



Public Health  
England

Protecting and improving the nation's health

# **Doing, supporting and using public health research**

The Public Health England strategy for research, translation and innovation

# About Public Health England

Public Health England exists to protect and improve the nation's health and wellbeing, and reduce health inequalities. It does this through world-class science, knowledge and intelligence, advocacy, partnerships and the delivery of specialist public health services. PHE is an operationally autonomous executive agency of the Department of Health.

Public Health England  
Wellington House  
133-155 Waterloo Road  
London SE1 8UG  
Tel: 020 7654 8000  
[www.gov.uk/phe](http://www.gov.uk/phe)  
Twitter: @PHE\_uk  
Facebook: [www.facebook.com/PublicHealthEngland](http://www.facebook.com/PublicHealthEngland)

© Crown copyright 2014

You may re-use this information (excluding logos) free of charge in any format or medium, under the terms of the Open Government Licence v3.0. To view this licence, visit [OGP](http://www.nationalarchives.gov.uk/ogp/) or email [psi@nationalarchives.gsi.gov.uk](mailto:psi@nationalarchives.gsi.gov.uk). Where we have identified any third party copyright information you will need to obtain permission from the copyright holders concerned. Any enquiries regarding this publication should be sent to [insert email address].

Published July 2015

PHE publications gateway number: 2015213



# Contents

About Public Health England	2
Foreword	4
Executive summary	6
Definitions	10
The strategic context	11
Current significant PHE research activities	14
Our strategic priorities for research, translation and innovation	17
Priority One	18
Priority Two	22
Priority Three	28
Priority Four	32
Priority Five	35
Implementation	37
Annex A	38
Annex B	40
Annex C	41
Annex D	42
Annex E	44

# Foreword

Public Health England (PHE) is a research-informed organisation that is driving forwards the provision and use of evidence for decision-making across our public health system. Research relevant to health and care is thriving due to sustained investment and new, productive relationships among researchers and those who would use their findings. In PHE we have taken a fresh look at the role of research and knowledge - or evidence - in supporting public health locally, nationally and internationally.

Public Health England does not commission research. Our mandate from Government, agreed with the Department of Health, refers to 'undertaking and contributing to research and development in areas relevant to its functions'.

We have four core functions:

- protecting the population's health from infectious diseases and other hazards
- improving population health and wellbeing and reducing inequalities
- improving population health through sustainable health and care services
- building the capability and capacity of the public health system

Each function must be underpinned by world-class scientific evidence drawn laboratory and clinical sciences, behavioural and social sciences, data sciences, and others. On occasion, we will commission external support to compile, analyse and present the evidence base on specific topics.

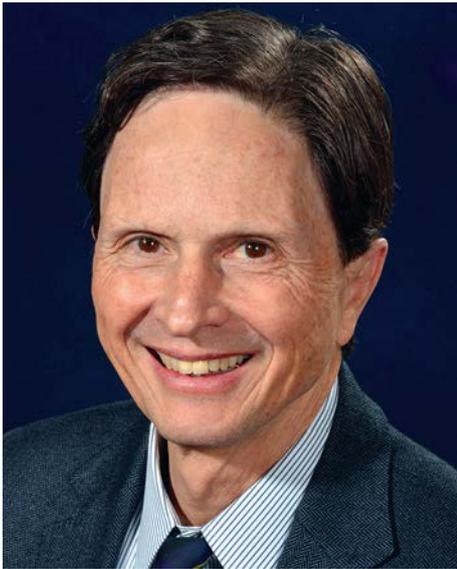
This document sets out PHE's commitment to research, translation and innovation; the steps we will take, alone or with partners, to do research, to support research and to use evidence from research. In 2014 we published 'From Evidence into Action: opportunities to protect and improve the nation's health', in which we indicated that 'new evidence and new knowledge...could transform the scope of public health' and made a commitment to ensure that 'credible, evidence-based advice is available on the key issues relating to the public's health'. Our research, translation and innovation activities will enable us to do that.

The intended PHE, national and global audiences for this document are:

- researchers, research commissioners and funders
- policy-makers
- public health practitioners and providers, including primary care and the voluntary sector
- local government organisations
- higher education institutions

- industry
- the public

We are most grateful to the many individuals and organisations who participated in our public consultation on this strategy. Many responses were substantial, all were valuable and we undertook a careful analysis of your comments. The final strategy is much improved as a result.



A handwritten signature in black ink that reads "D Heymann".

A handwritten signature in black ink that reads "Duncan Selbie".

**Professor David Heymann**  
Chairman

**Duncan Selbie**  
Chief Executive

# Executive summary

This strategy document sets out how Public Health England (PHE) will drive research, translation and innovation to support the transformation of public health practice and services. Its success will lie in close working across (public) health and care, academia and the private sector.

The remit, services and priorities of PHE that address the protection of the public and prevention of disease are, necessarily, broad. The level of achievement in research and related activities and its state of development vary considerably across the organisation's different functional areas; by far the greatest strengths are in Health Protection: Infectious Diseases and Chemical, Radiation and Environmental threats. Nonetheless, implementation of this strategy is intended to advantage all areas, drawing support from, and providing assistance to many local, national and international partner organisations.

This strategy addresses five priorities:

- knowledge
- infrastructure
- capacity
- innovation
- communication

For each priority, specific objectives are defined and the actions to be taken by PHE are set out. These are

## **Priority one: knowledge - generate new knowledge to improve and protect health**

Objectives:

1. Undertake research that peer reviewers commend as being of the highest quality and leads opinions through publications in the internationally-acclaimed scientific literature.
2. Focus researchers in PHE and elsewhere on research questions relevant to the evidence needed for public health.
3. Apply diverse research methodologies appropriate for the range and complexity of public health research questions and contribute to methodological development.
4. Value and evaluate evidence from diverse sources and use it systematically to improve public health.

PHE will:

- support and undertake high quality research relevant to more aspects of its remit
- support interactions among researchers, research funders, research users and the public to agree and disseminate priority research questions
- support the development and function of partnerships with major research groups
- provide high quality evidence products and support the development of skills to use evidence

**Priority two: infrastructure – build, share and sustain high-quality infrastructure to enable research by PHE and others**

Objective:

PHE will advance its engagement with, and support of, national enabling infrastructure for public health research

PHE will:

- continue its strong support for the National Institute for Health Research (NIHR) Health Protection Research Units (HPRUs) both to achieve evidence for PHE actions and to build research capacity, capability and excellence, leveraging the initial investment
- add value to networks of significant external partners who share a commitment to undertaking high quality research relevant to public health and using research and evidence to improve health outcomes
- invest in, deploy and share sophisticated research facilities, equipment and expertise
- continually enhance the efficiency of data provision for research, add value to data resources and work with partner organisations towards the same goals
- work with partner organisations to ensure effective, efficient governance arrangements for research and related activities

**Priority three: capacity – support development of public health research capacity in PHE and elsewhere and inspire public health research careers**

Objectives:

1. Embed development of research capabilities and leadership in workforce development initiatives.
2. Support academics in public health through engagement with PHE.
3. Provide career-long research training for public health researchers.

PHE will:

- have a clear view and action plan to support research in the careers of PHE staff
- maintain and extend its Academic Public Health Research Network
- extend the range of research training opportunities across different areas of PHE and different career stages
- work with partner organisations to highlight and support a co-ordinated clinical – academic career pathway for public health

**Priority four: innovation - accelerate translation of research into policy and practice in public health and commercial products**

Objectives:

1. Develop a PHE model for translation of evidence into policy or practice.
2. Develop a PHE process to enable robust evaluation of public health interventions.
3. Work with partner organisations and the private sector to support economic development.

