Public Health England

Knowledge strategy

Harnessing the power of information to improve the public's health

About Public Health England

Public Health England's mission is to protect and improve the nation's health and to address inequalities through working with national and local government, the NHS, industry and the voluntary and community sector. PHE is an operationally autonomous executive agency of the Department of Health.

Public Health England
133-155 Waterloo Road
Wellington House
London SE1 8UG
Tel: 020 7654 8000
www.gov.uk/phe
@PHE_uk

Prepared by: James Freed, Robert Kyffin, Jem Rashbass, Sam Organ, Paul Boseley, Antony Haworth, Anne Brice, Jurgen Schmidt, Julian Flowers, Don Sinclair, Andrew Hughes, Anthony Kessel, Elizabeth Coates, Adrian Davis, Sue Baughan, David Chappel, Margaret Mauchline, Natasha Roberts, Rebecca Kemp, Alison Hill and Chris Carrigan

© Crown copyright 2014
You may re-use this information (excluding logos) free of charge in any format or medium, under the terms of the current Open Government Licence. To view this licence, visit OGL or email 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 james.freed@phe.gov.uk.

Published June 2014
PHE publications gateway number: 2014119
This document is available in other formats on request. Please email james.freed@phe.gov.uk

Contents

About Public Health England 2
Foreword 4
Executive summary 5
Principles 12
Metrics of success 15
What environment are we working in? 16
Identifying needs and issues 17
Ambition 17
Approach 17
Knowledge generation and management 20
Ambition 20
Approach: Knowledge from data 20
Approach: Knowledge from research 26
Approach: Knowledge from experience 28
Translating knowledge into action 30
Ambition 30
Approach: Changing behaviours 31
Approach: Development, delivery and improvement of knowledge products 31
Approach: Knowledge management 35
Approach: Knowledge networks 37
The role of digital 40
Ambition 40
Approach 40
Next steps 41

Foreword

Public Health England is a knowledge organisation. Our success depends on our ability to provide independent, expert advice to government and the public, and encourage and support those able to take the actions needed to make a real difference to the public health in England. We can only do this if we constantly add to the knowledge base and continually look for better ways to share knowledge to encourage and support people to take the right actions and make the right choices where they can about their health. In addition we have a public duty to provide this service in as cost-effective a manner as possible.

PHE aims to deliver an internationally respected, high performing knowledge and intelligence service that encompasses research, statistics and know-how. Our main aim is to ensure that decisions we all make about our personal health, and the health of the population more widely, are based on the best information available and deliver the best possible outcomes. *Informatics: the future*[1], gives PHE the lead responsibility for informatics for the whole of the public health system. This document sets out the means by which PHE intends to discharge this responsibility, within the context of the Department of Health's information strategy, *The Power of Information*[2].

I am extremely proud to lead this strategy, which describes PHE's vision for the management of public health knowledge and the approach we are taking to realise it. It has been constructed around a knowledge cycle, encompassing the generation and sharing of knowledge alongside a better understanding of our partners' and stakeholders' needs and our commitment to work both effectively and efficiently. Taken together, the approach described in this strategy will inform and support public health practice at the national and local level, and help drive improvements in the public's health.

The formation of PHE has brought together a critical mass of public health expertise, but PHE is not the only place where public health expertise can be found. Put simply, we cannot do this alone. Through activities described in this strategy we will work with our partners in local and national government, the NHS, the wider public sector, industry, academia, charities and from overseas. For that reason I hope you, the reader, will see this document as a starting point and I hope it clearly articulates PHE's ambition for public health and how we intend to get there. Most of all, I hope you feel able to join us for the journey.

Professor John Newton
Chief Knowledge Officer, PHE

[1] **https://www.gov.uk/government/publications/informatics-the-future**
[2] **https://www.gov.uk/government/publications/giving-people-control-of-the-health-and-care-information-they-need**

Executive summary

This document describes the strategic approach to information and knowledge that the public health system needs to take in order to improve and protect public health and reduce inequalities. It is a response on behalf of the whole public health system, under the leadership of PHE, to the Department of Health information strategy, *The Power of Information: Putting all of us in control of the health and care information we need*. The Knowledge Strategy was developed following an extended and open consultation process and incorporates responses from local government, national organisations and key partners.

This strategy describes how PHE will meet the knowledge and information requirements of practitioners across the wider public health system. The audience for this document is therefore broad and diverse. It will have an impact on the way the wider public health workforce operates and provides the means to increase the engagement with those who would not traditionally consider themselves public health practitioners.

Taking the lead from *The Power of Information*, this strategy does not propose specific system implementations or set down detailed mechanisms for delivery. It provides a framework to support changes across the public health system, putting the focus on users of knowledge, and promoting flexibility and innovation within an environment that promotes efficiency.

The strategy addresses the entire knowledge lifecycle from understanding the requirements of those who use public health knowledge, including those outside the public health profession who ought to be using it, through to the technologies that PHE will use to help disseminate knowledge.

Taking account of all the work required to increase the speed and efficiency with which we get round the knowledge cycle, this strategy identifies a series of actions and activities needed over the next five years in the form of six key commitments.

Commitments

1. **Support openness and innovation**. PHE will develop an infrastructure to promote the sharing of ideas, data, techniques, tools and knowledge. It will support innovation through the adoption of a culture of openness, giving staff the time, permission and resources to experiment. This innovation will be shared so others can benefit and public health workers outside of PHE will be supported to contribute and share.
2. **Understand and meet public health requirements for knowledge**. PHE will take a systematic approach to understanding user needs, both internal and

external, including developing the public health workforce. A key measure of our success will be around our ability to meet these needs.

3. **Provide the tools to let public health professionals do their jobs**. PHE will enable the development of high quality services, data sets and tools and make them accessible for use across PHE and the whole public health system. This will include a common approach to methods, standards and policies to ensure standardisation and consistency wherever appropriate. . PHE will support data management activities across the public health system by supporting the linking of data sets and routinely publishing open, anonymised data publicly wherever it can.
4. **Develop cross-system networks, tools and services to share intelligence, expertise and experience**. PHE will coordinate the creation and development of intelligence networks to deliver data, information, best practice, evidence and predictive models to support decision making, working closely with the Strategic Clinical Networks and other partners. PHE will commit to connecting people across the public health system to support the sharing of experience. This will be enabled through the use of knowledge dissemination activities, events, collaborative software projects, the development of communities of practice, skills and expert directories and a glossary.
5. **Work with others efficiently**. PHE will seek to work in partnership and with a view to co-producing outputs, tools and services with external bodies and agencies such as the National Institute for Health and Care Excellence (NICE), NHS England, as the Health and Social Care Information Centre (HSCIC), the Office for National Statistics (ONS), Health Education England (HEE), the Local Government Association (LGA) as well as specific local authorities (the director of public health, their team and others), the NHS and others to work to its strengths and delegate where another body can perform the same task better.
6. **Ensure everything we do has a positive impact and provides value for money**. PHE will pay special attention to the translation of the knowledge it generates into direct public health benefit, either directly or through partners such as local government. PHE will always seek to measure the value and impact of the knowledge products it publishes.

The delivery of the knowledge strategy encompasses and is further described by the following strategies and frameworks:

The PHE Digital Strategy which will describe how PHE will meet user and government expectations and make the best use of technology to protect and promote health and reduce inequalities.

