



Public Health
England

Protecting and improving the nation's health

Improving people's health: Applying behavioural and social sciences to improve population health and wellbeing in England



FACULTY OF PUBLIC HEALTH Behavioural Science and Public Health Network



Local Government Association

About Public Health England

Public Health England exists to protect and improve the nation's health and wellbeing, and reduce health inequalities. We do this through world-leading science, knowledge and intelligence, advocacy, partnerships and the delivery of specialist public health services. We are an executive agency of the Department of Health and Social Care, and a distinct delivery organisation with operational autonomy. We provide government, local government, the NHS, Parliament, industry and the public with evidence-based professional, scientific and delivery expertise and support.

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Foreword

We live in a time when our population faces complex health and wellbeing challenges that stem from biological, psychological, economic, environmental, and social causes. The rising burden of long-term conditions and health inequalities poses a challenge for the whole public health system, and to deal with this we need to address the social, cultural and behavioural aspects of health and its determinants at a population level.

The behavioural and social sciences are the future of public health. Evidence from behavioural science suggests that simple and easy ways of helping people to change their behaviour are the most effective. Whether it's encouraging smokers to quit, increasing uptake of the NHS Health Check, making healthier food choices easier, or reducing the number of inappropriate antibiotic prescriptions, this evidence can help in understanding and therefore influencing behaviour change that promotes health, prevents disease, and reduces health inequalities. We must reach and be meaningful to people in the lives that they are leading.

It is time for the public health system to advance the use of behavioural and social sciences, and for this purpose, PHE's Behavioural Insights experts, working with many partners, have led the collaborative development of this comprehensive strategy – the first of its kind in the field.

Improving People's Health: Applying behavioural and social sciences to improve population health and wellbeing in England aims to enable public health professionals to engage with and apply the insights, methodologies and knowledge of behavioural and social sciences to their work on protecting and improving the health of the people. As a high-level guide, it provides a framework and consolidates a suite of relevant resources to help achieve this.

The strategy was developed in partnership with the Association of Directors of Public Health, Faculty of Public Health, Behavioural Science and Public Health Network, and the Local Government Association. This is the start of the process, not the conclusion, and PHE joins all stakeholders in our commitment to use this strategy to create and encourage further collaboration across the sector. We owe all partners involved in its development a debt of gratitude for freely giving their time, energy and expertise for the good of the health of our population.

Duncan Selbie
Chief Executive
Public Health England

Executive summary

Background and rationale

Public health has been described as the art and science of organised, societal efforts to improve and protect the health of the population (1).

In recent years the contributions of behavioural and social sciences (including psychology, behavioural economics, sociology and anthropology) to improving the health of the public have gained more prominence. However, they are still underutilised in practice and insufficiently integrated when applied to public health, and the workforce that is qualified to provide this behavioural and social science input remains small. Complex social phenomena and the pressures and challenges imposed on individuals by the contemporary world, as well as digital innovation and system restructuring, mean that we need to enlist and learn from these sciences more thoroughly, and strengthen transdisciplinary approaches (which are problem-based and 'person-centred'), to deliver effective and efficient change.

Scope and potential contribution to public health

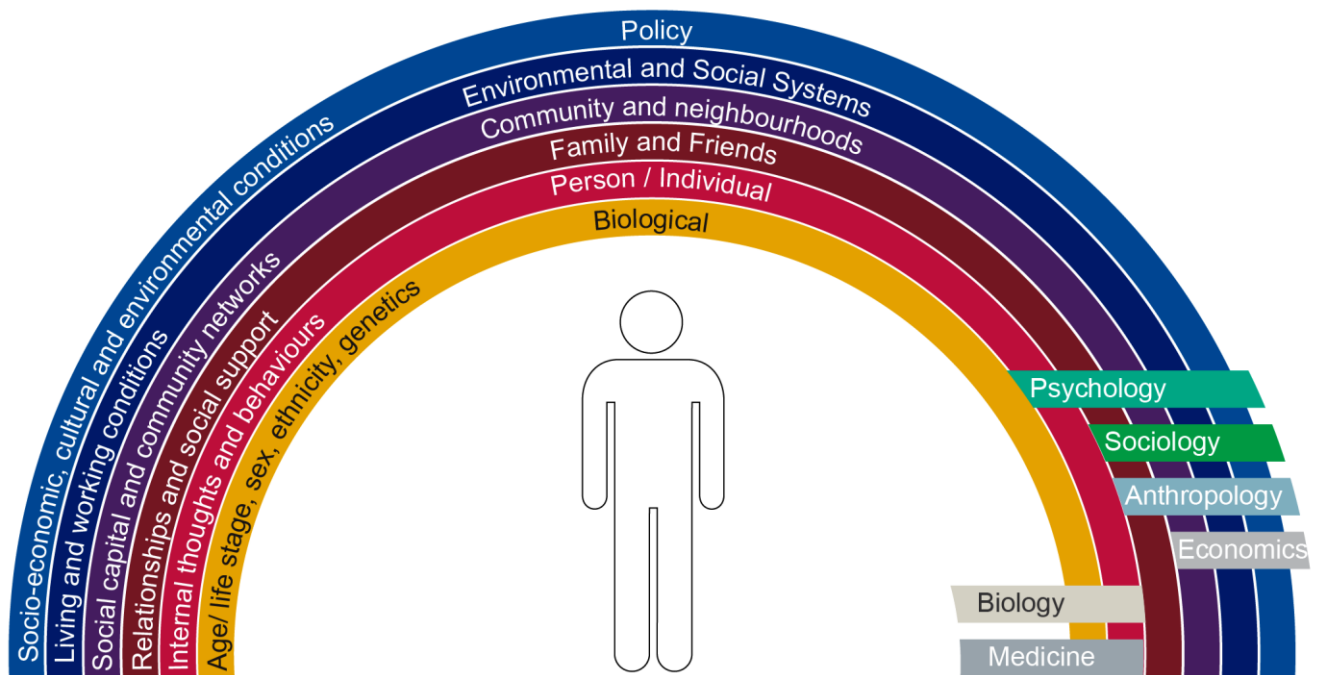
Many of the problems currently impacting on population health, such as smoking, poor diet and physical inactivity, could be reduced by changes in individual behaviour. However, while individual behaviour change is extremely important, a comprehensive and coherent framework to address these problems needs to draw more broadly on behavioural and social sciences to identify and solve structural and social issues.

There is a wealth of evidence that many of the issues that undermine or enhance our health outcomes have structural, social and behavioural determinants (2–4). This includes the environments in which we live, work, and play; how education, employment, income, and access to health care services are distributed; and our experiences and perceptions of the built and online environments, social behaviour, stigma, and discrimination. Many of these are also affected by digital developments.

