language
Social computation
Data architectures
Linked data
Security

Source: Andrew Morris
‘Understanding Patient Data has been set up to support better conversations about uses of health information.

We think that responsible use of patient data has the potential to improve everyone’s health and deliver better care. It is important that everyone ……. can understand more about the safeguards that are in place to protect patient confidentiality.’
Interdisciplinary Research Collaboration

Building the Toolkit

- Apps and Dashboards
- Big Data Analytics
- Nanosensors
- End-User Needs and Test Beds
- Biomarker Discovery and Capture Ligands
- Advanced Nanomaterials

UCL
Linking research and delivery

Strong support for **regional hubs of engagement** at the implementation workshop

- Build on existing networks and bring in a wide range of sectors
- Co-ordination by a national oversight body with sufficient freedom for hubs to innovate
- Pilot year to allow hubs to gain experience and establish best practice
- **Commitment by PHE to support implementation in its annual business plan:** All regional centres have R and D lead. Progress meeting this month

AMS and the Royal Society holding a joint workshop on **synthesising evidence, from multiple disciplines, for policymakers**
Well Newcastle Gateshead
Developing the next generation of researchers and practitioners

We need an ambitious plan to build transdisciplinary research capability, which harnesses the changing drivers of health and capitalises on emerging technologies.
Training and capacity building

Fostering transdisciplinarity

• Launch of AMS Springboard – Health of the Public 2040

• Joint AMS-Health Foundation taskforce to explore fellowship scheme to foster transdisciplinary working

Practitioner training

• Joint workshop on 3 July with MSC, HEE and GMC - ‘Starting the transformation in educating the health professionals of the future’
  ○ MSC and GMC exploring setting up a working group to take this further

• FPH Education Committee task and finish group to consider areas to be included in the proposed health of the public credential. Working with RCP (Carol Brayne)
Undergraduate training for medical students

Recommendation 5.1

We recommend that the Medical Schools Council, in collaboration with the General Medical Council and other relevant stakeholders, should undertake a review of competencies within the existing undergraduate medical curricula to identify opportunities to embed, strengthen and develop health of the public training and its broader application in clinical practice.
What will clinical practice look like in 2040? Will ‘4Ps medicine’ be a reality?

- Predictive?
- Pre-emptive?
- Personalised?
- Participatory?
What will clinical practice look like in 2040? Will ‘4Ps medicine’ be a reality

- Predictive? – considers the competing risks to our health from all the drivers (genetic, behavioural, social, environmental, biological). Needs big integrated clinical and epidemiological data sets to guide clinical care.

- Pre-emptive?

- Personalised?

- Participatory?
What will clinical practice look like in 2040? Will ‘4Ps medicine’ be a reality

• Predictive?

• Pre-emptive? Clinical practice can help us intervene effectively before people get sick if we understand risk and how to prevent disease. Needs good evidence on prevention

• Personalised?
• Participatory?
How will you practice medicine in 2040? Will ‘4Ps medicine’ be a reality’

- Predictive?
- Pre-emptive?
- Personalised? *We can tailor clinical management to peoples personal risks (genetic, behavioural etc) and preferences (prevention and treatment)*
- Participatory?
What will clinical practice look like in 2040? Will ‘4Ps medicine’ be a reality?

• Predictive?

• Pre-emptive?

• Personalised?

• Participatory? Everyone can read the textbook now (including machines?) This may revolutionise the way we practice medicine.
What will clinical practice look like in 2040?
Will ‘4Ps medicine’ be a reality?

- Predictive?
- Pre-emptive?
- Personalised?
- Participatory?

For the benefit of the Patient and the Public.
Prevention and population health needs integration into not isolation from the clinical method

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The Academy of Medical Sciences
The report

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