The National Health Surveillance Strategy for England which will agree standards for surveillance programmes and a plan for their implementation, identify gaps in the

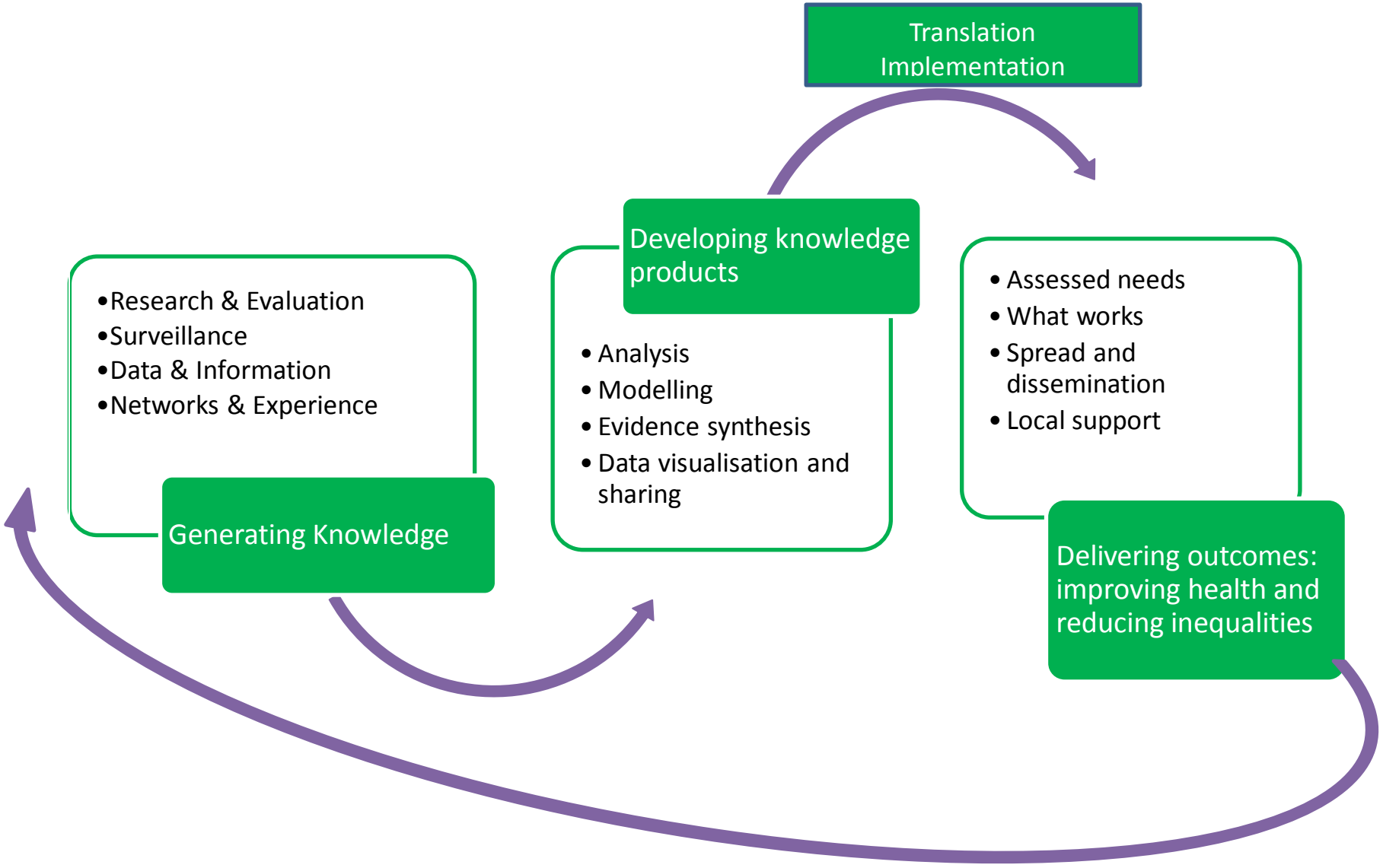
current provision of surveillance systems and make our outputs accessible and responsive to local needs.

The PHE Research and Academic Strategy which will baseline existing activity, identify priorities across public health and organise resources, in PHE and elsewhere to deliver a coordinated and integrated approach to public health research.

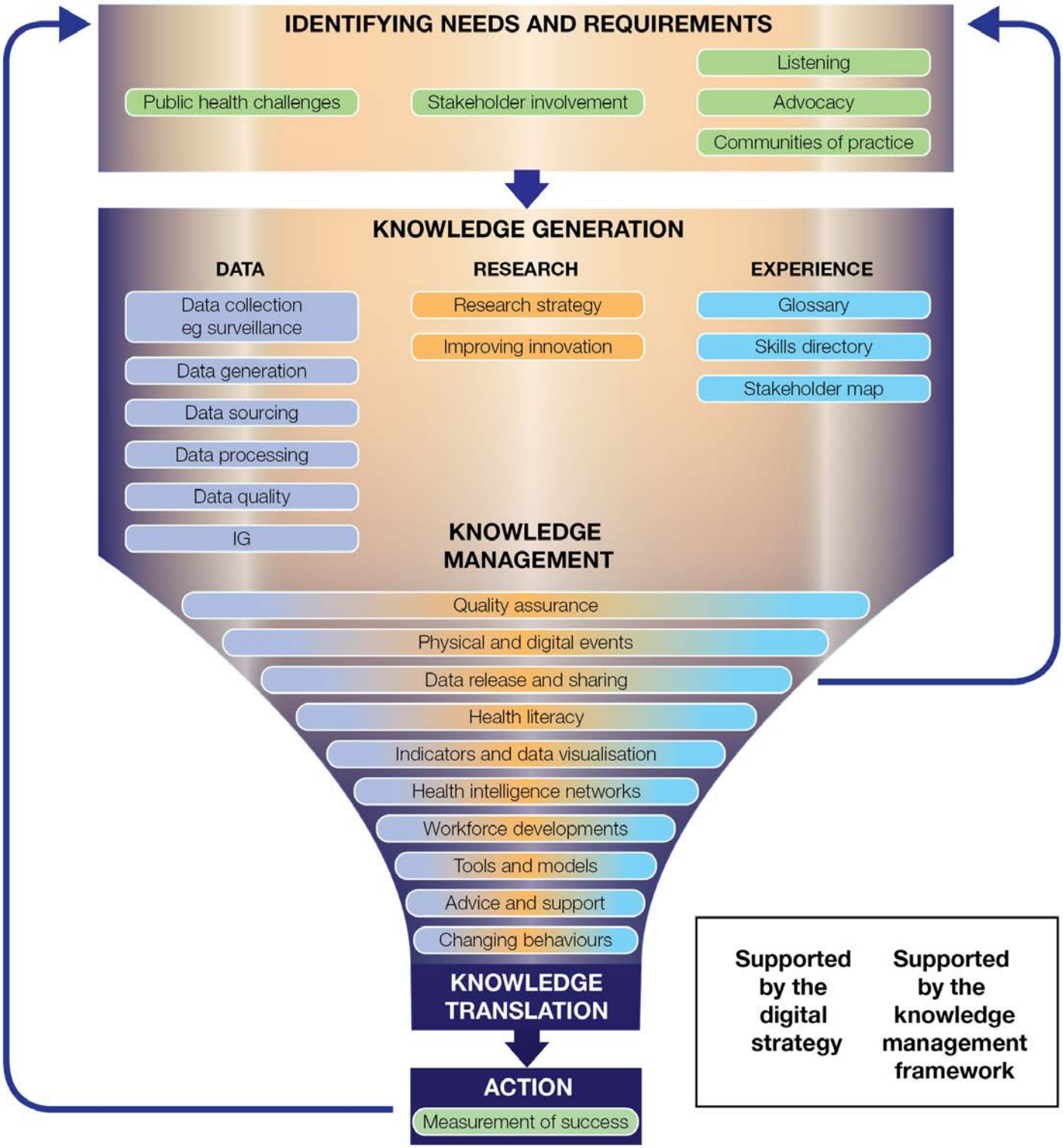
The PHE Knowledge Management Framework will describe PHE's approach to managing knowledge, building on the principles and commitments described in this document and expanding them to apply to all types of knowledge including that required to support the business.

The PHE Information Governance Framework will describe what the highest standards of information governance practice will look like in PHE and support the creation of an action plan to meet them.

The Knowledge Cycle as it applies to public health in England



The PHE Knowledge Strategy set within a cycle of knowledge



Introduction

Public Health England (PHE) is the expert national public health organisation which fulfils the Secretary of State for Health's statutory duty to protect health and address inequalities, and executes his or her power to promote the health and wellbeing of the nation[3]. It does this through the collection of knowledge, the focussing of this knowledge through the lens of expertise, and the effective dissemination of knowledge to those able to use it to inform the right action at the right time.

In this context "knowledge" is: any data we gather, for instance, patient record data, stakeholder surveys, outcomes measures, lifestyle trends or medication use; any relevant research undertaken; and our combined experience of public health and other disciplines. All of these add to the evidence base for public health. PHE can demonstrate that knowledge has been effectively shared when presentation of that knowledge has resulted in the right public health action, regardless of where that action is conducted or by whom. PHE already supports knowledge transfer through approaches including peer-reviewed publications, guidelines and policies, comparator statistics, intelligence-sharing networks and visual tools, but there is much still to do.