In this strategy we present the contributions of selected key behavioural and social sciences to public health, and the opportunities they present to build on current practice and improve the cost-effectiveness of interventions (Figure 1). We focus mainly on understanding and changing behaviours and practices but evaluation is also key to this process and the behavioural and social sciences provide tools for evaluation and behavioural and social scientists are skilled their use.

Transdisciplinary approaches, where people skilled in a range of disciplines work together on public health problems, could be used more widely. We hope that this strategy will foster further systemic growth in transdisciplinary approaches to public health. It is not intended to be exhaustive or the last word, but the start of a process.

Figure 1. Conceptualising the contributions of behavioural and social sciences (abbreviated version, full version in Section 4, adapted from (5))



Aim, vision and mission of this strategy

The aim of this strategy is to better enable the broad public health system to use behavioural and social sciences to benefit the health of the population. We want all public health organisations in England to make the most of the contribution of behavioural and social sciences to the protection and improvement of the public's health and wellbeing. We have a vision of a strong and vibrant behavioural and social science community that champions best practice to deliver these improvements.

Our mission is to improve health and wellbeing outcomes for the population, reduce health inequalities, and improve value to the public purse. This strategy provides high-level guidance on how to do this, applying the insights and riches from behavioural and social science to public health practice. The stakeholders, learned societies, and agencies that contributed to this strategy identified 8 priority themes to work on for the future and a number of related actions to be taken (Table 1).

Table 1. Priority themes and actions to support people in developing and applying behavioural and social science

	Priority Theme	Actions
1.	Evidence and theory	Increase the number of programmes, policies, and interventions that are (i) underpinned by evidence, principles, and methods from the behavioural and social sciences and (ii) aligned with evidence-based guidelines where available
2.	Leadership of our organisations	Make knowledge and skills from the behavioural and social sciences mainstream in all our organisations that commission, research, design, deliver or evaluate public health services
3.	Wider system leadership	Embed behavioural and social science skills, tools and frameworks across sectors of the public health workforce
4.	Access to expertise	Assist commissioners, decision makers and practitioners to understand and apply evidence and approaches from the behavioural and social sciences to public health issues
5.	Tools and resources	Provide a range of tools, methods and resources to support the use of approaches from the behavioural and social sciences
6.	Capacity building	Develop the skills and competencies of the public health workforce, so they can commission and deliver behaviour change interventions and programmes underpinned by behavioural and social science theory and evidence
7.	Research and translation	Encourage behavioural and social science research funding streams (including streams that are integrated with other public health disciplines) and the development of collaborative and multidisciplinary research capacity (with a focus on applied approaches) and dissemination
8.	Communities of practice	Strengthen or establish vibrant networks/communities of practice, improve quality of service, and promote exchanges of scientific information and professional experience

Audience and leadership

This is a broad strategy targeted at many parts of the public health system, providing a foundation for more coordinated action in future. However, we focus on the information, tools and infrastructure provided by national organisations that support the delivery of public health action by local government and their providers and partners.

A coalition of learned and professional organisations (Appendix 1) from many fields and disciplines came together to discuss and share perspectives, and identify contributions and shared goals. System leadership for this was provided by Public Health England, the Association of Directors of Public Health, and the Behavioural Science and Public Health Network. Volunteer authors contributed content to represent their fields and organisational mandates, which was integrated and reviewed by the group to deliver a co-created strategy, owned by stakeholders. This way of working has shaped both the strategy itself and the method by which we will seek to achieve its vision. We do not plan a central governance and reporting bureaucracy, but a collaborative culture of peer-support and coordinated action.

Bringing together and applying the many disciplines of behavioural and social science is an opportunity for a step change in public health. This strategy is an illustrative first start and not a definitive statement of the many approaches that can, and in many places are, being taken. We hope, however, that this strategy will catalyse an increase in people working across disciplines, especially disciplines they may not previously have considered or encountered.

Five key principles for good practice

Since this strategy brings together a variety of stakeholders, including people coming from different disciplinary traditions that may have different terminologies, we agreed in a stakeholder workshop on 5 key principles to govern our common approach:

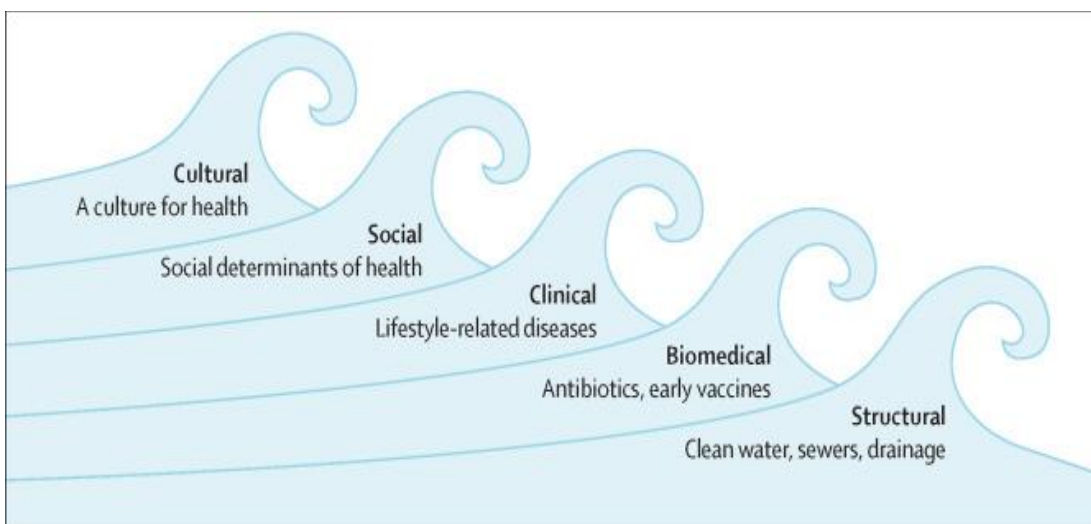
1. We should all use inclusive language that does not alienate.
2. We should all think outside of our disciplinary boundaries and cooperate across disciplines in order to ensure a multi-disciplinary approach.
3. We should promote our common focus on improving public health and reducing health inequalities.
4. We should involve end users in the development and implementation of behavioural and social sciences to benefit the public's health.
5. Our approach should be reflective and critical, informed by the evidence, and involve the highest possible standard of evaluation.

Although in this strategy we highlight different disciplines and the contributions they can make to public health, we seek to build policies and interventions in a transdisciplinary manner. We envisage a future where analyses of issues and their aetiology are not discipline-specific, but draw on insights from across the behavioural and social sciences.