PHE will:

- establish in-house and partnership support systems for successful innovation by translating evidence into policy or practice, learning from best practice nationally and internationally
- support the robust evaluation of public health interventions including close interaction with partner organisations so as to contribute to effective decision-making by providers of public health services
- enhance its track record and profile in the translation of research evidence into commercial opportunities

**Priority five: communication - communicate widely and openly about how research is contributing to improving and protecting health and wellbeing and reducing health inequalities**

Objectives:

1. Lead and contribute to evidence-based public health narratives, nationally and internationally.
2. Enhance the accessible, public profile of PHE's Research, Translation and Innovation functions and achievements.

**PHE will:**

- maintain a dialogue on public health research, organising, participating in and contributing to discussion fora nationally and internationally
- publish annual reviews of PHE's research, translation and innovation activities

For each objective, measures of success are set out that will be evident both within PHE and externally.

# Definitions

The following definitions of the terms 'research', 'translation' and 'innovation' apply throughout this document.

**Research** is an attempt to derive generalisable and/or transferrable new knowledge by addressing clearly defined questions with systematic, rigorous and repeatable methods.

**Translation** is a process of adding value to robust evidence so that it may be used.

**Innovation** is a process that brings together various novel ideas in a way that they have an impact (on public health).

## The strategic context

PHE is an executive agency of the Department of Health, but with operational autonomy. PHE provides the public health system with strong leadership, helping to make an effective and unified public health response to emergencies, supporting those responsible for delivery with the evidence, data and tools to make a real difference to the health of communities.

To fulfil the duty of the Secretary of State for Health to protect the public's health from infectious diseases and other public health hazards, PHE works with the NHS, local government and other key partners including the devolved administrations and internationally, as appropriate.

PHE also functions to secure improvements to the public's health, including through evidence-based interventions, working with its partner organisations. And PHE contributes to ensuring that the public health system maintains the capability and capacity to tackle today's public health challenges while preparing for future challenges.

In 2014 PHE published 'From evidence into action: opportunities to protect and improve the nation's health'<sup>1</sup> highlighting where it believes it can make the greatest impact on the public's health in addition to the delivery of mandated services. To galvanise and direct efforts, it focuses on seven strategic priorities aimed at improving the public's health: alcohol, antimicrobial resistance, dementia, obesity, tobacco, tuberculosis and giving every child the best start in life. The importance of focusing on prevention is reinforced by the 'Five year Forward View'<sup>2</sup> published by NHS England, PHE and other health sector partners.

PHE's Knowledge Strategy<sup>3</sup> was published in June 2014. The intention to develop a research strategy was indicated and, in setting out a knowledge cycle (Figure 1), research was placed within a continuum of public health knowledge creation and use.

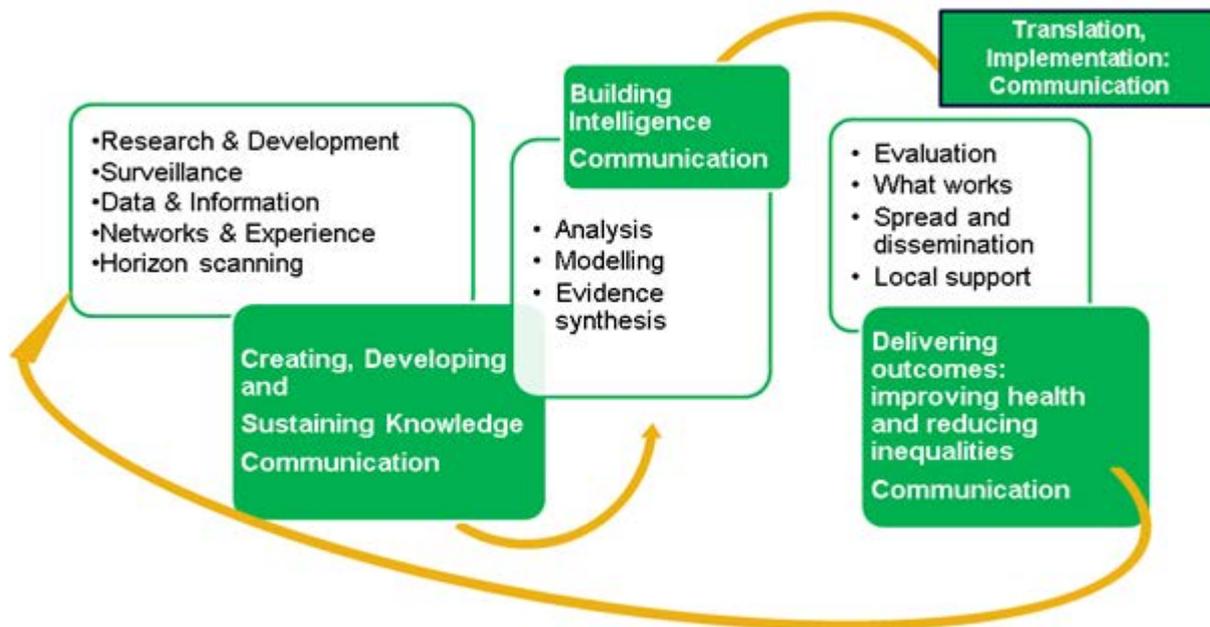


Figure 1: public health knowledge cycle

As an organisation with a deep commitment to providing and using knowledge, PHE operates alongside, and engages strategically and operationally with, partner organisations locally, nationally and internationally who undertake, support and use research. Opportunities for progress set out in the research strategies of a range of policy and funding organisations are highly relevant. The most significant is ‘Best Research for Best Health’<sup>4</sup> from the National Institute for Health Research (NIHR). NIHR is funded through the Department of Health, England (DH) to improve the health and wealth of the nation through research. Its strategy has been implemented successfully since its publication in 2006, transforming health research by providing consistent growth through significant investment in enabling infrastructure, major applied research programme, research careers and the involvement of patients and the public. In parallel, DH supports high quality research relevant to policy, mostly notably through the Health Research Programme Policy Research Units (HRP PRUs). Both the DH and NIHR significantly enable research in PHE and across the complex multi-organisational, multi-disciplinary public health landscape.

Among UK research councils, strategies of the Medical Research Council (MRC ‘Research Changes Lives’<sup>5</sup>) and Economic and Social Research Council (ESRC ‘Social Science Shaping Society’<sup>6</sup>) are highly relevant for research to meet the evidence needs of PHE. While PHE, as a civil service organisation, cannot lead proposals for research council funding, it can add value to research as a partner organisation and significantly enhance opportunities for research impact as articulated by MRC and ESRC. Likewise other public sector organisations and major health research charities nationally and internationally have set out their strategic plans. PHE will continue to engage with them to support implementation and provide input to future strategic thinking.

Leadership in patient and public involvement and engagement (PPI/E) in research is a hallmark of UK health research. The part of NIHR that supports active involvement of people in NHS, public health and social care research is INVOLVE. The INVOLVE strategy is being refreshed currently, however in a report of a review led by its chairman 'Going the extra mile: improving the nation's health and wellbeing through involvement in research', a vision is set out of 'A population actively involved in research to improve health and wellbeing for themselves, their family and their communities.' PHE will work to support the achievement of that vision.

For more than a decade, collaboration has been a hallmark of UK health research funders. This has enabled many highly beneficial strategic initiatives. The UK Clinical Research Collaboration (UKCRC) was established in 2004 to re-engineer the UK clinical research environment. The UKCRC brings together research funders from the public, private and charitable sectors with regulatory bodies and users of research findings that include industry, healthcare provider organisations, patients and the public. It has given rise to a range of highly beneficial reports and initiatives. These include the UK Health Research Analysis reports that provide detailed profiles of the UK's investment in health research, enabling insight and action. For example, understanding of the need to invest in illness prevention spurred development of the National Prevention Research Initiative (NPRI) and establishment of the UKCRC Centres of Excellence in Public Health. PHE aims to play a full part in future strategic developments.

## Current significant PHE research activities

PHE produces evidence from research and uses evidence across all of its remit. Its formation in April 2013 brought together a range of functions and organisations that varied in their depth and scope of research and legacy of research achievements. A focus of the current strategy is to share good practice, expertise, experience and support across all parts of the organisation so that all functional areas have a good research base.