PHE is a new organisation, now a year old, which draws together around 6,000 expert staff in possession of a wide range of skills and expertise in the fields of data, information and knowledge management. PHE has a responsibility to identify what knowledge is required, acquire that knowledge and disseminate it through products that have the greatest impact on the behaviour of our partners in the health service, local and national government and the public to improve and protect the public's health and reduce inequalities. However, PHE is one of several organisations in England that have major roles to play in the health information arena. The success of all depends on close partnership, collaboration and respect that will facilitate data sharing and the exchange of ideas in an appropriate, timely way to ensure each can deliver for the whole population. Specifically, PHE will need to develop close partnerships with the Local Government Association (LGA), the Health and Social Care Information Centre (HSCIC), the Office for National Statistics (ONS), the National Institute for Health and Care Excellence (NICE), NHS England, Health Education England (HEE), clinical commissioning groups, academic health science networks and academia more broadly, the third sector, supplier communities and all the teams in the extended public health community in local government and other organisations.

This strategy positions PHE firmly in the knowledge and information environment as a leader in informatics in the new public health system and describes how high-quality

[3] **Public Health England: our priorities for 2013/14: https://www.gov.uk/government/publications/public-health-englands-priorities-for-2013-to-2014**

data, information and knowledge will be provided alongside continuously improving infrastructure, products and services to meet our priorities. The strategy is written around the knowledge lifecycle illustrated above and describes how the eight priorities[4], previously published by the Chief Knowledge Officer's directorate, will be met.

This strategy describes PHE's overarching vision and some of the building blocks required to realise that vision. It will be used to inform immediate and long term work schedules. The strategy also identifies a number of gaps where the way forward is less clear. It is recognised that PHE's strategy will need to evolve to close these gaps. Key to this will be an open engagement with others, alongside the establishment of a flexible organisational infrastructure for knowledge and technology capable of identifying and meeting new requirements responsively.

This strategy will support PHE in meeting its corporate priorities. It will do this primarily through making it easier for PHE staff to support the public health system by making tools, techniques, knowledge and data easier to find and easier to use.

PHE is committed to the principles of 'Open' described here. In this regard this knowledge strategy will, over the next year, be linked to a transparent and published implementation process. Our progress against the headline objectives illustrated in this strategy will be publicly available, as will opportunities to contribute and critique.

[4] **http://www.apho.org.uk/resource/item.aspx?RID=121651**

The ambition

In our role as leader for informatics for public health, PHE will furnish public health workers across the system with the knowledge, skills and tools to make the right decision at the right time based on the best available evidence. We will do this by efficiently generating, sourcing and processing high-quality data, adding to the evidence base and continuously working to translate this knowledge into actions which improve and protect the public's health and wellbeing, and reduce inequalities. We will stay at the cutting edge of public health informatics by fostering a culture that encourages new ideas and innovation while supporting staff with a framework of standards to ensure synergy and efficiency. Our intention is to become a recognised national and international leader in the collection, use and interpretation of population-wide knowledge to deliver relevant, timely, high-quality metrics, indicators, information and evidence to support public health and healthcare.

At its heart, this strategy aims to deliver the following:

- everyone working in public health will spend less time finding the information and knowledge they need and more time using it
- the right knowledge will be available to the right people at the right time in a form they are able to use
- PHE itself will be an information-led, knowledge-driven and evidence-based organisation

Principles

This strategy sets a framework for public health knowledge and information that will support delivery by PHE and our partners. PHE has a public health system leadership duty to recognise excellence, regardless of where it is, encouraging others to share their knowledge and creating an exciting environment in which others wish to work while supporting effective and efficient delivery with a suite of standards and processes that are, for the most part, advisory rather than mandatory. PHE will foster an innovative culture by promoting core tools and expertise, adopting open principles, developing supporting standards and methodologies, and increasing our appetite for risk.

Making the most of what we have

Improving and protecting public health is challenging. We have a pivotal role to play in solving a lot of seemingly intractable problems. How do we influence the social and behavioural factors that result in people getting seriously ill or dying sooner? How do we predict and prepare for an epidemic? What do we need to do to reduce our risk of suffering from a natural disaster? Public

health takes a holistic view, not only of individual people and patients, but of the wider social, economic and environmental context in which we live our lives.

More than anything this strategy is about making the most of what we have. We will achieve that by leveraging all the effort we can, coordinating it to reduce unnecessary waste and putting people together to view these extremely complex problems from as many perspectives as possible.

Adopting open principles

'Open' is key. PHE will adopt open principles by widely sharing, wherever we can, data, software, methodologies and standards internally and ultimately through the appropriate public exposure of those products. PHE's knowledge products will be shared freely wherever possible and in standard formats to maximise their utility.

Networks

We see tremendous leaps forward when organisational and personal barriers are put aside to enable people interested in solving a common problem to get together[5]. PHE will identify and, where they already exist, support and develop these networks. We will create ways to help new networks to form and make the most of the people they connect. The networks we create are our way of making the most of the people who are trying to solve public health problems.

Supporting standards

Real innovation requires radical thinking that is often stifled by constraints. In contrast, organisations require a level of consistency to increase efficiencies, reduce risk and improve the quality of their operations and outputs. In addition, if a problem has previously been solved, there needs to be effective and efficient ways to share and replicate or adapt that solution elsewhere. PHE aims to strike a balance by developing a framework that encourages constraint-free innovation but also supports the development and recording of methodologies and a process to agree consistent standards.

PHE will develop an open suite of methodologies and standards that its staff, the wider public health system and the public will be able to access. They will be generated predominantly by standards users and where networks see a need for consistency. They will be open to critique and regularly improved in response to challenge. A few will be imposed through policy, for instance in the management of systems containing

[5] **Open innovation in action, Andrew Gaule**

personal confidential data (PCD), but most will be advisory, where users will have the freedom to select the most appropriate standards and methodologies to support consistency and aid interoperability between data, tools and services. The standards suite thus developed will cover the gamut of quality, official statistics, information governance, information management, the production of evidence, open principles and domain specific standards, such as those developed to support surveillance activities.

Supporting innovation by increasing the appetite for risk

The pace of change across the information and knowledge arena is such that PHE needs to avoid overly-bureaucratic processes. Standards that are too prescriptive and a heavy-handed approach to project management can result in projects that are delivered slowly and can even be obsolete by the time they are completed. This requires new ways of working and the ability to take risks, accepting that on occasion we may fail, but providing we are open and honest we will learn from these experiences and move forward. This requires a supportive and enabling culture led from the top. PHE will develop leaders and line managers to support staff to make changes and communicate those changes to the rest of the organisation. Staff will be encouraged to spend time in networks containing a diverse skill and discipline mix with the aim of fostering new ideas and taking them through cycles of rapid development. The key to the success of this will not just be the move away from a risk-averse culture, but also the tools to communicate ideas and products to a geographically dispersed organisation.

In addition, PHE will identify new ways of funding innovative projects to reduce the delays often associated with identifying changes to budget lines or submitting bids for capital funds. The two key delays for many projects are waiting for approval to proceed and identification of funds. Significantly reducing the impact of these delays will be central to PHE's approach to innovation.

Supporting effective and efficient delivery

PHE is a public body and has a duty to spend public money effectively and achieve the best return on investment for public expenditure. While innovation and free-thinking will be encouraged and supported, structure will be applied to ensure "enterprise class" tools and systems are used consistently and promoted through the standards suite. PHE will undertake to identify and define the knowledge requirements of its core business elements. It will do this through the identification of business leads from across the organisation, experts who perform these activities as part of their daily work. Each lead will be encouraged and supported to take forward the development of strategies that will deliver requirements while maximising the return on investment.

Core tools, services and expertise

PHE will identify and provide common tools and services that will speed up and reduce the cost for new outputs, systems, processes and other developments. Expertise will be identified and readily accessible following a skills audit that will support the creation of a directory of expertise and will quantify the skills already available to PHE. This community will help to identify best practice, ensure recognition of key individuals, promote excellence and provide training and accreditation. PHE will further develop core expertise where necessary, for instance around informatics, information governance, knowledge management, or generalist software development.

These core tools and services will put the user at the centre and will reflect the fact that user requirements may differ wildly and may even require different solutions.

Metrics of success

This strategy needs to deliver the vision for knowledge and information across the public health system. The metrics of success will be closely aligned with this vision. PHE will publish these alongside its implementation plans for specific elements of this strategy; however the success of the strategy as a whole will be measured against the following overarching aims:

- PHE will be acknowledged as a leader in health informatics and a respected provider of public health data and information products and services
- PHE will have a record of successful delivery that changes practice and improves patient and population health
- PHE will have fostered an open and innovative environment across the public health system that ensures the right people have the right tools to make a real difference
- PHE will operate its knowledge functions efficiently, demonstrating value for money for every service it operates and every product it develops.