1. Why do we need this strategy?

It is time for the systematic advancement of the behavioural and social sciences. Recently, the Chief Medical Officer argued that persisting health inequalities and the rising burden of long-term conditions pose a challenge for public health systems, which requires a “cultural” wave of public health (Figure 2). She proposed that population health improvement needs a fifth wave of public health that will promote a culture in which healthy behaviours are the norm and in which the institutional, social, and physical environment support this mindset. This cultural engagement with health must be embedded and must promote the active participation of the population as a whole, if it is to reduce health inequalities.

Figure 2: The proposed 5 waves of public health (6)¹



The behavioural and social sciences are essential for maximising health gain in this fifth wave, particularly in an era of digital transformation which brings additional opportunities and challenges. This cultural wave must act on the broader social and structural environment that affects the population, and not solely on interventions focussed on individuals, which tend to be less effective, much less cost-effective, and increase inequalities.

This is not to imply that the other waves are concluded. There is a wealth of evidence that many of the issues that undermine or enhance our health outcomes have social and structural determinants. This was recently addressed in depth by the Marmot Review (2). Clinical care, while important, accounts for only a minor part of our health outcomes. Preventable diseases

¹ We note that many so-called “lifestyle-related diseases” are not in fact lifestyles, for instance, smoking is an addiction, and eating too much and moving too little are sets of behaviours

and mental ill health remain stubborn challenges that require an approach which takes account of the whole person and social context in order to be effectively addressed. And wider aspects, such as belonging, identity, social connection, and purpose are crucial. Social and structural factors such as the distribution of education and employment, the built and online environment, and social norms and practices all impact on our health. Despite the fact that behavioural and cultural factors account for a vast tract of variance in health outcomes, they currently attract only a tiny fraction of the attention or resource that goes to clinical treatment (7, 8).

Furthermore, the tools we have to address the challenges we currently face in public health are changing. The way that people communicate is changing rapidly, and the digital transformation in clinical care, prevention, and health promotion is enabling direct interaction with the public (9).

Finally, in a period of austerity, approaches based on the behavioural and social sciences can be utilised to improve the physical and mental health of the population, and prevent avoidable morbidity and mortality across the life course, while reducing the burden on the public purse.

All of these factors taken together mean that improvement of the population's health cannot rely solely on biological and medical models and sciences, and **the behavioural and social sciences have increasing relevance as contributors to a multi-faceted approach to addressing the health of our population.**

The following examples demonstrate the broad scope of public health topics where the behavioural and social sciences can have a beneficial impact:

1. Examining the positive health impacts of equality and diversity in the workplace.
2. Tools and insights to understand the impact of incentives, preferences, and perceptions on behaviours that put people at risk of ill-health.
3. Insights and methods to inform the design of policy interventions to change behaviours that put people at risk of ill-health.
4. Studying how the planning of public spaces can be used to improve health.
5. Identifying how people with mental health problems can access employment and thrive in the workplace.
6. Embedding methodologies in digital transformation, such as improving how apps and electronic devices can enhance self-management for long-term conditions.
7. The use of systems science in population health studies such as obesity.
8. The development of quantitative models for policy making that consider the impact of human behaviour on the expected results such as adherence or attendance at screenings.
9. Reducing anxiety and trauma created by crime and antisocial behaviour.

10. The use of social identity approaches to address a wide range of mental and physical health problems through the recognition of the importance of social groups and the psychological identification with those groups to health.
11. Using behavioural science in market design, to create taxes that are mainly aimed at changing producer behaviour, but may also change consumer behaviour, for instance sugar taxes.
12. Use of laboratory experiments and other behavioural science research to identify the key role of substitution, from an unhealthy to a less unhealthy product, such as the successful use of e-cigarettes in decreasing the prevalence of smoking.

Each of these examples highlights an opportunity to apply behavioural and social sciences to an issue that requires a solution beyond individual behaviour change. In order to optimise attempts to improve population health, a comprehensive systems approach is required, with evidence-based interventions needing to be both “upstream” (prevention of health issues at population level before risks or exposures arise) and “downstream” (individual level interventions, eg, smoking cessation or weight management to address an existing health issue or risk factor) in their approach (10). Dynamically balancing and integrating these 2 strategies is crucial for a comprehensive approach to improving population health. Clearly, these system approaches will often need to draw on multiple behavioural and social sciences with transdisciplinary ways of working.

Our vision

Our vision is of (i) a public health system that embeds social and behavioural science approaches into the planning, delivery, and evaluation of effective interventions to improve and protect the health of the population (with social science research valued as much as biomedical and clinical research in decision making), and (ii) a behavioural and social science community that champions best practice.

Our mission

Our mission is to support organisations to utilise behavioural and social sciences in order to improve value to the public purse, reduce health inequalities and improve health outcomes and wellbeing for the population.

Outcome

Our desired outcome is the widespread application of the behavioural and social sciences to efforts to improve and protect the health of the population by the public health sector.

Aim

Our aim is for all public health organisations in England to maximise the contribution of behavioural and social sciences to the protection and improvement of the public's health and wellbeing.

2. National and local context

The field of public health currently faces a variety of significant challenges including tackling obesity, reducing smoking, increasing physical activity, improving mental health, increasing uptake of screening and immunisation, reducing inappropriate antibiotic use in order to address antimicrobial resistance, and improving air quality. Progress on these challenges will rely on changing behaviours (individual, professional, and organisational) as well as understanding and changing systems. A systems approach is needed because the complexity of public health means that change often needs to happen at multiple levels simultaneously.

Traditionally, public health professionals have worked to change behaviour by informing and educating people (health education and health promotion), as well as making structural changes. In more recent years we have recognised that many of the behaviours targeted by information and education campaigns are more effectively changed by also addressing psycho-social and structural issues (eg, food environments) and other wider determinants of health. These can shift systems towards healthier states, can create new healthier practices, and can encourage 'making the

healthier choice the easier choice'. The focus on the individual and the focus on the social and structural therefore need to be integrated.

The use of behavioural and social sciences in public health can be traced back a long way. For instance, Dr John Snow used geography to trace a cholera outbreak to a water pump in Soho in 1854 and Dr Joseph Goldberger drew on sociology when arguing that pellagra was caused by dietary deficiencies in 1914. More recently, evidence from the social sciences was influential in changing legislation, such as securing tobacco advertising bans and introducing mandatory wearing of seat belts, which has then affected cultural norms. However, to date, the behavioural and social sciences have often not been applied in a systematic way.