A light-touch review was undertaken of research and related activities in the first year of PHE's operation, 2013/14. Principal findings were:

- some £35M in funding invested of which more than £29.5 million was attracted from external research funders
- £8.5M of the external research funding was from sources outside the UK
- excluding abstracts, book chapters etc and reports, 857 peer-reviewed publications comprised part of PHE's advice and guidance functions - spanning more than 300 different journal titles, this total indicates the considerable breadth of PHE's engagement with research; all publications included at least one author employed by PHE (albeit that some author affiliations were to PHE's predecessor organisations).
- publications and other output that informed significant developments in policy and practice

This high level of productivity was sustained throughout 2014, eg with a total of more than 1,000 peer reviewed publications.

The most significant research concentration relates to infectious disease. To consolidate and accelerate capacity and capability in that area and others for the future, an excellent platform has now been established in 13 NIHR Health Protection Research Units. The competitive selection process involved rigorous peer review including a high-level international panel that reviewed documentation/presentations and conducted interviews. Funding for five years was awarded to 13 units that commenced operation in April 2014. Eleven units are theme-specific while two are cross-cutting. PHE is a partner in each of the 13 NIHR HPRUs as shown in the table below, as well as being a user of the research outcomes and expertise to be developed in the units.

The work programme of each NIHR HPRU is set out in a business plan agreed among its partners. Their governance is the responsibility of an Oversight Group convened by the DH and on which PHE is represented. The specific research themes being pursued are detailed in Annex A.

PHE's response to the 2014-15 Ebola outbreak in West Africa included work on virus characterization, vaccine development, the deployment of resources in affected countries and the UK, modelling of the outbreak and its likely impact and strategies for recovery and rebuilding in its aftermath. The research capabilities of PHE and its partners, particularly within several NIHR HPRUs, contributed significantly to this work and continues to do so. Major publications and other beneficial outputs are emerging and will be added to well into the future.

**Table 1. NIHR Health Protection Research Units**

<b>Priority Area</b>	<b>Lead University</b> and other partners (with PHE)
Environmental change and health	<b>London School of Hygiene &amp; Tropical Medicine</b> Exeter University, University College London
Health impact of environmental hazards	<b>King's College London</b> Imperial College London
Emergency preparedness and response	<b>King's College London</b> Newcastle University, University of East Anglia
Chemical and radiation threats and hazards	<b>Newcastle University</b>
Emerging infections (including zoonoses) and biological threats	<b>University of Liverpool</b> Liverpool School of Tropical Medicine
Immunisation	<b>London School of Hygiene &amp; Tropical Medicine</b>
Respiratory infections	<b>Imperial College London</b> Imperial College NHS Trust and Birmingham University
Gastrointestinal infections	<b>University of Liverpool</b> University of East Anglia, University of Oxford, Institute of Food Research
Blood-borne and sexually transmitted Infections	<b>University College London</b> London School of Hygiene & Tropical Medicine
Healthcare associated infections and antimicrobial resistance	<b>Imperial College London</b> Wellcome Sanger Institute, NWL Academic Health Science Network, Cambridge Veterinary School
	<b>University of Oxford</b> Animal and Plant Health Agency
Development of modelling methodology	<b>Imperial College London</b>
Evaluation of interventions	<b>University of Bristol</b> University College London, Cambridge MRC Biostatistics Unit, University of the West of England

# Our strategic priorities for research, translation and innovation

Our five priorities are:

- **knowledge** - generate new knowledge to improve and protect health
- **infrastructure** – build, share and sustain high-quality infrastructure to enable research by PHE and others
- **capacity** – support development of public health research capacity in PHE and elsewhere and inspire public health research careers
- **innovation** - accelerate translation of research into policy and practice in public health and commercial products
- **communication** - communicate widely and openly about how research is contributing to improving and protecting health and wellbeing and reducing health inequalities

# Priority One

**Knowledge - generate new knowledge to improve and protect health**

## **Objectives:**

undertake research that peer reviewers commend as being of the highest quality and leads opinions through publications in the internationally-acclaimed scientific literature

1. focus researchers in PHE and elsewhere on research questions relevant to the evidence needed for public health
2. apply diverse research methodologies appropriate for the range and complexity of public health research questions and contribute to methodological development
3. value and evaluate evidence from diverse sources and use it systematically to improve public health

## **Undertake research that peer reviewers commend as being of the highest quality and achieves publication in the internationally-acclaimed scientific literature**

PHE includes areas of activity with excellent track records of success in securing research funding through competitive peer review and in achieving publication. It is recognized however that while we participate in many projects, our record of research leadership can be improved. Further, the majority of external awards relate to health protection research and, of almost 1,000 peer reviewed publications achieved each year, the majority concern health protection. Funding opportunities to contribute to the development and evaluation of public health interventions include the MRC Public Health Intervention Development programme and NIHR Public Health Research Programme, respectively; however the project portfolios of many other funding schemes include a diverse array of public health research.

To enhance its research performance relevant to a wider proportion of PHE's remit, greater support will be provided to develop external funding proposals, achieve publications in the scientific literature and develop partnerships with academia. This support will be differentiated according to the current state of research capacity and capability in specific areas of PHE. All areas will be encouraged to develop action plans aligned to this current strategy, to work towards attainable targets and to monitor and report on their achievement.

In some aspects of its work, eg emergency preparedness and response, PHE invests its own funding for research. The quality of all such research will be assured through regular external reviews by panels involving external, expert peers. The outcomes of reviews will inform future funding decisions.

**PHE will: support and undertake high quality research relevant to more of its remit**

**Measures of success:**

1. The number of high quality, peer reviewed publications, led by PHE authors.
2. The number, value and success rate of proposals for external research funding that are led by PHE staff.
3. The number of PHE staff who are named applicants on proposals for external research funding.
4. Developmental measures to include: members of PHE staff achieving their first peer reviewed publication, first research conference keynote presentation and/or first external research funding.

**Focus researchers in PHE and elsewhere on research questions relevant to the evidence needed for public health**

Robust evidence for research is essential across all areas of PHE's remit and only a small proportion can be done by PHE's own staff. To highlight areas of research need and gain consensus across the sector, PHE convenes workshops and related activities involving leading researchers, research funders, PHE programme leads and others with responsibility for policy and service delivery. Workshop outputs highlight the most important research questions and necessary developments in research infrastructure and support. An initial workshop series focused on the PHE priorities set out in 'From Evidence to Action' while others concern discrete PHE programmes. Workshop reports will be disseminated widely.

Achieving consensus on research priorities is a key function of the James Lind Alliance, part of the NIHR. The process generally involves the formation of priority-setting partnerships (JLA PSPs), for example with health (research) charities that engage patients and/or carers affected by particular illnesses. To build upon that important work and enable multi-disciplinary approaches to illness prevention, PHE will seek to develop a PSP-like methodology so that members of the public can contribute to priority setting. An important partner for PHE will be INVOLVE, one of the few government funded programmes of its kind in the world that supports the patient and public involvement and engagement in research (PPI/E).

**PHE will: support interactions among researchers, research funders, research users and the public to agree and disseminate priority research questions**

**Measures of success:**

1. The range of research priority topics influenced by PHE.
2. Innovative community involvement in research prioritization exercises and subsequent research.

## **Apply diverse research methodologies and disciplines appropriate for the range and complexity of public health research questions and contribute to methodological development**

The breadth and complexity of public health research presents considerable challenges and opportunities for innovation. Knowledge and methodologies drawn from many different disciplines eg quantitative analysis of large datasets and descriptive epidemiology; genomics and behavioural psychology, may need to be combined and placed within real-world contexts to address particular questions. And high quality information science should underpin all research. The necessary expertise cannot always be provided by PHE's own staff so must be deployed through collaboration with academics locally, nationally and internationally.