What environment are we working in?

The Health and Social Care Act 2012 has introduced two major components in the new public health system, in local government and in PHE, which need to work as an integrated public health system and specialist workforce. The new commissioning landscape for public health is complex and has important, highly varied and context-dependent information and knowledge needs, which will be catered for by partnerships between NICE, ONS, the HSCIC, NHS England, HEE and PHE.

In addition there are many others in local and national government, the NHS, industry, the third sector, academia and others who are taking forward the wider public health agenda and may not even see themselves as part of the wider public health workforce.

More than anywhere else in health and social care, public health problems are addressed by a wide and diverse set of partners. The raw materials required to meet these needs - the data, research, experience, resources and legal permissions - are spread out across these partners. As the system leader for public health, PHE has a responsibility to bring these pieces of the puzzle together so we can tackle public health problems more quickly and more efficiently.

In August 2013 PHE published the factsheet *Knowledge and intelligence: Public Health England's local contribution to the work of local government and the NHS*[6]. This clearly stated that health intelligence teams in local government and the NHS are the first port of call for local intelligence enquiries and that PHE will work in partnership with these teams. In the accompanying letter[7], PHE confirmed that this partnership working would be through local PHE knowledge and intelligence teams (KIT) and Centres, which will work together and continue to liaise with local government and the NHS to ensure that the support provided locally is as effective as possible.

[6] **https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/232030/PHE_local_contribution_to_the_work_of_local_government_and_the_NHS_flyer.pdf**
[7] **https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/232028/Letter_on_Public_Health_Englands_local_contribution.pdf**

Identifying needs and issues

Ambition

In order for PHE to meet its stakeholders' needs, it must correctly and systematically identify requirements, gaps and uncertainties, and provide or advocate for solutions which are appropriate to each stakeholder and locality.

PHE will put systems in place to identify problems affecting the public health workforce and public health more broadly, and will understand them and develop or coordinate a clear plan for their resolution. PHE will make it easy to identify or raise concerns or needs and provide clear mechanisms for the wider public health workforce to articulate and track their requirements of PHE and the wider health and care system.

Approach

PHE will take a systematic approach to understanding user needs, both internal and external, which will include formal information needs analysis across the wider public health community. It will ensure that it takes account of what is already known, using the existing evidence base, as well as undertake targeted surveys with a range of users and stakeholders. It will work collaboratively with partner organisations in order to align national products and services, and use existing expertise and experience where it is available.

Stakeholder involvement

Stakeholder involvement is where PHE conducts focussed engagement activities to identify stakeholder needs, usually in relation to a specific issue, such as the development of our website or a new surveillance output. This engagement will be facilitated by a stakeholder mapping exercise. PHE will use techniques including representative sampling of users and stakeholders to improve information products and services, and commission or conduct in-depth interviews to develop common sets of user profiles. In many cases we will be co-producing products or tools with partners.

Examples of where stakeholders will be actively involved include:

- **Research**: PHE will conduct a review of the major research requirements of the wider public health system in order to focus research on the important gaps in knowledge, uncertainties and the unmet information needs of patients, the public and public health professionals, drawing especially on our interactions with local authorities and our national partners

- **Product development**: PHE will seek stakeholder views or work in partnership with stakeholders to co-produce a product. PHE will ensure that the user journey is taken into account as new products and services are being designed and tested.

Listening to stakeholders

PHE is a listening organisation and will provide simple but effective ways to enable stakeholders to contact us when they want to.

Examples of how we will listen:

- **Product operation**: In order to achieve constant improvements, PHE will ensure that its products and services will be rate-able, allowing users to contribute to their on-going development.
- **Local authority public health problems and needs:** Local authorities and other local stakeholders are already able to log concerns and needs with their local PHE knowledge and intelligence team. PHE will listen to local needs to help develop an empowered and well-supported local level, able to drive effective change. PHE will input where asked to support local teams in the commissioning of healthcare and public health services based on up-to-date needs assessments and the latest evidence about what works.
- **Question answering services** such as that available through the web site and the internally offered 'ask a question' service are active now to address and log concerns and problems raised by the general public and PHE staff respectively.

Advocacy

PHE has a leadership role for public health knowledge and information. PHE has a duty to recognise and understand that problem affecting the public health workforce or public health more broadly and make proportionate effort to resolve it, even if it is beyond PHE's scope, responsibility or resources.

Public health challenges

New areas of public health concern arise all the time, be it from new research (such as our national policy for health promotion around diet), emergencies (such as the recent flooding in England) or reports of observations (such as the emergence of Schmallenberg virus in 2011). As new concerns come to light, PHE will review the current knowledge base and determine how best to work with partners and coordinate our efforts. A response may involve: setting up a new data collection, such as in the establishment of a new enhanced surveillance system; identifying research gaps that need to be filled; or public health communication, promotion or advice.

Communities of practice

A community of practice is a network of people who share a common interest in a specific area of knowledge or skills and are willing to work and learn together over a period of time to develop and share that knowledge. Communities of practice exist in some form in every organisation – whether they have been deliberately created and labelled as such or not. The challenge for knowledge management is to support them in such a way that they make a positive contribution to creating and sharing organisational knowledge and support business objectives.

Communities of practice can:

- Provide a valuable vehicle for developing, sharing and managing specialist knowledge
- Help avoid 'reinventing the wheel'
- Cut across organisational or departmental boundaries and reporting lines
- Be more flexible than traditional organisational structures
- Generate new knowledge in response to problems and opportunities
- Provide early warning of potential opportunities and threats
- Be a vehicle for cultural change by creating a knowledge sharing culture
- Be largely self-organising.

Although communities of practice are a great way to identify problems, they also need to be empowered to solve them.

PHE has set up a number of local intelligence networks, a particular type of community of practice which, typically, will link local Directors of Public Health, analysts embedded in local authorities and analysts from the local PHE presence across a geography to address issues of capacity and capability. We have developed, and will continue to develop, communities of practice to solve specific problems and share knowledge, for instance the application of Health Impact Assessments[8].

[8] **The Health Impact Assessment gateway - http://www.apho.org.uk/default.aspx?QN=P_HIA**

Knowledge generation and management

Ambition

A core function of PHE is to continuously review and add to the evidence base to enrich our knowledge of public health problems and the efficacy of public health interventions. PHE will do this using knowledge from data, research and experience. This knowledge will be made increasingly accessible following the principles of openness espoused throughout this document.

PHE will also manage and process knowledge to increase its value by reducing the costs of production and improving quality, accessibility and utility.

Approach: Knowledge from data

PHE controls one of the most complex and expansive health data collections in the world. To make the most of this asset PHE will, within the limits of the law, prepare datasets to enable rapid linkage as and when the need to do so is identified. Importantly, PHE will do this as part of wider efforts across the health and social care system to protect patient confidentiality and restrict access to personal confidential data (PCD) to those with a clear and legal 'need to know'.

NHS England intends to increase the collection of identifiable, linkable data from all care settings in ways that will support public health analysis and research. This knowledge strategy will ensure that PHE is able to make the most of the information and knowledge resources it possesses as NHS England coordinates the adoption of open data standards across the NHS. PHE recognises the potential for large linked datasets, such as *care.data,* to provide major benefits to public health and is highly supportive of the broader principle of open data.

PHE will continue to work with its partners to identify, link, anonymise and publish datasets in ways that both protect privacy and support public health action and research. PHE collects data, for instance our cancer registration service and infectious disease surveillance work; generates data, particularly from our laboratories; and sources data, for example commonly used datasets such as births and deaths data from ONS and Hospital Episodes Statistics from the HSCIC.

PHE is one of the few organisations to have legal permissions to collect identifiable data without seeking patient consent. We do so primarily for health protection and cancer registration purposes. Because of this we have both the means and the responsibility to

act as a data intermediary, providing non-identifiable data to others to support public health initiatives.

Data collection

In some cases PHE collects data directly, and in others it sources it from partner organisations. PHE will continue to operate as a collector of data for public health purposes directly from NHS laboratories, NHS acute trusts, primary care, genitourinary services and services treating users of illicit drugs and a commissioner of other data collections including surveys.