The behavioural and social sciences include a range of disciplines that study individual behaviour and social systems. 'Behavioural insights' and behaviour change methodologies have been gaining recognition over the last ten years. These approaches combine findings from fields such as cognitive psychology, behavioural economics, social psychology and health psychology to understand human behaviour and decision making. Behavioural insights can be used to develop and evaluate behaviour change interventions and the approach has now gained support from key leaders (11). To demonstrate leadership in this area, the Department of Health and Social Care (DHSC) launched 'DHSC Collaborate' in 2018. This stepwise initiative to further develop open policy making was established with an initial focus on behavioural science. Public Health England (PHE) has embedded the behavioural insights approach into recent strategies including 'From evidence into action: opportunities to protect and improve the nation's health' (12) and 'Strategic plan for the next 4 years: better outcomes by 2020' (13). These state that the behavioural insights approach is a game changer for PHE and the wider system because it delivers high value for money and return on investment, and uses a systematic approach based on evidence and theory.

A range of developments is also happening at a local level. Since local authorities have become responsible for public health in England, the increasing use of behavioural and social science approaches is evident. The Local Government Association (LGA) produced 2 briefings for public health professionals on behaviour change in 2013 and 2016 including local examples of good practice (14,15). In 2015/16, the LGA initiated a behavioural insights grant funding programme that was subsequently re-run in the next 2 years ([link](#)). The most recent wave was hugely oversubscribed, despite the requirement of matched funding. Across a number of areas, local authorities have been working to enhance capability for applying the behavioural and social sciences to public health practice. This has been achieved in a variety of ways including employment of a behaviour change lead (such as in Solihull and Croydon), setting up a behaviour change hub (Croydon), and collaboration between academic experts and councils (such as in Coventry and Warwickshire). As a result, behavioural science expertise has

been applied to external funding applications, rapid literature reviews and service redesigns. It has also led to the embedding of behavioural science in specific interventions and the provision of ad-hoc advice across organisations. This work has also extended to the upskilling of frontline staff through a range of behaviour change and communication skills training courses, led by behavioural and social scientists. Competency frameworks have also been developed in some areas to ensure that staff gain the appropriate skills and that these skills are embedded into practice.

Although there have been many gains in terms of behavioural science being better taken up by local public health functions, there have been fewer initiatives for building similar capacity for other social sciences. Many local authorities do commission from, work with, and learn from psychologists, sociologists, geographers, and anthropologists working on public health, but there are fewer resources to provide guidance about where insights from these disciplines could have greatest impact, or how best to work with social scientists. There needs to be a step change in these areas following publication of this strategy.

There is an important role for Health Education England (HEE) in developing competencies, and identifying opportunities for training and capacity building. Some professions already include behavioural science in their core curriculum; professional bodies should encourage and build upon this.

This strategy for incorporating the behavioural and social sciences into public health builds on recent work by the Academy of Medical Sciences, the British Academy, and the Campaign for Social Science, which has highlighted some of the current and future needs across the public health system for the behavioural and social sciences. The roles of behavioural and social science in public health practice have gained momentum in recent years. Some of the key developments include:

- British Journal of Health Psychology special issue on links between public health and psychology (1998)
- European University Studies Monograph on Health Behaviour and Health Promotion in a Public Health Psychology by Thomas von Lengerke(16) (2001)
- American Psychological Association book on Integrating Behavioural and Social Sciences with public health (2001)(17)
- Secondment of 2 Health Psychologists to the government's Division of Public Health (2003)
- National Consumer Council review of health-related campaigns and social marketing, 'It's Our Health!' (2006)(18)
- NICE Guidance on behaviour change: general approaches (2007)(19)
- Funded places for Health Psychology training (stage 2) through the Scottish Health Boards and National Health Service (NHS) (2008).

- Evidence based public health: a review of the experience of NICE in developing public health guidance (20)
- Behavioural and Social Sciences Teaching in Medicine published “A Core Curriculum for Psychology in UK Undergraduate Medical Education” (2010) (21)
- House of Lords Science and Technology Select Committee on Behaviour Change (2011)
- Public Health England created with a specific Behavioural Insights function (2013)
- Behavioural Science in Public Health Network (BSPHN) founded (2013)
- Local Government Association briefing on ‘Changing Behaviours in Public Health’ (2013)(14)
- NICE Guidance on behaviour change: individual approaches (2014)(22)
- Behavioural Experiments in Health Network founded (2015)
- PHE and British Psychology Society’s Division of Health Psychology briefing on ‘Why Directors of Public Health need to know a Health Psychologist’ (2015)(23)
- Behavioural Experiments in Health Network (BEH-net) launched its international workshop, now in its fifth edition (2015)
- European Health Psychology Society monograph on Health Psychology (2016)
- Behavioural and Social Sciences Teaching in Medicine published “A Core Curriculum for Sociology in UK Undergraduate Medical Education” (2016)(24)
- Local Government Association’s briefing on ‘Behavioural insights and health’ (2016)(14)
- Academy of Medical Sciences launch “Health of the Public 2040” (2016)(25)
- National Academy of Social Sciences’s Campaign for Social Science launches “The Health of People: How the Social Sciences can improve population health” (2017)(26)
- London School of Economics launched the first Executive MSc course in “Behavioural Science for Health” (2017)
- Competencies developed and applied to lifestyle services in Hertfordshire (2017) and Solihull, based on the Dixon and Johnston behaviour change competency framework
- Behavioural Experiments in Health Network and 3 universities launch the first PhD Summer School in Behavioural and Experimental Health Economics (2018)
- Social science evidence used in development of NICE guidelines on topics such as Active Travel and Environmental Interventions

Skills needs have also been mapped by the Public Health Workforce Review (27) and the Public Health Skills Framework (28). Some of the conclusions from these reports include:

- “while much is understood about human behaviour from basic research, there is relatively little evidence on how this could be applied in practice to change the behaviour of populations”

- we have a “limited understanding of which aspects of our environments – singly and together – are most important in driving unhealthy behaviours, often without awareness. We know even less about how to create environments – physical, economic, social and digital – to enable healthier behaviours”;
- “there will be demand for specific skill sets, such as... behavioural insight and change management”

These findings demonstrate a need for a systems leadership approach to embedding the behavioural and social sciences in public health. To develop interest in this and build on the strategic demand, a broad stakeholder engagement event took place in March 2017 at which academics, practitioners, and representatives from learned societies and funders agreed that there is both the need and the will to take action. Partners emphasised the need to draw on a number of behavioural and social sciences to deliver health improvements. They agreed that this initiative should take the form of a collaboration amongst researchers, policy makers and practitioners with the aim of developing a coherent and systematic framework.