PHE will seek to form partnerships involving diverse support mechanisms, including finance, access to data, specialist facilities and resources or other in-kind contributions. Short-term staff exchanges – secondments – between partners will be advocated and facilitated to assist in disseminating research skills from academia and helping them to understand the contexts in which research findings can have impact.

Through the EU's European Commission, the Horizon 2020 and health programmes, PHE supports major research and innovation projects involving multiple academic, other public sector and private sector partners. Parts of PHE, predominantly in Health Protection areas, have excellent track records of success in EU programmes. The current opportunities include a focus on 'Societal Challenges', with topics such as ageing, illness prevention, reducing inequalities etc, so there is scope for PHE involvement across the breadth of its remit. The need to translate research findings into real impact is fundamental to most programmes. Therefore PHE, with its roles in delivering and supporting public health interventions locally and nationally, is an excellent partner in EU research consortia.

**PHE will: support the development and maintenance of partnerships with major research groups**

### **Measures of success:**

1. Active partnerships with universities and other research organisations.
2. Number of staff exchanges between PHE and partners.
3. Number and success rate of proposals to external research funders, including EU programmes, which involve PHE.

## **Value and evaluate evidence from diverse sources and use it systematically to improve public health**

Public health practice and policy encompass many opportunities to collate useful evidence in addition to that acquired through conventionally-structured research projects. This real-world evidence can be essential particularly when judging whether

the results of research are applied more generally and more widely than the specific study itself or the appropriateness of using evidence in the design of novel interventions. Whatever the sources of the evidence or method by which it is gathered, the skills to evaluate it are essential. PHE will work closely with respected organisations, eg Cochrane Collaboration or the Critical Appraisal Skills Programme (CASP), to contribute to and draw from the evidence base and develop skills such as those for evidence appraisal or systematic reviewing within its own staff. PHE can also influence the wider public health sector by involving staff, eg those from local authorities, in training or other programmes designed to enhance skill for the evaluation and use of evidence.

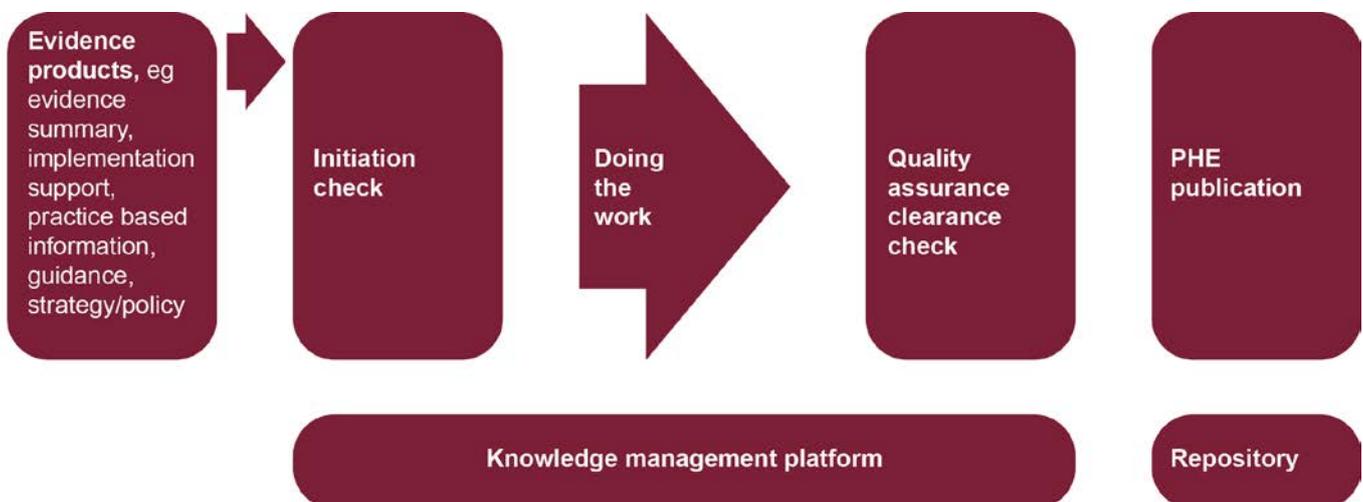
PHE has a role in the preparation and dissemination of evidence products to organisations and practitioners across the sector. In this, it works closely with the National Institute for Health and Care Excellence (NICE) that also has a strong public health function. Joint working includes agreement on systematic taxonomy of different products and outputs. To ensure the high quality of its evidence products, a PHE publication standard has been developed (Figure 2) and the requirement to achieve that quality standard will be embedded across the organisation.

**PHE will: develop the skills of the public health sector by providing high quality evidence products and supporting the development of skills to use evidence**

**Measures of success:**

1. The number of PHE evidence products that achieve its quality standard
2. The usage by external organisations of PHE evidence products and esteem in which they are held
3. The number of PHE staff and local authority public health staff who are trained in evidence information retrieval, appraisal, reviewing etc

**Figure 2 PHE publication standard process**



## Priority Two

### **Infrastructure – build, share and sustain high-quality infrastructure to enable research by PHE and others**

Infrastructure for excellent health and care research is now widely available nationally. Public health is no exception although improvements to the available infrastructure are always possible through partnerships and dedicated funding streams.

Infrastructure is supported through diverse investments from a wide range of major health research funders based in the UK or internationally. The NIHR in particular has established, supports and provides access to a comprehensive infrastructure, coordinated by the NIHR Office for Clinical Research Infrastructure (NOCRI).

#### **Objective:**

- enhanced PHE engagement with, and support of, national enabling infrastructure for public health research, including:
  1. Significant external support (eg NIHR Health Protection Research Units).
  2. Significant networks (eg NIHR School for Public Health Research; NIHR School for Primary Care Research; NIHR School for Social Care Research; Collaborations for Leadership in Applied Health Research and Care (CLAHRCs); Academic Health Science Networks (AHSNs)).
  3. Access to dedicated expertise and resources to undertake studies (eg clinical research networks (CRNs), clinical trials units (CTUs), specialist laboratory facilities, equipment and staff, expertise including statistics, data analysis, health economics, information science etc).
  4. Health, care and other population-based datasets/linked data.
  5. Research governance support.

#### **Significant external support, eg NIHR Health Protection Research Units**

The major NIHR infrastructure investments build upon a substantial track record of successful projects and the commitment of recognised leaders. Most of PHE's past success in external funding relates to Health Protection – whether infectious disease or chemical, radiation or other environmental hazards. A step change in infrastructure support in these areas is provided by the five-year, £47.5 million NIHR Health Protection Research Unit (HPRU) initiative. Thirteen NIHR HPRUs were established in 2013 with the aim of supporting PHE to achieve its objectives and functions for the protection of the public's health. PHE are full partners in each Unit. Table 1 shows the NIHR HPRU partners and research themes that were selected through a highly-competitive, international, peer review process. In each case, responsibility for delivering the agreed work programmes, managing the units and reporting to funders lies with a university-based director (an internationally-recognised leader in the relevant area), working with

designated PHE lead(s). Each NIHR HPRU also provides capacity to respond to research needs emerging through PHE's work.

**PHE will: continue its strong support for the NIHR HPRUs both to achieve evidence for PHE actions and to build research capacity, capability and excellence, leveraging the initial investment**

**Measures of success:**

1. The number of high quality papers published and postgraduate students supervised in NIHR HPRU projects with PHE staff as named authors or supervisors.
2. Evidence of impact on public health nationally and internationally.
3. Other markers of research esteem gained by PHE staff, eg invited keynote presentations at major conferences, review articles, journal editorships or leadership of subsequent major initiatives.
4. Leverage of the NIHR investment in HPRUs through external research funding achieved by PHE.