PHE will work in close partnership with the HSCIC, ONS and other data collecting organisations to ensure that the data collections managed by all parties are supported by national standards, expanded to support secondary uses and are continuously improved with a strong focus on data quality and efficiency. PHE will aim to ensure that data and information are captured accurately and once only from any given source, minimising the burden on data providers. PHE has a strong focus on reducing health inequalities and will ensure data collections are designed to enable the measurement of inequalities in the system.

Surveillance

The aim of the PHE surveillance strategy will be to strengthen and deliver high-quality surveillance systems to support and enable key policy and operational goals, making the best use of modern technology and the synergies offered by PHE. PHE will undertake:

- to confirm the national health surveillance strategy for England
- to agree standards for surveillance programmes and plan for their implementation
- to undertake a stock take of existing national health surveillance systems to provide assurance that the high level requirements of England are being met
- to identify gaps in current surveillance systems that need to be filled and to develop a clear case for any new surveillance programmes or systems that may be required
- to identify any modifications or withdrawals that are appropriate for existing surveillance programmes or systems, especially those that are inadequately evaluated or of unclear effectiveness, quality or value.
- make our outputs accessible to those who need them and responsive to local needs.

National disease registration

National Disease Registration is a key function for Public Health England, collecting, collating and quality assuring large scale patient-identifiable and record-level data from across the whole population in England. The data PHE collects forms the basis of

population-level disease registers for cancer, congenital anomalies and rare diseases; other national data collection supports the monitoring of treatment for drug and alcohol misuse.

Data release and sharing

Knowledge that results in evidence-based action can come from experience, research or data. Although PHE provides a number of value added services where data is converted into intelligence products, there are some services that PHE provides (or is working to provide) which deliver data in a relatively unprocessed form. PHE strongly supports the principles of data sharing espoused in the NHS Confederation report *Challenging bureaucracy*[9].

Data release service

PHE has launched a data release service which will provide a single point of contact for all requests for data access and release. The service will develop or adopt standards around pseudonymisation and anonymisation of data and support the open data agenda. It will also be the first port of call for requests to PHE for identifiable datasets, where the necessary legal permissions exist, and will manage a growing relationship with external organisations (such as the HSCIC and the Clinical Practice Research Datalink (CPRD)), industry and academia to make the process of requesting data from PHE easier and quicker. In some cases PHE may have to charge for data and data services but will strive to keep any fees to a minimum.

In order to support effective and secure information sharing, PHE has developed a secure file transfer system that supports the safe exchange of sensitive information such as patient data with external organisations.

HES service

PHE is working with its national partners to ensure that it has appropriate levels of access to the data it needs to carry out its essential health protection and health improvement functions. Examples of some of the key data sets PHE needs to do its job include Hospital Episode Statistics (HES) and births and deaths data, which are supplied by the HSCIC and ONS respectively. In some instances, PHE does need to process identifiable data but only ever does so where it has a clear legal right and only with the appropriate information protection safeguards in place. To meet the majority of its internal requirements PHE uses pseudonymised or aggregate data. Similarly, where it does provide information to support the work of partners such as local authority public health teams - for example, through the HES aggregate data enquiry service provided by its Knowledge and Intelligence Teams - PHE ensures that it makes available the maximum amount of information it is able to.

[9] **http://www.nhsconfed.org/Publications/reports/Pages/challenging-bureaucracy.aspx**

Open data

A key element of the PHE Knowledge Strategy is the commitment to open principles. Public health is everyone's business and open access to anonymised data will help to release the resource others can bring to solve public health problems. PHE therefore aims to make as much data freely available in suitably anonymised and open formats as possible. PHE supports the adoption of open data principles[10] to expose the knowledge of its data holdings to PHE staff, the wider public health system and the public wherever possible.

Data sharing best practice

Sharing datasets between organisations continues to be a complex area. PHE is acting, and will continue to act, as an advocate for those unable to tackle public health problems because of lack of access to the necessary data. We will work with the HSCIC to increase access to anonymised linked data in line with the recommendations of Dame Fiona Caldicott's information governance review *Information: To Share or not to Share*[11] and will contribute to documented best practice through the cross-government Centre of Excellence for information sharing, and by working on related data sharing initiatives with the Department of Health, NHS England and Monitor. PHE is also a strong supporter of the data sharing initiatives being taken forward as part of the integration pioneer programme.

Data processing

Data linkage

Across the organisation there are many collections of data that PHE needs to join together appropriately to extract new information and knowledge. It should be possible to do this quickly and efficiently so that new questions can be asked and the answers delivered as rapidly as possible. To support patient level data linkage, data will be held at the level of an individual patient wherever possible, but access to fully identifiable data will be limited on a strict 'need to know' basis. A central pseudonymisation service will be developed to support the ability to transform an identifiable dataset into a pseudonymised one to enable data linkage without the need to use identifiable fields.

Functional interoperability between systems

The core principles of functional interoperability, supported by the development of an organisation-wide systems architecture, will first be adopted by those PHE systems holding datasets that are used by large numbers of people. PHE will encourage the

[10] **Open Data Certificate (beta) - https://certificates.theodi.org/**
[11] **https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/251750/9731-2901141-TSO-Caldicott-Government_Response_ACCESSIBLE.PDF**

adoption of these principles in other datasets at the discretion of dataset and system owners.

In the first instance, PHE will look to supply tools to enable safe and accurate data linkage where permissions exist, rather than linking datasets by default. For this reason, the use of industry-standard data sharing services will be encouraged but not mandated across PHE.

The first shared dataset is the geospatial dataset, maintained by the Geographic Information System team in Porton, which provides access to geospatial reference data and population estimates to ensure consistent use of data across PHE while reducing the overhead on system owners.

Data catalogue

A data catalogue is necessary to understand what data sets are held by PHE in order to make best use of those assets. PHE will therefore adopt an organisation-wide data catalogue in which system owners will provide a listing of the data items they collect alongside associated definitions. Systems themselves will be logged in PHE's Information Asset Register (IAR) and contain metadata such as data quality metrics, provenance, access details, ownership and constraints around use. This register will be open for interrogation by PHE staff, its partners and the public.

Data quality

In clinical care, poor quality information may result in patients being harmed or undermine the trust clinicians place in recorded information. Likewise, in public health, poor quality information may undermine the validity of any conclusions drawn, resulting in poor quality commissioning and potentially putting the public at risk.

The development of data quality standards is fundamental to support the drive to improve the quality, accuracy and timeliness of the data that ultimately inform public health action. To ensure that these data are fit for purpose, there needs to be a consistency in approach, both over time and geography, for data collection, analysis and presentation. PHE will develop a framework to measure and drive improvements in data quality, underpinned by a set of standards as part of the PHE standards suite.

There are many standards currently being applied within the field of public health. These have been developed in a variety of ways to serve different purposes and vary also in their level of formality; many are for internal purposes rather than to meet industry standards. It is important that there is an agreed set of authoritative standards for data quality that are appropriate to and applied by PHE. These will be developed and agreed by prospective users, using existing standards as well as those that are in development as a starting point.

Information governance

Public health is involved in the provision of direct patient care, in research, and in the commissioning of prevention and treatment services in order to protect and improve the health of the population. All these aspects of public health depend on access to relevant, accurate and timely data, usually in aggregate form but sometimes in pseudonymised or identifiable formats. Regardless of the type used for these different public health purposes, however, all data must be handled in ways that preserve public trust and protect confidentiality but also maximises its utility to public health professionals.

As the national expert agency for public health, PHE has a responsibility to ensure that robust and resilient information governance arrangements are in place to safeguard the data it uses, and to provide leadership to support the implementation of the national framework for information governance across the public health and care system.

PHE has put in place a clear and strong information governance management framework to ensure that all the data it needs to carry out its duties are handled in accordance with agreed information governance standards. Senior responsible roles have been identified, policies and procedures developed and implemented, and training and guidance provided to staff to ensure that PHE actively minimises and manages any risks to the data it holds. Particular emphasis is being placed on ensuring that those PHE systems that need to process personal data do so with a clear legal basis and the highest information governance standards in place. This management framework is safeguarding the confidentiality, security and integrity of the data PHE uses and shares with other trusted partners, with external assurance provided through the Department of Health information governance toolkit and supported by action plans to address any deficiencies. Transparency and accountability[12] are also being addressed in line with Cabinet Office national guidance[13].