3. What can behavioural and social sciences contribute to public health?

Behavioural sciences bring rigour and discipline to intervention design, development, and evaluation. They use explicit theories and models, which can underpin interventions, and provide a cumulative evidence base of what works. Behavioural and social scientists have valuable research and methodological skills, in some cases these can lead to new avenues for public health, such as the ability to use large datasets to inform practice. They can contribute quantitative and qualitative skills for evaluation, to understand what works, how it works, why, and for whom. As noted earlier, we recommend that public health simultaneously draws on multiple skills and expertise from the behavioural and social sciences in a transdisciplinary approach.

In this section we demonstrate how the behavioural and social sciences have contributed to improving the public's health and the opportunities they present to build on current practice and improve the effectiveness of interventions with 2 examples: tobacco control and tackling obesity.

Tobacco control

The biggest public health success story of the 21st century may very well be the reduction in tobacco use and smoking-related diseases. It also demonstrates how the behavioural and social sciences can be usefully applied to public health issues.

A broad range of insights and evidence from behavioural and social sciences have been used to understand and develop a range of interventions to address this significant public health issue. The interventions have been implemented at various levels, from the political, to the environmental, to the individual, and include informing the population of the risks associated with smoking, so that they would understand the problem, and then: providing evidence-based stop smoking services to support people attempting to go smoke free, providing a national accessible training programme for practitioners, increasing tobacco taxes, banning advertising, banning smoking in public places, and requiring plain packaging.

“The greatest benefits to health are likely to result when social structural changes are combined with more targeted interventions. For example, in the case of tobacco control, raising tobacco taxes has clearly played an important role but when it was used as the only tobacco control measure in the 1990s there was no corresponding reduction in prevalence. The ban on smoking in indoor public spaces has been a huge success in protecting the health of non-smokers, but its effect on smoking prevalence remains

uncertain. Social marketing campaigns, including No Smoking Day and Stoptober, have shown good evidence of being effective and highly cost-effective. Targeted clinical interventions, in the form of brief opportunistic advice from physicians and pharmacists, and provision of stop-smoking support, have led to a substantial increase in quitting.”(26)

Tobacco control has also tackled health inequalities, when done in a targeted way. For example, Stop Smoking Services reduced health inequalities when they were well targeted to certain groups, such as the sick and disabled, manual workers, and those with mental health problems (29–31). The Marmot Review concluded that “*Tobacco Control is central to any strategy to tackle health inequalities, as smoking accounts for approximately half the difference in life expectancy between the lowest and highest income groups*”(2).

Upstream interventions

Table 2. Upstream tobacco interventions and the contribution from behavioural and social sciences by ‘policy category’ of intervention as classified by the Behaviour Change Wheel (32, 33)

Policy category	Intervention	Contributions from behavioural and social sciences
Policy level		
Legislation	<ul style="list-style-type: none"> • Bans on tobacco advertising in the press, on billboards, and at sporting events (Tobacco Advertising and Promotion Act 2002) • Prohibition of names such as ‘light’ or ‘mild’ (Tobacco Advertising and Promotion Act 2002) • Legal smoking age increased from 16 to 18 years (Health Act 2006) • Smoking ban in public places, workplaces and cars (Health Act 2006) • Mandating pictorial warnings on cigarette packets (implemented in 2008) • Ban on point-of-sale tobacco 	<p>Social science research contributed to the evidence base that led to the ban on advertising and restrictions on marketing (34, 35). Many studies have shown that legislative measures can increase smoking cessation (eg, 36, 37).</p> <p><i>[note: The list of interventions on the left is only a sample of the extensive legislative framework that also includes a ban on sales from vending machines, minimum pack sizing, and product regulation]</i></p>

	<p>product displays (implemented in large stores, eg, supermarkets in 2012 and in small stores in 2015)</p> <ul style="list-style-type: none"> • Standardised Packaging of Tobacco Regulations (2015) 	
Fiscal Measures	<ul style="list-style-type: none"> • Increased cost of tobacco products 	<p>Research has shown that reducing the affordability of tobacco can reduce smoking amongst young people and those of low socioeconomic status (38–40).</p>
Guidelines	<ul style="list-style-type: none"> • National Tobacco Control Strategy • National Guidelines to support the implementation of local stop smoking services • Tobacco Harm Reduction • Guidance on E-Cigarettes • Guidance for the training of Stop Smoking advisors and specialists 	<p>Training programme underpinned by evidence from the behavioural and social sciences. The website provides an overview of evidence in the area, including recommendations from academic work.</p>
Environment level		
Environmental/ Social Planning	<ul style="list-style-type: none"> • Smoke free places • Designated smoking areas • Tobacco products not on display • Ban on advertising and sponsorship 	<p>Restructuring the physical and social environment is a key strategy to influence smoking behaviour. As well as reducing exposure to harmful second-hand public smoke, which already suffices to justify the policy, it has 2 effects: (i) it makes smoking more difficult (eg, by requiring individuals to go elsewhere to smoke or making the acquisition of tobacco harder) and (ii) it changes perceptions of whether smoking is a normal or acceptable behaviour (by reducing the visibility of smoking, both the smoking behaviour of others and the products themselves).</p>

Communications/ Marketing	<ul style="list-style-type: none"> • Social Marketing Campaigns such as Stoptober, January Health Harms, No Smoking Day, and World No Tobacco Day • Health warnings on tobacco products 	The behavioural and social sciences have been used in a range of ways to improve communications and marketing campaigns. For example, the Stoptober campaign included insights about social networks, setting clear and specific goals, and moment-to-moment impulse management.
Individual level		
Service Provision	<ul style="list-style-type: none"> • Delivery of evidence based effective stop smoking services • Brief Interventions(41) • Making Every Contact Count • Development of digital stop smoking interventions(42) 	The English model of smoking cessation is derived entirely from behavioural and social sciences with interventions being composed of individual empirically tested Behaviour Change Techniques.

Downstream interventions

Table 3. Downstream tobacco interventions and the contribution from behavioural and social sciences categorised by 'level' of intervention as classified by the Behaviour Change Wheel (32, 33)

Policy category	Level	Intervention	Contributions from behavioural and social sciences
Service Provision	Organisational	Commissioning effective evidence based stop smoking services. Providing evidence based stop smoking services to support people attempting to go smoke free.	As well as providing evidence to underpin their development, the behavioural and social sciences can contribute to the evaluation of services and interventions (eg 43, 44).
	Health care professional	Health care professionals including GPs providing brief advice to smokers and referring into stop smoking services (45).	