**Significant networks, eg NIHR School for Public Health Research; NIHR School for Primary Care Research; NIHR School for Social Care Research; Collaborations for Leadership in Applied Health Research and Care (CLAHRCs); Academic Health Science Networks (AHSNs)**

The NIHR schools are nation-wide networks of university members with significant experience of research relevant to the health and care system. Their emphasis on translational research and innovation or 'what works practically' makes them important partners for PHE, the NIHR School for Public Health Research (SPHR) in particular. The schools enable access to senior investigators with significant experience of leadership and commitment in many topics across public health for which evidence, and the use of evidence is essential. The NIHR SPHR is strongly engaged locally and so offers a supportive infrastructure to complement the geographical reach of PHE and its local authority partners. That engagement includes involvement in a number of CLAHRCs. The AHSNs are designated as 'system integrators' across public and private health sectors to align various pathways towards improved health outcomes, including the adoption of new technologies. Further development of a focus on illness prevention among AHSNs, and progress in the application of technology to public health, eg digital health technologies, should yield future opportunities for beneficial engagement, including wealth-creation aspects such as product development.

**PHE will: add value to networks of significant external partners who share a commitment to using research and evidence to improve health outcomes**

**Measures of success:**

1. Number of projects underway involving PHE and member(s) of NIHR Schools, CHLARCs and/or AHSNs.
2. Number of projects involving PHE and network partners working with local authorities.
3. Recognition as a valued participant in AHSN initiatives.
4. External income realized by PHE through engagement with networks.

**Access to dedicated expertise and resources to undertake studies, eg clinical research networks (CRNs), clinical trials units (CTUs), specialist laboratory facilities, equipment and staff, expertise including statistics, data analysis, health economics etc**

The diversity of PHE's scientific services and research requires provision of, and access to, highly specialized physical and human resources and continual investment in their maintenance and upgrading. Nonetheless, to meet the health protection from chemical, biological, radiation or natural hazards and scientific/technological advances, the necessary facilities or skills are not always available in-house in appropriate time-scales. Many other organisations face similar challenges so it is both efficient and expedient to establish ongoing arrangements for mutual access and collaboration.

**As part of the UK's response to the 2014 to 2015 Ebola outbreak in West Africa, research and translation by PHE helped to characterize the virus at genomic level and develop vaccines. That was possible only with laboratory facilities of the highest safety and containment level, specialist scientific expertise and experience of working successfully in global networks.**

Consistency in the availability and quality of physical or staff resources and expertise is essential for high quality, cost-effective research. Major investment by NIHR in CRNs, CTUs and other research support services, and investment by a range of other funders, is of significant value to PHE's work in aspects of infectious disease, including immunisation. PHE has a significant experience of conducting, and working with others on, clinical trials that inform government policy on immunisation for illnesses that include influenza, TB and a wide range of childhood immunisation programmes. There is an opportunity to formalise arrangements and resources, ensuring that PHE plays a full part in the Infectious Diseases and Microbiology Specialty of the NIHR CRN.

As a major step-up in its scientific capability, PHE has planned its Science Hub as a significant development over the next decade. Opportunities to advance research are envisaged together with support for economic development, engaging the private sector. The proposed greater involvement in existing networks, including AHSNs in many parts of the country, will advantage PHE's aspirations.

**PHE has submitted an outline business case to government to develop a Public Health Science Hub with a preferred location of Harlow, in Essex between London and Cambridge. The ambition is that The Hub will be a centre for most of PHE's national scientific functions bringing together expertise into a single location, strengthening our scientific functions and research base. The Hub will work closely with a series of nodes across the country enabling a nation-wide network of research-active practitioners, drawing on the national centre of expertise and specialist facilities.**

Expertise that exists and is being developed both in-house and with academic and policy partners includes behavioural insights and health economics. Such expertise facilitates innovation by informing decisions about implementing novel, cost-effective interventions. The availability of relevant, scarce expertise also attracts investment from the private sector and contributes to economic development.

**PHE will: invest in, deploy and share sophisticated research facilities, equipment and expertise**

**Measures of success:**

1. Return on investment in PHE's own research facilities, equipment and expertise.
2. Number of projects undertaken by PHE, alone or with partners that involve NIHR CRN.
3. Number and success rate of research proposals involving PHE that include CTU support.
4. Step-up in research activity as the Science Hub is realised.
5. Evidence of impact on policy, practice or product development.

**Health, care and other population-based datasets/linked data**

The UK has an exceptional wealth of health datasets and considerable work underway, by a range of organisations, to maximize the value of these assets for research to benefit people, services and the economy. Responsibility for the datasets lies with a number of organisations that include PHE and other principals:

- the Health and Social Care Information Centre (HSC IC)
- Clinical Practice Research Datalink (CPRD)
- NIHR Health Informatics Collaborative (NIHR HIC)

Ongoing collaboration among these organisations aims to create shared processes and IT infrastructures. This work will also engender trust among the potential users about the accessibility and quality of the data and among the public about the robustness of confidentiality and governance arrangements. PHE has integrated and developed single, national disease registries, initially in cancer and congenital anomalies, deploying significant resources and expertise that will also be applied to additional

disease and treatment areas. An Office for Data Release has been established to respond to requests from researchers, operating within an appropriate data governance framework. PHE must be acknowledged in any ensuing publications or presentations. The development of mutually beneficial arrangements for data sharing with statutory holders of data, including the Health and Social Care Information Centre (HSC IC), continues apace.

For its core functions of collating and analysing data and information from across the (public) health and care system and making it available to health and care provider organisations, PHE recruits and develops staff with deep and broad expertise in statistics and data analysis. These staff add value to the data that may be accessed for research. Significant advantages for research are also enabled through routinely collated, population-level datasets. When appropriate, specific data sets may also be linked with those managed by the Office of National Statistics.

#### **Current major PHE data assets:**

- **national registers – cancer, congenital anomaly and rare diseases**
- **clinical audit data**
- **data from screening programmes – cancer, vascular disease, antenatal and new born disease, diseases in childhood**
- **microbiology laboratory data**

Future opportunities for PHE and for academic researchers include partnerships with major UK investments in data science expertise and IT capability.

Using routinely-collected data, PHE works with researchers at many institutions nationally and internationally on the Global Burden of Disease (GBD) initiative. Its application to understanding the burden of disease and disability across regions of England is highly innovative and will contribute to the support provided to local authorities.

**PHE will: continually enhance the efficiency of data provision for research, add value to data resources and work with partner organisations towards the same goals**

#### **Measures of success:**

1. The number of quality research publications enabled by data shared by PHE.
2. The number and achievements of partnerships between PHE and major data science initiatives (funded projects, successful postgraduate training, publications and impact on policy or practice).

## Research governance support

It is important that researchers receive clear, consistent messages on how to achieve good governance for their proposed project. For public health, studies capable of supporting policy or practice, nationally or internationally may be clearly recognisable as research or may straddle the boundaries with related activities such as service evaluations.

PHE is working closely with the Health Research Authority (HRA) that was established to protect and promote the interests of patients and the public in health research and to streamline the regulation of research. The HRA ensures that health research is ethically reviewed and approved, including the provision of information so that people can make an informed decision about whether to participate or not. This helps to build public confidence in health research.

To support research led by PHE staff, a Research Governance Review Group has been established with an independent chair and membership that includes HRA and lay people. The remit of the group is to review PHE-led research and service evaluation proposals that involve human participants, their data and/or their tissues, advising on appropriate routes to ethics review and conformity with relevant legislation including, but not limited to, that covering data protection, confidentiality, freedom of information, the Human Tissue Act and applicable regulatory standards such as 'good clinical practice'. As much research in PHE involves academic partners, processes of a collaborating university may be an appropriate route to good governance so such solutions will be recognised. The Group will also advise on whether PHE should act as sponsor for particular studies.

A register of studies involving PHE will be maintained to provide assurance that all research meets the necessary governance standards to minimise risks to the organisation, to its staff as investigators and to people who consent to be study participants.