In addition, PHE has a key leadership role to play in supporting the implementation across the public health system of the recommendations of Dame Fiona Caldicott's information governance review[14] and in supporting the adoption of the rules set out in the HSCIC's guide to confidentiality[15]. The success of the national information governance framework will be measured by its ability to maintain patient and public trust in the safe and secure handling of their data, while supporting – with the right legal

---

12 **www.gov.uk/government/policies/improving-the-transparency-and-accountability-of-government-and-its-services**

13 **www.data.gov.uk/sites/default/files/Cabinet%20Office%20Open%20Data%20Strategy.pdf**

14 **www.gov.uk/government/publications/the-information-governance-review**

15 **www.hscic.gov.uk/confguideorg**

safeguards and assurance processes in place – the sharing of data where this is needed to protect and improve public health at both a national and local level. The revised Caldicott principles emphasise not only the importance of ensuring that any processing of confidential data has a clear legal basis, and that identifiable data should not be used unless absolutely necessary and only the minimum amount where it is, but also that the duty to share can be as important as the duty to protect confidentiality. PHE will play a key role in national initiatives aimed at supporting the implementation of these revised principles and ensuring that information governance best practice standards are adopted across the whole of the public health system.

Approach: Knowledge from research

Knowledge based on valid research enables reliable predictions to be made about the future. Such predictions form the basis for important decisions about the use of scarce public resources including professional time, money and political capital. In this context, research is not an end in itself, but a pragmatic exercise fundamental to the knowledge pathway, starting with the generation of new knowledge to the application of that knowledge for the public good, and back again. PHE has three roles with respect to knowledge from research: performing research alone or more often in collaboration with partners, supporting research undertaken by others, and as a user of knowledge from research.

PHE aims to build on the internationally respected body of expertise created under its precursor organisations by experienced scientific and public health staff engaged in high quality research. A significant part of the agency's role is the sharing of our information and expertise with local authorities, industry and the NHS in order to help them make improvements to public health. This evidence-based advice is developed through rigorous research programmes into the key public health challenges and is provided through published reports, articles in scientific journals, public statements, direct advice to senior Government officials and ministers, and through PHE's membership of, and input to, advisory committees and groups run by other government agencies and departments. In collaboration with experts across PHE and beyond, PHE will identify public health research priorities and continue to develop our own capacity and capability to provide professional, scientific and delivery expertise and advice to our partners. PHE will strive to ensure that all public health decisions, be they policy or operational, are based on the best available evidence.

PHE will shortly publish its research and academic strategy which describes how it will facilitate and support population and public health research conducted by its partners as well as by PHE itself. The strategy will ensure that public health research demonstrates both academic excellence and value for money. It will enable PHE, alongside its partners, to identify the national priorities for research and ensure these are aligned with current and future public health needs. The strategy covers:

- a description of the science-base for PHE's core operational strategies. This will include a second UK Global Burden of Disease project looking at inequalities within the UK
- a review of the major research requirements of the wider public health system in order to focus research activity on the important gaps in knowledge and the unmet information needs of patients, the public and public health professionals drawing especially on our interactions with local authorities and national partners
- a mapping and development strategy for PHE's own research activity, including our health protection and vaccine research but also in other areas
- an academic strategy for PHE to manage and develop its academic workforce, including honorary clinical academics and trainees and covering job appraisal and revalidation
- the route to allow further alignment of PHE activity with NIHR public health programmes, relevant MRC programmes and the work of the Academic Health Science Networks
- the attraction of resources required for PHE's academic activities and for public health excess intervention costs (in other words, the costs associated with conducting research into new interventions).

In support of the continued development of high-quality research evidence, PHE will manage key public health priorities as cross-organisational programmes, thereby effectively focussing relevant resources in order to achieve objectives. The development of these programmes, in collaboration with partner organisations, is a key element of PHE's research and academic strategy.

The research and academic strategy will identify the fundamental infrastructure required for research, including access to high quality data. It will explore the need for provision of linked data including mortality, morbidity and disease registration datasets to public health researchers internal and external to PHE. It will further explore the partnership with CPRD to this end. PHE will continue to work with its partners to prioritise research questions for both primary and secondary research, and will also identify where closer working relationships with qualitative data providers, including primary care surveys and health survey England, would be beneficial for research.

Delivery of the research and academic strategy within the field of health protection will be supported by the development of thirteen National Institute for Health Research (NIHR) Health Protection Research Units (HPRUs). HPRUs are research partnerships between Universities and PHE that have been set up to support PHE in delivering its objectives and functions for the protection of the public's health. The units will act as centres of excellence in multi-disciplinary health protection research in England. The objectives of the units include translating advances in health protection research into benefits for patients and the public; focusing on priority areas which will have the

greatest impact on public health; and providing high quality research evidence to inform decision-making by public health professionals. Each unit is led by a lead university and many of the units also involve other partners, such as other universities or other government agencies.

Approach: Knowledge from experience

Knowledge from experience is a high value source of knowledge which is freely available but rarely harvested. The knowledge from experience continuously feeds into development and improvement, but to make this tacit knowledge explicit requires focused effort.

Knowledge management encompasses both collecting and connecting dimensions. The connecting dimension involves linking people with people – specifically people who need to know with those who do know, thereby explicitly sharing knowledge. Connecting is necessary because knowledge is embodied in people and in the relationships between people within and between organisations. Information becomes knowledge as it is interpreted in the light of the individual's understanding of a particular situation or context.

The systematic collection of experience can be supported by a range of tools and techniques including the collection and publication of case studies; learning before, during, and after events; and exit interviews to ensure that knowledge acquired by staff leaving an organisation is not lost. PHE will provide tools and opportunities to connect public health professionals to each other and to the general public, to enable the sharing of information. This will include the use of social media, knowledge harvesting and crowd-sourcing technologies.

Although some knowledge and experience sharing topics will only be relevant to PHE staff, the principles, technologies and tools will be used to connect other stakeholders with an interest in public health. The same technologies developed to support discussions within PHE will be made accessible to the wider public health system to identify experience and expertise and to both harvest and share ideas, techniques and evidence.

PHE will develop a knowledge management framework which will explore the use of knowledge tools to encourage the sharing of experience. These include:

- creating a regular knowledge, informatics and data seminar/webinar series through which best practice and new ideas can be cascaded and discussed
- skills and expert directories – searchable online staff directories that give much more detail about who does what and who knows what
- communities of practice – networks of people with a common interest, intelligence networks for instance
- events designed to support the sharing of knowledge and experience

- health literacy will be promoted through training and access to reading and journal clubs
- a glossary will be developed as a learning and sharing tool
- mapping and documenting key stakeholders and networks, using existing networks and channels where possible to avoid duplication and aid sustainability

Translating knowledge into action

Ambition

PHE has a duty to provide knowledge products that help decision makers, in local and national government and elsewhere, to make the right decisions based on the best available evidence.

PHE intends to affect action in the following forms:

- inform effective change
- develop national and local policy and strategy, e.g. in helping Joint Strategic Needs Assessments
- efficiently and effectively respond to emergencies
- support commissioning and other decision making
- measure impact
- encourage research, hypothesis generation and innovation.

PHE will develop a cohesive approach to the facilitation of knowledge transfer within PHE, and throughout its communities, networks and partners. It will provide a mechanism to support learning before, during and after actions, and in particular it will ensure that the knowledge from experience is made easily available to supplement the knowledge derived from published research evidence and data. PHE undertakes to measure the impact of these knowledge products on the public health system and public health underpinned by established best practice.

PHE will establish organisation-wide processes that support the quality assurance of the knowledge products it creates for use by patients, the public and professionals . PHE stakeholders and others who use the knowledge and information products and outputs PHE creates will be confident in their quality and robustness through appropriate and proportionate quality assurance processes.

PHE will take forward this agenda through:

- the use of the best evidence in knowledge translation
- the development of efficiently targeted knowledge products
- the quality assurance of those knowledge products, including the assurance of applicability of the source data
- the measurement of the impact of these products on behaviour change within the public health community and most importantly on the level of impact the provision of knowledge services has on the wider public health.

Approach: Changing behaviours

PHE has a major role in influencing local health and care providers to make specific changes and in speaking directly to the public. The work of the Health and Wellbeing directorate in PHE is designed to save lives, promote wellbeing and create environments that enable individuals, families and communities to be informed, empowered, healthier and more productive.

Recognising the contribution of the wider determinants of health including social, cultural, economic and environmental factors are key to this work. PHE will take an integrated and evidence-based approach to address and promote lifestyle behaviours to make it easier for people to make healthy choices.

A focus will be on the major drivers of mortality and morbidity in England, where further improvements in public health outcomes may be made by scaling up known, effective strategies.