Fiscal measures	Individual/ patient	Incentivising pregnant women to stop smoking	Research has shown that incentives can encourage healthy lifestyle behaviours (although there are sometimes issues of relapse when the incentives finish)(46). One trial showed that incentives (shopping vouchers) delivered over the course of pregnancy significantly increased smoking abstinence amongst expectant mothers (47).
	Organisations	Commissioning for Quality and Innovation and Quality and Outcome Framework	
	Health care professional	Payment by results	
Guidelines	Improving identification, and retention across all levels	Improving access and referral pathway to stop smoking services	Techniques such as motivational interviewing have been trialled and integrated into services in order to improve retention on programmes(48).
		Development of digital aides to support stop smoking services	Advisors from the behavioural and social sciences have worked in tandem with digital teams to ensure that tools are optimised, both in terms of efficacy and in terms of engagement(49)

Tackling obesity across the life course

Obesity is a complex contemporary public health problem that involves a range of social, environmental, individual, physiological, biological and cultural components. Halting (and ultimately reversing) the current obesity epidemic requires systemic change by taking a holistic view that addresses the individual, social, environmental, and fiscal influences over the long term.

Strategies to tackle obesity, at a national and local level, include a mix of preventative population level approaches (eg, the soft drinks industry levy, improving the nutrient content of food and drink at the point of purchase); curative secondary prevention services (eg, family and adult weight management services); and targeted community asset based approaches. Alongside this, it is imperative to create local places that promote healthier defaults through our built, active, and food environment. Applying behavioural and social sciences and building behavioural insights into the design of these approaches is key, and is already contributing to the delivery of both population approaches at a systems level and targeted individual interventions.

Table 4. Obesity interventions and the contribution from behavioural and social sciences by 'policy category' of intervention as classified by the Behaviour Change Wheel (32, 33)

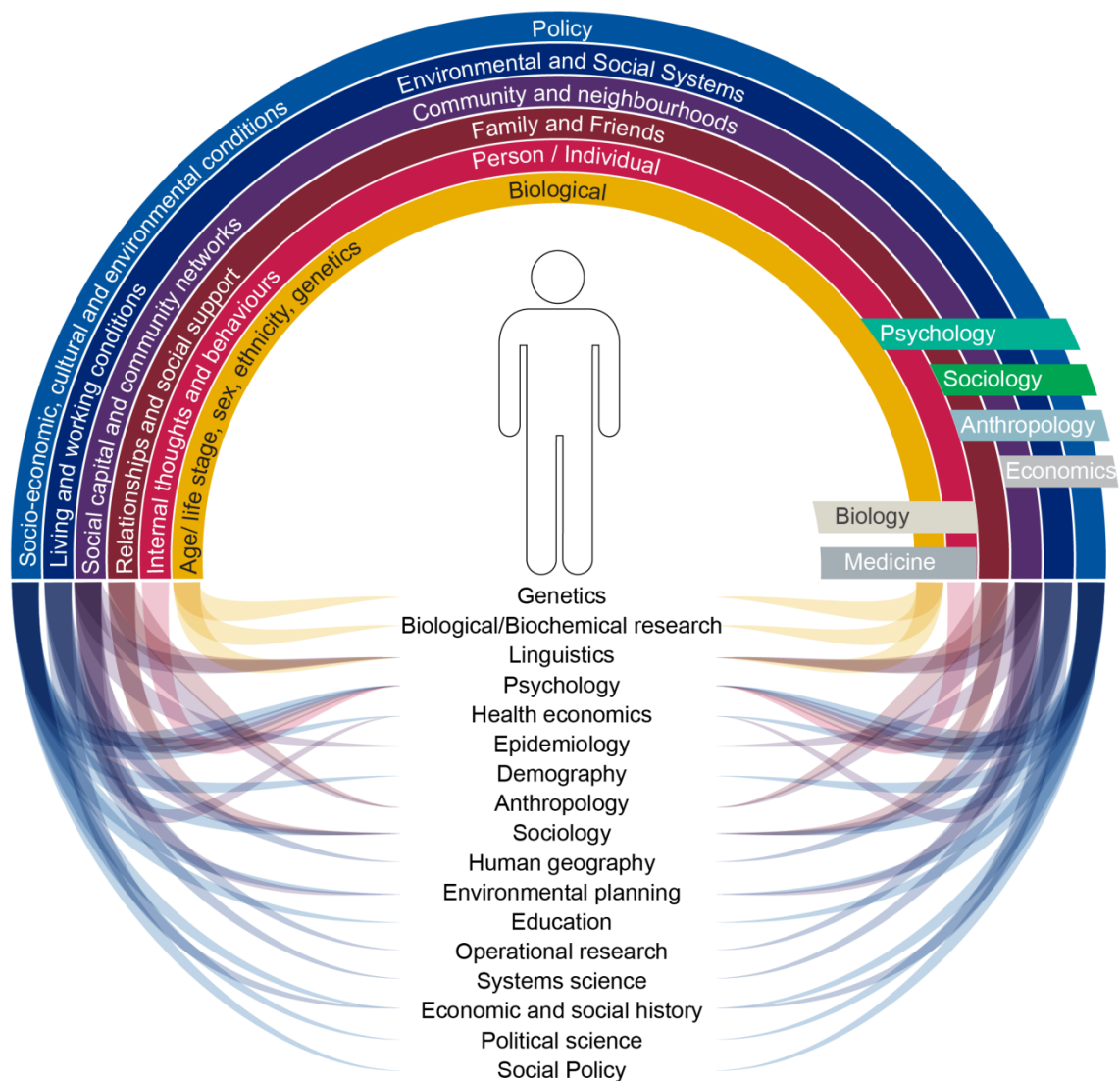
Policy category	Intervention	Contributions from behavioural and social sciences
Legislation	Restrictions on advertising of unhealthy food and drink to children	Helped to demonstrate that children are susceptible to food advertising, with adverts for energy-dense foods leading to an increase in calorie consumption (50, 51). A number of advertising strategies (eg, using popular children's cartoon characters) have been prohibited in order to minimise the impact of food advertising on children's diets.
Regulation	<ul style="list-style-type: none"> • Front of Pack Labelling • Sugar Reduction 	Consumers' response to nutrition labelling on packaging has been investigated, with demographic characteristics also taken into account to help elucidate the effectiveness of labelling measures.
Fiscal Measures	Soft Drinks Industry Levy – as a policy lever to encourage reformulation.	The evidence package for the levy included behavioural insights about the use of fiscal measures as an incentive for companies to reformulate products to contain less sugar.
Guidelines	<ul style="list-style-type: none"> • National Childhood Obesity Plan • Change4Life Retail Guidance • Weight-Management Guidance for Adults • The EatWell Guide 	<p>PHE has developed evidence-based guidelines for retail, as well as for weight-management providers and commissioners.</p> <p>Healthier catering guidance has been developed that supports buying, making and serving healthier food that also provides environmental benefits.</p> <p>See above for additional comments on front-of-pack labelling.</p>