**PHE will: work with partner organisations to ensure effective, efficient governance arrangements for research and related activities**

### Measures of success:

1. Researchers in PHE receive efficient, authoritative advice on the pathways to ensuring good governance.
2. PHE has clear, timely reports on governance arrangements for all projects that involve its staff, facilities or resources.
3. PHE has clear, timely reports on its commitments as a research sponsor.

## Priority Three

**Capacity** – support development of public health research capacity in PHE and elsewhere and inspire public health research careers

### Objectives:

1. Embed development of research capabilities and leadership in workforce development initiatives.
2. Support academics in public health through engagement with PHE.
3. Provide career-long research training for public health researchers.

### Embed research in workforce development initiatives

The size and diversity of the public health workforce requires concerted action to ensure sufficient commitment to research and prevent the loss of valuable expertise. PHE, universities, research funders and professional organisations each have parts to play. Support must be available at all career stages. PHE supports many workforce initiatives and it is important that there is adequate focus on research skills, including research management and leadership.

Health Education England (HEE) has set out its Research and Innovation strategy<sup>8</sup>. It advocates whole-system cultural change in doing and using research and innovation, scoping and accessing best practice in research training and developing a multi-professional research careers framework. To achieve its aims, HEE will work with health, and care sector partners as well as universities, much the same as those indicated throughout this PHE strategy. Thus HEE will be a key partner for PHE, working together and with others to apply its vision and framework to research careers in public health.

PHE has set out its Public Health Workforce Strategy that includes a focus on research, consistent with that in the HEE Research and Innovation strategy. Actions being taken forward include improving the co-ordination of existing support and resources; supporting academic PH through specialty training; facilitating the entry of PH staff into research and research career development.

The European Commission offers a range of programmes for individuals and institutions for short-term and longer-term staff exchanges with EU and other countries. These help to stimulate research and innovation through training and acquisition and dissemination of skills and expertise. While the UK is extremely active in such programmes, to-date PHE has been minimally involved. Increased participation can be highly beneficial both to the organization and to individual staff.

**PHE will: have a clear view and action plan to support research in careers in public health**

### **Measures of Success**

1. Completion of an organisation-wide scoping exercise.
2. Staff in PHE can access support for research training and performance at all career stages.
3. PHE participates in EU-funded researcher training and mobility programmes.

### **Support academic public health**

PHE has established a nationwide Academic Public Health Research Support Network, based largely upon the holders of honorary contracts from PHE. Oversight of the contributions made by contract holders includes input to their job planning and appraisal, working alongside their academic managers. The roles and responsibilities of institutions that employ the honorary contract-holders have now also been formalised through collaborative agreements.

An overview of the areas of expertise covered by holders of honorary contracts is now possible following a mapping exercise. This enables PHE staff to access the necessary support for particular functions. Gaps in the current expertise can also be identified and action taken to identify suitable academics. Annual network events for honorary contract holders enable closer engagement with PHE, raising mutual awareness of relevant topics.

Much academic expertise of value to PHE is in disciplines where individuals typically do not hold honorary contracts so future partnership development will extend into all academic disciplines relevant to specific PHE programmes of work.

The outcomes of the 2014 UK Research Excellence Framework (REF 2014) demonstrated strength, depth and relevance in public health research activity, and improvements relative to the previous REF (2008), in many universities around the UK. Combining this with the geographical dispersal of PHE and its local authority partners provides a sound basis for local research development. Such development would enable a focus on locally-relevant research questions, but with research quality sufficient to compete for funding nationally or internationally. Funded research projects would enhance the recruitment and retention of research staff, development of research expertise and opportunity for research to inform practice and services throughout the country. Integration into a national network would help to ensure a flow of robust, generalizable findings to stimulate innovation in other locations.

**PHE will: maintain and extend its Academic Public Health Research Network**

### **Measures of success:**

1. Number of holders of PHE honorary contracts who are involved in research with PHE.
2. Number and value of research projects involving PHE and local authorities with local universities.
3. Evidence of increased flow of research findings into local public health interventions.

### **Career-long research training for public health researchers**

Research training supported by PHE currently involves funding of PhD studentships through competitive selection of projects led by PHE researchers, normally with academic partners. In many cases, project leads secure matched, or partial, funding of the studentships from external sources – essential given the small size of the PhD funding resource. Most studentships are held in scientific (laboratory) positions and are undertaken by full-time students, recruited openly, who register with a partner university. While that programme is important to attract highly able graduates into public health research, the modes and topics of study need to be broadened to provide opportunities for other disciplines and individuals.

A positive driver for change is the wish among some individual staff to pursue postgraduate research awards of benefit to PHE as well as their own careers. It is appropriate for the organisation to encourage and support motivated individuals, to help them undertake study and research training on topics of benefit to PHE's remit and to vary their workload to facilitate study.

New opportunities might include:

- increased range of PHE disciplines funded to offer PhD projects.
- supported part-time doctoral study, including opportunities for existing PHE staff.
- support for professional doctorates.
- a formal research training framework with modules offered by PHE alongside academic partners, appropriate to postgraduate, post-doctoral and more advanced research stages.

While the individual student in training is necessarily the focus of a PhD supervisory team, teams that include both PHE and university staff with a range of expertise and experience can enable productive mutual learning and acquisition of skills across the wider team.

Opportunities to learn about other research activities, to celebrate research achievements and to gain experience in presenting research findings are organised by PHE for its PhD students. It is important that such offerings embrace all those working towards postgraduate research awards, whether supported through PHE's own PhD scheme or otherwise

PHE's desire to engage more substantially in the health research ecosystem, including success in competition for major funding, requires enhanced capability and capacity for research leadership and management. This focus has been a core feature in developing the strength of UK clinical research, particularly through NIHR support. PHE will work to develop opportunities for senior staff to participate in such programmes.

**PHE will: extend the range of research training opportunities across different areas of PHE and different career stages**

**Measures of success:**

1. Number of full-time and part-time research students who spend a substantial proportion of their programme in PHE, including PHE staff.
2. Number of PHE staff who are involved in doctoral student supervision.
3. A well-subscribed programme of internal and external research training available to all full-time and part-time PHE research students and staff.
4. Number of PHE staff who participate in training for research leadership.

# Priority Four

**Innovation – accelerate translation of research into policy and practice in public health and commercial products**

## **Objectives:**

1. Develop a PHE model for translation of evidence into policy or practice.
2. Develop a PHE process to enable robust evaluation of public health interventions.
3. Work with partner organisations and the private sector to support economic development.

## **Develop a PHE model for translation of evidence into policy or practice**

A wealth of research relevant to public health is underway in the UK and globally and the existing literature is extensive. Different studies have been consistent in showing a considerable lag-period - some 17 years - between the initiation of research and the uptake of findings into policy or practice. A great diversity of robust findings from public health research can be drawn upon when designing innovative policies or interventions, but the many sources of possibly useful evidence also create complexity.

For the REF 2014, participating universities submitted case studies to demonstrate how their research made an impact on society, eg on policy or practice. Universities also set out strategic commitments to build future impact. PHE is an excellent conduit to achieving impact for universities because of its growing ability to use evidence to deliver programmes, its proximity to local authorities and its remit to advise government on evidence.

The translation of research findings into policy or practice is in itself a major source of enquiry in many countries. Disciplines such as implementation science have developed in scope and methodologies though their predominant focus is on clinical care. Nonetheless various health/care systems globally have progressed evidence translation approaches to benefit their public health services. It is extremely important for PHE to identify and engage with exemplars of best practice internationally.

**PHE will: establish in-house and partnership support systems for successful innovation by translating evidence into policy or practice, learning from best practice nationally and internationally**

## **Measures of success:**

1. Adoption of a 'PHE Evidence Translation Model'.
2. Number of PHE or local authority public health interventions developed or amended by translation of research evidence.

3. Number of impact case studies involving PHE that will be developed for university submissions to the next REF, in 2020.