The directorate has programmes focussing on the following key areas:

- Children, young people and families
- Diet and nutrition
- Drugs and alcohol
- Health and the justice system
- NHS Health Checks
- Obesity
- Screening policy
- Smoking
- Physical activity
- Health and work
- Mental health and wellbeing

There are interventions in many of these areas that are known to work but which are not always taken up uniformly or effectively. PHE has initiated a programme of work to improve the translation of Evidence into Practice and Policy (EiPP) including a series of events bringing together researchers, policy makers and practitioners.

The work is being overseen by the PHE translation steering group which is considering ways that the learning from such events and other activities can be brought together and applied across all programmes and beyond.

Approach: Development, delivery and improvement of knowledge products

PHE has inherited a large number of existing knowledge products. PHE is building on this legacy and working with NICE and other partners to ensure that these products are organised into a consistent and clear product suite, aimed at specific audiences, meet

common quality criteria and are integrated with the wider evidence base so that users can find the most appropriate sources for their questions. Some will be delivered through the PHE data and knowledge gateway, some through the PHE website and others will be delivered independently of both. These knowledge products include the following, often in combination:

- indicators and indicator products
- tools and models (atlases, profiles, cost effectiveness, return on investment models, surveillance dashboard, evaluation frameworks)
- guidance and evidence reviews, evidence summaries and briefings, practice-based information and knowledge updates

Indicators, indicator products and data visualisation

Indicators are summary measures that aim to describe in a few numbers as much detail as possible about a system, to help people understand, compare, predict, improve, and innovate[16] informed by evidence of what works. PHE has inherited a large number of indicators and information products including the Health Protection Profiles and the Cancer Commissioning Toolkit[17]. PHE is also responsible for populating definitive summary measures of public health in the form of the Public Health Outcomes Framework[18]. PHE will develop consistent systems for indicator development, production, quality assurance, maintenance, storage and display, presented within a sub-strategy for indicators.

The strategy will ensure PHE generates a comprehensive suite of indicators for a wide variety of health determinants and outcomes, including selections of indicators in information products aimed at supporting the planning and commissioning of services to improve health. PHE will develop a common repository of indicators for product development, and these will be available to other partner organisations and the public. PHE will develop an overarching governance process to ensure that the selection of indicators for information products will be both user-led and technically appropriate. This will be supported by the development of a suite of standard methodologies within PHE and with partner organisations. PHE will aim to develop a common publication schedule and links to the best available evidence on interventions pertinent to the indicators it publishes.

---

[16] **Pencheon D, The Good Indicators Guide: Understanding how to use and choose indicators, Association of Public Health Observatories and NHS Institute for Innovation and Improvement, 2009**
[17] **https://www.cancertoolkit.co.uk/**
[18] **https://www.gov.uk/government/publications/healthy-lives-healthy-people-improving-outcomes-and-supporting-transparency**

Knowledge generated through surveillance activities includes statistics that measure health outcomes, healthcare performance and other determinants of health[19]. There therefore needs to be a good understanding of how to both interpret and effectively communicate these three complementary types of knowledge through various forms of communication routes including formal surveillance reports or bulletins, annual reports, conferences, media releases and web based tools. PHE will enable the NHS, local authorities and others, with appropriate access permissions, to view and customise outputs from any surveillance system operated by PHE. These outputs will provide real-time information on disease events, exposures and hazards. This is the vision for surveillance set out in the *Towards a Public Health Surveillance Strategy for England* document[20].

Tools and models

Our stakeholders are asking for products that can help them make the business case for investing in prevention and public health interventions, through which they can demonstrate the efficacy and cost effectiveness of the work they are undertaking or proposing. PHE already produces a range of tools to support decision makers in the NHS and local authorities. These are being made available through the Data and Knowledge Gateway[21]. Examples include:

- cost-effectiveness tools including the Spend and Outcome Tool
- standard evaluation frameworks for weight management, physical activity, dietary interventions and end of life care services
- models, for example disease prevalence modelling

We intend to increase our suite of tools and models in accordance with our stakeholders' needs. We will be developing a tool to make the 'return on investment' case for disease prevention methods and interventions. We will be undertaking large-scale population based modelling to support the prioritisation of decisions that need to be made between policy and programme interventions for different population groups. Depending on demand we will look at developing further standard evaluation frameworks.

Types of evidence products and services

PHE produces a range of published products for different audiences, ranging from guidance documents, systematic reviews of the evidence, rapid evidence synthesis, evidence briefings, knowledge updates, and practice-based information. Some of these

---

[19] Bernard C. K. Choi, "The Past, Present, and Future of Public Health Surveillance," Scientifica, vol. 2012, Article ID 875253, 26 pages, 2012. doi:10.6064/2012/875253

[20] https://www.wp.dh.gov.uk/publications/files/2013/01/Towards-a-Public-Health-Surveillance-Strategy.pdf

products have a key role in bringing together the three sources of knowledge - evidence from research, from data and from experience – in formats that are designed to support the translation of knowledge into action at a local level.

We will be introducing standard processes that ensure consistent methods for the production and assessment of the different types of information. Where possible we will base our quality assurance processes on existing standards, such as the NICE Accreditation standards for guidance production. We will work closely with NICE and other partners such as the Cochrane Collaboration, to develop consistent frameworks for the categorisation of resource types and application of quality standards. This means that information producers across public health can share the same knowledge structure, definitions, and approach to quality assurance and methodological standards for different types of knowledge. The work on resource types will help ensure that the underpinning quality processes for any content produced or commissioned by PHE meets agreed and approved standards. This will be supported by high quality standards in information science and evidence appraisal, and knowledge updating and current awareness services.

PHE data and knowledge gateway

Across PHE, there are many high-quality reporting tools that provide data and analysis to public health professionals. PHE has provided simplified access to these tools through a gateway[21] on the PHE website, and we will continue to work to improve this service. These tools are accessible through a simple structure, which allows users to click on the area or system of interest in order to be taken to the relevant reporting tool.

Quality assurance of knowledge products

Robust metrics, indicators and evidence can only be delivered with a deep understanding of the source data used and its provenance. The link between the original data and the generation of outputs needs to be close and quality assurance of knowledge products must be performed in collaboration with those responsible for collecting the data.

As described in the PHE Quality Framework for Surveillance, the utility and value of outputs is determined by the confidence that users have in their quality and robustness. PHE will seek to provide this assurance through the application of methods and tools to describe quality. Where appropriate, the concept of self-assessing quality will be encouraged as data providers are usually in the best position to know the strengths and

[21] **http://datagateway.phe.org.uk/**

weaknesses of the data that they supply. PHE will explore the following mechanisms to support this:

- quality statements – a data quality statement is a presentation of information about the quality of a data item or collection of data items. Its purpose is to clearly communicate key characteristics of the data that impact on quality, thus ensuring that potential users or recipients of outputs can make informed decisions about fitness for use[19]. The statements should report on both the strengths and limitations of the data and components should include relevance, timeliness, accuracy, coherence (comparability and compatibility), interpretability and accessibility. For example:
    - **coherence:** the degree to which data derived from different sources or methods can or have been combined to build a picture of the phenomenon being studied
    - **accuracy and precision:** the closeness between the value finally produced or derived (after editing, estimation, imputation and so on) and the true, but unknown, value. The larger the error the lower the accuracy
    - **comparability:** the degree to which data can be compared over time, domain and to similar data from different sources
- quality flags – the flagging of quality levels can be achieved through the presentation of symbols, providing a quick assessment of quality[22]
- metadata – all generic outputs that are generated should be presented in a standard format with their associated metadata. Metadata is data that provides information about other data. It can consist of details about a source of information, the timeframe of validity of an output, publishers and so on
- kitemarking – a kitemark is a demonstration of certification. For example, NICE has established an approach to accredit an organisation's ability to reproducibly produce high-quality guidance.

Approach: Knowledge management

There are a number of activities PHE undertakes or seeks to develop in order to better help the translation of the body of knowledge available into action that will make a real difference to public health.

Assisting in workforce development

The local public health knowledge and intelligence workforce will be developed in response to the consultation[23] on *Healthy Lives, Healthy People: Towards a workforce*

[22] **Definition sourced from the National Statistical Service - https://www.nss.gov.au/dataquality/abouttool.jsp**
[23] **Public Health Workforce Strategy – Next Steps for the PHI&I Workforce (Sept 2012)**

strategy for the public health system[24,25]. PHE will provide placements and secondments, including structured training programmes, which rotate between PHE and local system partners. This will facilitate mutual understanding and longer-term career pathway opportunities. PHE will support the development of knowledge and intelligence teams in local government and help to ensure they are appropriately trained, informed, and guided. Career pathways and training for career progression in public health knowledge and intelligence will be clarified to ensure this is an attractive career choice and that we get the best workforce for the future.