	<ul style="list-style-type: none"> • Front of Pack Nutritional Labelling • School based meal standards • Start4Life • Government Buying Standards for Food and Catering services 	
Environmental/ Social Planning	<ul style="list-style-type: none"> • Improving access to active travel • Healthy Urban Planning Checklist • Removal of confectionary from supermarket checkouts • National Child Measurement Programme (NCMP) 	<p>Restructuring the physical and social environment can have a large impact on healthy lifestyle behaviours. For example, changing the visibility and availability of products in retail environments (eg, at supermarket checkouts) can impact upon sales of those products (52, 53).</p> <p>The NCMP, a national surveillance programme that weighs children in reception and in Year 6, was designed to enable management of local efforts to tackle child obesity. It has been evaluated by behavioural and social scientists and enhanced feedback has been tested by PHE Behavioural Insights.</p>
Communications/ Marketing	<ul style="list-style-type: none"> • Change4Life Campaigns • Food Smart • 100 calorie snacks • Start4Life – breastfeeding 	<p>The behavioural and social sciences are used to develop effective communications and marketing campaigns.</p>
Service Provision	<p>Delivery of evidence-based effective weight-management services to support people to achieve a healthier weight</p>	<p>Behavioural science contributed to the development of guidelines for evidence-based weight-management services (54, 55). Behavioural science is contributing to the development of digital weight-management interventions.</p>

4. What are behavioural and social sciences? What key frameworks do they offer public health practitioners?

The richness and diversity of behavioural and social scientific disciplines is impossible to encompass in a strategy document, and there are many more than we have chosen to represent in brief here. Those summarised in the sections below are chosen purposefully as examples of disciplines where there has been, or currently is, fruitful engagement with public health disciplines, and where there are insights which are valuable. It is not any indication or suggestion that those not included here are not valuable or important. Figure 3 shows how a larger, though still not comprehensive, list of disciplines can inform different aspects of public health, taking a systems approach with both upstream and downstream factors.

Figure 3: Conceptualising the contributions of behavioural and social science disciplines



Although we set out illustrative examples of the contributions of different disciplines, our aim is to support the interdisciplinary application of the behavioural and social sciences. Indeed, it is sometimes difficult to say which discipline is responsible for a particular approach or framework, so our classification is necessarily somewhat imprecise. This simply highlights our broader point that exemplar applications of behavioural and social sciences do not follow disciplinary boundaries and that our application of behavioural and social science to public health needs to be transdisciplinary and issue-based.

In what follows, we focus on the contribution of behavioural and social sciences to understanding behaviour and behaviour change, but all of these disciplines can also contribute quantitative and qualitative methods for evaluation, in order to answer such questions as what is happening and why, what interventions work and why, and for whom.

A. Anthropology

Anthropology is the study of human cultures and societies. Anthropology has made important methodological contributions to public health, in particular through the use of ethnography (explained below) to better understand the spread of infection and adopting healthier practices. Anthropological approaches can also contribute to the translation of scientific knowledge into effective practice at the community level.

Key concepts and theories

The focus on cultures, societies and communities can be applied to digital projects (eg, in the discovery phase, when research is done on whether users need the service that it is proposed to build and what other services exist).

Tools and frameworks

Ethnography: a form of qualitative inquiry used to gain insight into the lived experience of individuals and groups, where the researcher is embedded in the society or group that is being studied and observes behaviour in order to develop insights. 'Focused ethnography', which studies specific beliefs and practices of a particular group of people, has been adopted for work in health (56).

B. Economics

Behavioural economics

Behavioural economics takes into account theories, insights, and methods from economics, psychology, and other disciplines (sociology, anthropology, philosophy, but

also biology, neuroscience, medicine) to improve the descriptive power of economic models of decision making. Traditional economics is based on a model of rational decision making. The behavioural economics approach builds on, and departs from, traditional economics by acknowledging that human decision making and behaviour are not always fully rational and optimal, and may be subject to biases and heuristics. It discovers and diagnoses biases through testing the assumptions of the rational choice model, and it implements psychological insights into standard economic models. Behavioural economics can contribute to public health by enhancing our understanding of how humans behave and make decisions (in contrast with how they *should* behave and make decisions), thus informing the design of effective policy interventions.

Key concepts and theories

Non-standard beliefs: while traditional economics assumes that people's beliefs are formed in a rational manner based on all available evidence, behavioural economics allows that people may have systematically incorrect beliefs because of biases in the way beliefs are formed.

Non-standard preferences: traditional economics assumes that people are time-consistent (that they have the same preferences about future plans at different points in time), that they only care about their final outcomes, and that they are rationally self-interested; behavioural economics allows that people are time-inconsistent, that they care about whether an outcome is a gain or a loss and may be particularly averse to losses, and that they may also care about other people's wellbeing.

Non-standard decision making and behaviour: traditional economics assumes that decisions are consistent and optimal, given a person's preferences; behavioural economics allows, for instance, that people may use suboptimal heuristics, that they may have limited attention, that they may be affected by the framing of the decision, or that their choices may be affected by their emotional state.

Key frameworks and tools for public health practitioners

Nudge (57): we can change behaviour through 'nudges', altering the way choices are presented without restricting any options.

MINDSPACE (58): a framework to develop behaviourally informed interventions, including insights from psychology and behavioural economics.

EAST (59): a framework to support the application of behavioural insights to public policy, including insights from psychology and behavioural economics.

What is Really 'Behavioural' in Behavioural Health Policy? (60): a conceptual framework for preference-based policies, information-based policies, incentives, nudges, regulation, taxation, and 'behaviourally super-charged' health policies.

Behavioural Insights in Healthcare (61): an quick scoping review, summarising the evidence of the application of nudge-type interventions in health care and considering opportunities for reducing inefficiency and waste in health care using nudge-type interventions.

The Behavioural Experiments in Health Economics checklist (62): an *Oxford Research Encyclopaedia* toolbox to navigate 10 key areas of potential challenge/debate about applying behavioural economics experiments to health.

Test, Learn, and Adapt (63): a guide to using Randomized Controlled Trials (RCTs) to evaluate policy interventions.

Public and health economics

Public and health economics have contributed to the design of public interventions and incentive frameworks in public and health-related sectors and organisations.