### **Develop a PHE process to enable robust evaluation of public health interventions**

The development of novel interventions must be accompanied by robust evaluation frameworks. The outcomes of evaluations then inform decisions on future redevelopment or refinement of the interventions and their cost-effectiveness. The NIHR School for Public Health Research (SPHR) has developed a highly innovative programme – the Public Health Practice Evaluation Scheme (PHPES), that selects local authority-delivered interventions, matches them with appropriate academic expertise from among its member institutions, and supports a two-year evaluation. The initiative also adds value by surrounding each ongoing evaluation with a learning network to disseminate evaluation expertise.

Despite the relevance and excellence of the PHPES, there is capacity to deliver only a small number of evaluations annually. PHE will develop in-house support for evaluations, corralling a range of known expertise and working closely with the developing health economics programme.

Major research funders, specifically NIHR and MRC in addition to a range of charities, have specific schemes dedicated to the implementation of findings and their evaluation. These schemes will be targeted by PHE, alone and with academic partners.

**PHE will: contribute to effective decision-making by providers of public health interventions through robust evaluation of public health programmes**

#### **Measures of success:**

1. Adoption of a 'PHE Intervention Evaluation Process'.
2. Number of successful evaluations of interventions in line with the PHE process.
3. Number of successful PHPES evaluations where there is PHE involvement.

### **Work with partner organisations and the private sector to support economic development**

PHE has a diversity of resources, expertise and assets – whether biological materials such as cells or microorganisms or datasets – that can add significant value to commercial enterprises. Many successes have been achieved and income realised for the organisation by investing in research activities and enhancing the delivery of routine PHE services.

In the digital sector, innovation in personal and population health monitoring, eg of behaviours such as physical activity to prevent illness, is driving commercial innovation and development. The precise shape or success of future business models is yet

unclear. For PHE there are opportunities to integrate novel digital capabilities into public health research programmes and to support decision-making about their deployment by providing evidence from research and evaluation.

The proposed enhanced interaction with AHSNs will facilitate engagement with the private sector and facilitators of innovation.

**PHE will: enhance its track record and profile in the translation of research evidence into commercial opportunities**

**Measures of success:**

1. Number of innovative products based on research evidence from PHE.

## Priority Five

**Communication** – communicate widely and openly about how research is contributing to improving and protecting health and wellbeing and reducing health inequalities

### Objectives:

1. Lead and contribute to evidence-based public health narratives, nationally and internationally.
2. Enhance the accessible, public profile of PHE's Research, Translation and Innovation functions and achievements.

### **Lead and contribute to evidence-based public health narratives, nationally and internationally**

Already PHE communicates widely about its research, most notably via authorship of some 1,000 articles annually in the scientific literature as well as many other evidence-led reports, guidelines, briefings etc, but this excellent productivity must be accompanied by communication of research expertise and potential more widely within PHE and the wider public health research system, to potential research partners and users of research and to the public. The re-development of PHE's own digital communication channels (intranet and internet) present an opportunity as does the dissemination of many types content via social media, including supported professional networks.

Part of PHE's remit is to provide evidence-led advice to government. By developing research questions based on evidence gaps, using the findings from subsequent research and highlighting the contributions of the research, PHE would be well-placed to ensure that high quality, authoritative advice is communicated. This is also a route to impact on policy-making. Again, this underlines the value of PHE in mobilizing evidence from research.

Components of a national dialogue in public health research are woven through this strategy. PHE will engage with academic, professional, government, local authority and other public and private sector opinion-leaders and publish its views, as appropriate, through conventional and digital channels. Relevant topics would include:

- research priorities and questions
- research infrastructure and other funding opportunities
- translation of evidence from research into public health policies and practices
- economic value of public health research
- value and impact of evidence
- involvement and engagement of people, patients and communities

**PHE will: maintain a dialogue on public health research, organising, participating in and contributing to discussion for a nationally and internationally**

**Measures of success:**

1. Enhanced profile for PHE as a reliable source of high quality, evidence-led publications/products.
2. Internal and external communications of strength and achievements in research and related activities.

**Enhance the accessible, public profile of PHE's Research, Translation and Innovation functions and achievements**

A PHE directory of expertise will be compiled, focussing primarily on research expertise, and made publicly accessible.

Many staff of PHE hold dual affiliations, eg PHE and academic institutions. It is important always to detail PHE involvement when authoring any publications. This drives the profiling of PHE's activities and outputs, particularly through digital literature searching or content extraction, helping to increase the rate of citation of PHE staff publications and the wider use of research findings.

A review of PHE's research, translation and innovation activities will be undertaken and published annually to illustrate the value to public health, contributions to income and workforce and impact on public health research more widely.

**PHE will: publish annual reviews of PHE's research, translation and innovation activities**

**Measures of success:**

1. External use of a PHE directory of expertise.
2. Reports published of annual reviews of PHE Research, Translation and Innovation.

## Implementation

This strategy has set out the principal actions that will be taken by PHE and how success will be measured.

To advise and support its implementation, an External Advisory Board (EAB) will be established. Chaired by a non-executive member of PHE Board with significant research experience, the EAB will include research leaders from academia and the wider public health sector in the UK and internationally, senior members of staff with research responsibility from public sector organisations with analogous responsibilities to those of PHE and members of the public. The Board is expected to meet annually to review achievements and support future progress. The Board will make recommendations to the Deputy Director for Research, Translation and Innovation in addition to a report to PHE's chief executive.

Within PHE, an organisation-wide group (currently titled PHE R&D Group) will agree specific metrics with each PHE directorate/major research groupings and monitor their achievements. Where appropriate, the Group will advise on actions or initiatives that might accelerate progress and support the deputy director for research, translation and innovation to implement these.

# Annex A

## NIHR Health Protection Research Units

NIHR HPRU	Themes
Environmental change and health	Climate resilience Healthy sustainable cities Health and the natural environment
Health impact of environmental hazards	Epidemiological assessment of low-level environmental exposures Modes and mechanisms of chemical toxicity Health impact of low dose non-ionising and ionising radiation Health impacts of noise and air pollution including nanoparticles
Emergency preparedness and response	Wellbeing during and after a major incident The behavioural impact of emergency communication Syndromic surveillance for early detection of incidents The evidence base for risk assessment and risk reduction The operational effectiveness of skin decontamination in exposure to toxic chemicals Biomarkers in detection and triage Enhancing emergency preparedness through improved exercises/training
Chemical and radiation threats and hazards	Health effects of medical radiation exposures Skin and barrier function in radiation and chemical exposures Chemical exposures and the development of primary biliary cirrhosis Acute and chronic chemical exposure and neurological and psychiatric disorders
Emerging infections (incl. zoonoses) and biological threats	Risk assessment of emerging and zoonotic threats Epidemiological approaches Clinical surveillance Pathogen discovery and characterisation Vector biology and climate modelling
Immunisation	Vaccine effectiveness and safety, disease burden and equity in health using linked electronic health records Systematic reviews, modelling and cost effectiveness Policy, communications, implementation and vaccine acceptability
Respiratory infections	Influenza surveillance, severity/pathogenesis Influenza immunology and virology TB surveillance, screening and diagnostics Acute respiratory infections Respiratory syncytial virus

NIHR HPRU	Themes
Gastrointestinal infections	People: exploring socio-economic and behavioural factors in GI infections Tracking disease in the population: developing novel methods for disease surveillance and outbreak investigation Pathogens: exploiting recent advances in genomics Places: elucidating the role of environment in GI disease outbreaks Pathways: understanding transmission of GI infection to and between people The microbiome: the role of microbial communities in GI infections
Blood-borne and sexually transmitted infections	Understanding risk and risk reduction for STIs and BBVs Reducing the burden of undiagnosed STIs and BBVs Improving the care and management of people with STIs and BBVs
Healthcare associated infections and antimicrobial resistance	Applied molecular bacteriology Applied data linkage, syndromic surveillance and modelling Innovations in behaviour change, technology and patient safety to improve infection prevention and antimicrobial use Organisational change, sustainability and evaluation
	Improved data linkage, surveillance, data analysis and modelling Translation of pathogen genome sequencing Interventions, assessment and delivery
Development of modelling methodology	Respiratory infections, HIV and sexually transmitted infections Emerging threats Behavioural science and health economics Integrated genetic and epidemiological analysis informatics, Platforms and software Tools, training and capacity building
Evaluation of interventions	Economic evaluation and modelling Population studies Primary care Evidence synthesis Behavioural science