In this way, public health professionals, particularly those working in local authority teams, will be developed to make best use of knowledge and intelligence products and services provided by PHE and others.

Active knowledge and library services

Even where comprehensive digital collections exist, their effective use may still need knowledgeable and skilled mediation and interpretation, and integrated with local knowledge to get effective results. Active knowledge management requires accessible, tailored knowledge services to provide expert searching, synthesis, navigation, mediation and training to PHE staff and in the wider system in order to facilitate efficient knowledge translation.

A responsive local knowledge services team can provide support in knowledge and information management to local teams and communities. Working in partnership with national providers can ensure effective collaboration and reduce variation and duplication in knowledge and information provision. There is already a wide range of knowledge and information services and expertise in the public health community and the wider health system, and we will aim to ensure that this is accessed and sign-posted wherever possible.

Services should be delivered to the point of need, both mediated and digitally, using existing resources wherever possible. Potential services could include:

- evidence synthesis
- tailored knowledge support packages
- mediated literature searching and filtering
- current awareness services
- provision and training in knowledge management tools and processes
- information skills training

[24] **https://www.gov.uk/government/consultations/healthy-lives-healthy-people-towards-a-workforce-strategy-for-the-public-health-system**
[25] **https://www.gov.uk/government/publications/healthy-lives-healthy-people-a-public-workforce-strategy**

- question and answer services

High-quality knowledge services are dependent on the workforce having relevant skills and competences. To aid the assessment of skills required, PHE will develop a specification of the knowledge services and products that all public health staff should have access to, and the skills required to deliver them. This will enable local staff and teams to make an assessment of the skills they have available, and to identify where they may be developed. Existing benchmarks and quality frameworks, such as those for knowledge management and knowledge translation, and the NHS Library Quality Assurance Framework[26] will be used where possible.

Advice and support

PHE's Knowledge and Intelligence Teams will develop and support the use of products directed at both commissioners and providers of public health and healthcare services. PHE will support local teams to make the right decisions around reducing the impact of disease and risks to health and improve public health by engaging with local teams, making knowledge and information available and delivering data, interpretation and evidence.

Specifically PHE will:

- work locally to ensure that appropriate data analysis and evaluation services and support are available to local teams
- develop translational and interpretation services to support the local use of data outputs and products
- advocate on behalf of stakeholders when their needs are not being met.

Approach: Knowledge networks

Health Intelligence Networks

PHE is committed to supporting existing health intelligence networks in cancer and end of life care and to developing new intelligence networks with strategic partners in three additional key areas, selected to best serve the strategic clinical networks NHS England has established. Since April 2013, PHE has built on work by its predecessors to establish networks for cardiovascular disease and children, young people and maternity. Work is also firmly underway to launch an intelligence network for mental health in the summer of 2014 and to develop a Learning Disabilities Intelligence Network.

[26] **http://www.libraryservices.nhs.uk/document_uploads/LQAF/LQAF_Version_2.2_April_2012_90e8f.pdf**

PHE has a significant contribution to make in each of these areas but we recognise that our strategic partners can contribute as much. Our commitment therefore is to recognise where these strengths exist and work in partnership to build on them. In particular, where strong leadership and expertise already exists, we are seeking to ensure that we do not simply replicate this but augment it by working in partnership with others using a network-approach.

The networks deliver information, data, best practice, evidence and predictive models to support strategic decision making. They build on existing strengths in PHE and from external partners in the NHS, academia, the third sector and industry to support knowledge sharing across the whole public health system.

High-quality intelligence is critical to improving the health of the public, in promoting good health, preventing ill health and when people do get ill, ensuring they are treated well and return to as active and healthy life as possible. PHE collects, analyses and publishes information to help local public health teams, communities, commissioners, providers and clinicians make good decisions. Our role is to provide the highest quality intelligence possible and we recognise that this is not something which we can do in isolation from our partners in health and local government.

Experience in cancer and end of life care has shown that a networked approach, working beyond organisational boundaries, delivers real benefits. The National Cancer Intelligence Network (NCIN) and the National End of Life Care Intelligence Network, now hosted by PHE, are examples of what can be done working with funding partners in innovative and supportive ways to develop and deliver intelligence across the whole pathway, reducing duplication and delivering with better co-ordinated use of resource.

While PHE is providing operational management for each of the networks, led by a senior member of staff, each network's work programme and strategy is overseen by a partnership board of key organisations. Strategies and business plans for each network for 2014/15 have been developed and meetings set up to support the sharing of knowledge and good practice.

Health networks for behavioural risk factors and wider determinants of health

PHE has developed further networks to support data and knowledge sharing between parties interested in addressing wider determinants of health and behavioural risk factors. The approach here is similar to that taken by the health intelligence networks, with learning shared across all. We have differentiated between intelligence networks, primarily promoting action in the NHS and usually aligned to strategic clinical networks, and health networks which work predominantly with local authorities and focus on the following areas:

- Health inequalities
- Health and work

- Tobacco
- Obesity
- Nutrition
- Sexual health
- Violence
- Alcohol

PHE has chosen to focus on these underpinning factors because of the huge impact they have on health.

The role of digital

Ambition

PHE will use digital tools, technologies and ways of working to meet its users' needs in the most efficient and effective ways.

Approach

Baroness Lane-Fox's review of government on the web[27] and the Government Digital Strategy[28] commit central government departments and agencies to improving their digital performance. This means getting in appropriate digital capability, rationalising our publishing (websites), improving our digital tools and transactions (services), and, in the longer term, opening up our content, data and services.

These actions are as relevant to PHE as the rest of government. On capability, we need to expand our digital team to meet the growing needs of PHE. On publishing, PHE's website (www.gov.uk/phe) is growing, but much of our content remains the 150 websites of sender organisations. These sites also hold our services - data and information tools and our commercial services - in disparate locations and formats.

How will this work in practice?

- Following the Department of Health Digital Strategy[29], we are going 'digital first'.
- We are developing our digital strategy, which we will publish by the end of 2014.
- We are boosting digital capability, beginning with digital specialists, so we are equipped to deliver what our users need.
- We are improving our publishing and services by rationalising our 150 websites. We are reshaping our content so that it meets users' needs and is in the right place. The PHE website holds content for professionals. NHS Choices[30] holds content for citizens. Content that is no longer needed will be archived on The National Archives[31].

[27] **https://www.gov.uk/government/publications/directgov-2010-and-beyond-revolution-not-evolution-a-report-by-martha-lane-fox**
[28] **https://www.gov.uk/government/collections/government-digital-strategy-reports-and-research**
[29] **http://digitalhealth.dh.gov.uk/digital-strategy/**
[30] **http://www.nhs.uk/Pages/HomePage.aspx**
[31] **http://www.nationalarchives.gov.uk/**

Next steps

The scope of this strategy is broad and so the level of detail is necessarily low. The strategy captures the need for culture change, as well as broad requirements that need to be addressed, and some very specific actions that can be taken forward relatively quickly. The ethos it describes is one of partnership, consultation, flexibility and innovation. The de-centralised approach to how we may achieve our strategic goals, through the application of user-generated standards to describe best practice, is very deliberate.

Following the publication of the strategy *we* will establish an infrastructure through which cross-PHE and cross-public health system projects can be managed as part of the implementation of the strategy, hand-in-hand with business as usual functions and the business planning cycle. It will be accompanied by a delivery document which addresses some of these issues. In addition, we will present the strategy in a digital format linking the high level commitments and direction in this strategy to the business planning cycle for the current year, with progress monitored by clear metrics, and functionality added to enable the public to register an interest, express a view or offer a solution.

In parallel to these two activities, we will identify areas of public health activity where corporate leadership of methods, standards and policies as part of a strategy would be beneficial. Surveillance, the PHE web presence and research have already been identified in this document as areas where related sub-strategies need to be further established, but other areas of public health activity such as outbreak response, bioinformatics or screening are likely to require similar approaches to ensure appropriate levels of consistency and efficiency.

The approach we have described in this document needs to be flexible and adaptive to change. We believe that supporting our partners and stakeholders to contribute to the implementation of this strategy, to help to shape its future and solve the problems that crop up along the way, will ensure its success.