## Annex B

### References

1. From evidence into action: opportunities to protect and improve the nation's health (2014)  
[www.gov.uk/government/publications/from-evidence-into-action-opportunities-to-protect-and-improve-the-nations-health](http://www.gov.uk/government/publications/from-evidence-into-action-opportunities-to-protect-and-improve-the-nations-health)
2. Five Year Forward View (2015)  
[www.england.nhs.uk/wp-content/uploads/2014/10/5yfv-web.pdf](http://www.england.nhs.uk/wp-content/uploads/2014/10/5yfv-web.pdf)
3. PHE Knowledge Strategy (2014)  
[www.gov.uk/government/publications/knowledge-strategy-harnessing-the-power-of-information-to-improve-the-publics-health](http://www.gov.uk/government/publications/knowledge-strategy-harnessing-the-power-of-information-to-improve-the-publics-health)
4. Best Research for Best Health: A new National Health Research Strategy (2006)  
[www.gov.uk/government/publications/best-research-for-best-health-a-new-national-health-research-strategy](http://www.gov.uk/government/publications/best-research-for-best-health-a-new-national-health-research-strategy)
5. Research Changes Lives  
MRC Strategic Plan 2014-2019  
[www.mrc.ac.uk/news-events/publications/strategic-plan-2014-19](http://www.mrc.ac.uk/news-events/publications/strategic-plan-2014-19)
6. Social Science Shaping Society  
ESRC Strategic Plan 2015 [www.esrc.ac.uk/\\_images/Strategic\\_Plan\\_2015\\_tcm8-33418.pdf](http://www.esrc.ac.uk/_images/Strategic_Plan_2015_tcm8-33418.pdf)
7. UK Health research Analysis 2009/10  
UKCRC 2012  
[www.ukcrc.org/wp-content/uploads/2014/06/2UKHealthResearchAnalysis-1.pdf](http://www.ukcrc.org/wp-content/uploads/2014/06/2UKHealthResearchAnalysis-1.pdf)
8. Research & Innovation Strategy: Delivering a flexible workforce respective to research and innovation  
Health Education England (2014)  
<http://hee.nhs.uk/wp-content/uploads/sites/321/2014/05/HEE-RI-strategy.pdf>
9. Going the extra mile: improving the nation's health and wellbeing through involvement in research' (2015)  
[www.nihr.ac.uk/get-involved/Extra%20Mile2.pdf](http://www.nihr.ac.uk/get-involved/Extra%20Mile2.pdf)

## Annex C

### Glossary of acronyms

AHSN	Academic Health Sciences Network
CASP	Critical Appraisal Skills Programme
CLAHRC	Collaboration for Leadership in Applied Health Research and Care
CPRD	Clinical Practice Research Datalink
CRN	Clinical Research Network
CTU	Clinical Trials Unit
DH	Department of Health, England
DH HRP PRUs	DH Health Research Programme Policy Research Units
ESRC	Economic and Social Research Council
GBD	Global Burden of Disease
HEE	Health Education England
HSC IC	Health and Social Care Information Centre
HRA	Health Research Authority
JLA PSP	James Lind Alliance Priority-Setting Partnership
MRC	Medical Research Council
NIHR	National Institute for Health Research
NIHR HPRU	NIHR Health Protection Research Unit
NIHR SPHR	NIHR School for Public Health Research
NOCRI	NIHR Office for Coordination of Clinical Research Infrastructure
PHE	Public Health England
PPI/E	Patient and Public Involvement and Engagement
UKCRC	UK Clinical Research Collaboration

## Annex D

Development of this strategy included extensive engagement with public health research, practice and academia within PHE and externally and a 12-week public consultation (December 2014 to March 2015).

Summary of comments provided through the public consultation:

### Topics

<b>Partnership</b>	Wide range of potential partnerships across the sectors requires further exploration and clarity, ie PPI; HEIs: NHS, professional bodies and voluntary sector as partners. Transparency over PHE's role and leadership, relationship between national/local.
<b>Co-production</b>	Build on what is already there; nature of international scope; PH broader than PH specialty
<b>National/local</b>	Build on existing local research; Links to 'place-based' PH; access to data and intelligence at local level
<b>Language, terminology, clarity and structure</b>	Lack of clear definitions; challenges section not set out clearly, or differentiated from 'aims'; needs explanatory text or link between 'opportunities' and 'challenges' in relation to strategic priorities; need clear and realistic goals; needs clear framework; how will outcomes be measured?; build on what is already known and invest where there is an identified gap
<b>Wider knowledge cycle and translation</b>	Less focus on 'primary' research; links between research and practice; identify uncertainties; avoid centralisation of expertise in data and statistics; access to and use of research
<b>Evaluation</b>	Need for robust evaluation methodologies and research outputs; need for evaluation research to be recognised in HEI metrics; need for evaluation research strategies at national level
<b>Workforce</b>	Better co-ordination of existing support and resources; role of PHE in supporting academic PH through specialty training; more detail needed on how PHE will support academic PH given current resource constraints; need 'entry' points for PH research careers; clarify scope of PHE in research career development
<b>Funding</b>	Role of PHE in funding research; funding incentives, and issues for PH academic research; collaboration on research priorities and funding; visibility of research funding opportunities; visibility

of research funded and progress

**Scope**

Scope of PHE role: leadership; role of PHE re technologies; need to broaden disciplines relating to wider determinants; access to data; role in addressing cultural perspectives; prioritisation and funding

**Pathway/model  
(These comments relate  
to the knowledge cycle  
that is included in the  
PHE knowledge  
strategy)**

Clarify relationships within model; add detail to aid clarity for all partners; consider existing models; add step to relate to priorities; overcomplicated and doesn't flow; Incorporate a reflexive loop; develop a shared narrative

## Annex E

The following individuals and organisations external to PHE provided comments on this strategy through the public consultation:

Academy of Medical Sciences

Alzheimer's Research UK

Animal and Plant Health Agency

Association of Directors of Public Health

Asthma UK

British Association for the Study of Community Dentistry

British Heart Foundation

Cancer Research UK

City of York Council

College of Occupational Therapists

Cornwall Council

Council for Allied Health Professionals Research (CAHPR)

Durham University, Professor of Health Policy and Management, and Director  
Centre for Public Policy and Health

Food and Environment Research Agency

Keele University, Research Institute for Primary Care and Health Sciences

King's College London, Department of Primary Care and Public Health Sciences

Lincolnshire County Council

Newcastle University, Institute of Health & Society

National Institute for Biological Standards and Control, Director

National Institute for Health and Care Excellence

NHS England, Pandemic Influenza Resilience Manager

NHS R&D Forum Primary Care Working Group

NIHR Public Health Research Programme, Director

Research Councils UK

Society and College of Radiographers

The PHG Foundation

The Society and College of Radiographers

UCL School of Life and Medical Sciences

University of Birmingham, CLAHRC-WM

University of Cambridge: Cambridge Institute of Public Health, the Cambridge Public Health Network and Cambridge Infectious Diseases University of Nottingham, Associate Professor and Consultant in Public Health

University of Manchester, Director of the Institute of Population Health

University of Nottingham, Associate Professor and Consultant in Public Health

University of Warwick Medical School, Public Health academics

Warrington Local Authority, Public Health Team