In particular, public economics has proposed a fundamental tri-partition of public finance functions into (i) economic stabilization, (ii) income redistribution, and (iii) resource allocation. Economic stabilization is achieved through both fiscal and monetary policies. Income redistribution is achieved through taxation and provision of subsidies, public goods, and social services, including healthcare. Resource allocation is achieved through direct public provision of public goods and social services, and through regulation of private markets, including price regulation.

Building on the public economics framework, health economics has proposed a rationale for public intervention in the health and healthcare sectors in all the instances where those sectors are characterised by market failures, namely: public goods, externalities, asymmetric information, and monopoly. Health economics has contributed to informing the design and implementations of behavioural interventions embedded within health systems and to evaluating their macro-level impact, including also any unintended spillover effects across different stakeholders. Health economic modelling can further help to identify cost-effective interventions and potential return on investment, which is necessary when presenting invest-to-save under the preventative agenda.

Key concepts and theories

Market failures: Any time the health and healthcare sectors are characterised by the presence of public goods, externalities, asymmetric information, or monopoly, there is a rationale for public intervention in health.

C. Behavioural operational research

Operational research uses modelling to find optimal solutions to complex decisions; behavioural operation research is a sub-field that studies behavioural factors affecting model-based problem solving and decision making processes. It evaluates 3 aspects of model-based problem solving and decision making processes (64): (i) behaviour in models (how human behaviour is represented in models and how variations in behaviour impact model outcomes); (ii) behaviour with models (how decision makers use models to inform their decisions); and (iii) behaviour beyond models (how models impact upon organisational processes and behaviour). Behavioural operational research can help with the improvement of screening campaigns, policy making in the management of long-term conditions, workforce planning, optimisation of resources in organisational units (eg hospital, A&E areas, bed utilisation), and facilitation of organisational change programmes, to name a few examples (65).

Key frameworks and tools for public health practitioners

Behavioral Operational Research, Theory, Methodology and Practice (64): an overview that connects together theory, methodology and practice and offers the “state of the art” on Behavioral Operational Research theory and practice.

Special Issue “Healthcare Behavioural OR” to be published by the Journal of the Operational Research Society (forthcoming in 2018/9), including a review of implementation of behavioural aspects in the application of OR in healthcare (65).

D. Psychology

Psychology is a broad set of disciplines and perspectives, which range from the study of individual cognition to the study of group behaviours and many more aspects besides. For example, the psychology of leadership and diversity is of increasing importance to public health practice.

The aspiration underlying this strategy is to integrate the use of science and disciplines but here we discuss just 3 disciplines – health psychology, cognitive psychology, and social psychology – as starting points for public health’s engagement with the broad spectrum of psychologies.

Health psychology

Health Psychology uses the bio-psycho-social model to promote and maintain health, enhance the wellbeing of those affected by illness and disease, and improve the health care system and support health policy formation. Behaviour is complex and often people are unaware that they are engaging in detrimental behaviours, or feel unmotivated or unable to make a change. Understanding how people think, feel and learn can help us to understand and predict how they will act, and to understand how to change behaviours for better health. Within public health, health psychology can be used to identify target behaviours for change, create a behavioural diagnosis of key determinants of behaviour, identify behaviour change techniques and ways to effectively deliver them (eg education, incentivisation, restructuring the environment), develop and evaluate services, suggest low-cost changes to existing interventions and identify how best to communicate risk.

Key concepts and theories

Behaviour change theories and models, such as COM-B (Capability, Opportunity, Motivation – Behaviour) (29, 30) take into consideration the dual-process of motivation via conscious (reflective) and less conscious (automatic) decision-making processes including habits, impulses and drives.

The Health Action Process Approach (65): introduces the distinction between motivation to change behaviour and the enactment of this motivation, integrating a range of self-regulation processes.

Key frameworks and tools for public health practitioners

Intervention development frameworks:

- Intervention Mapping (66), a step-by-step approach to intervention development;
- the Person-Based Approach (67), a 'person-centred' approach to developing digital health interventions which combines ongoing qualitative research at all stages of development with the identification of guiding principles that highlight the ways the intervention will address behavioural issues;
- the Experimental Medicine Model (68) a programmatic approach which emphasises experimental testing of targets or mechanisms of change;
- Multiphase Optimization Strategy (MOST) (69), a 3 stage process for digital design in which intervention components are screened, refined and confirmed.

Combining psychological theories: the Theoretical Domains Framework (70).

Building intervention content:

- the Behaviour Change Technique (BCT) Taxonomy (71), with [free BCT Online training](#);
- Oxford Food and Activity Behaviors (OxFAB) taxonomy and questionnaire to explore the cognitive and behavioral strategies used by individuals during weight management attempts (72).

The TIPPME (Typology of Interventions in Proximal Physical Micro-Environments) intervention typology for changing environments to change behaviour (73)

Delivery approaches: Motivational interviewing, an approach used to increase motivation to change behaviours (74).

Networks to support intervention developers:

- the Behavioural Science and Public Health Network (BSPHN) (formerly the [Health Psychology in Public Health Network](#)) for practitioners and academics, a community of practice for those working within the behavioural and social sciences and public health to come together to share best practice both virtually and physically at regular events;
- the Division of Health Psychology, a society membership for health psychologists trained in intervention design, delivery and evaluation.

[Manchester Implementation Science Collaboration open access elearning website](#) about behaviour change for health professionals,

Division of Health Psychology's specialist knowledge database (available from September 2018)

Cognitive psychology

Cognitive psychology is the study of internal mental processes such as attention, language use, memory, perception, problem solving, and thinking.

Key concepts and theories

Dual-process theories (75): propose that human cognition can be conceptualised as 2 types of processes: System 1 (automatic, fast, and non-conscious) and System 2 (slow, deliberative and conscious). The idea that people often use mental shortcuts and rules of thumb to speed up decision making can inform interventions to support positive health decision making (76).

Key frameworks and tools for public health practitioners

Review of cognitive biases and heuristics in medical decision making (77)

Review of how cognitive biases affect clinicians (78)

Social psychology

Social psychology is the scientific study of how people's thoughts, feelings, and behaviours are influenced by the actual, imagined, or implied presence of others (79). Social psychology is an interdisciplinary domain that bridges the gap between psychology and sociology.

Key concepts and theories

Social norms: these are implicit rules about behaviours and standards that are socially acceptable and/or commonly enacted by relevant others. Social norms can be descriptive (what others do) or injunctive (what others approve of).

Social comparison theory (80): this theory proposes that individuals are motivated to compare themselves with others when evaluating their behaviours, attitudes and opinions, and to adjust behaviour accordingly.

Social learning theory (81): this theory suggests that individuals learn behaviours via observational learning of others performing the behaviour.

Theory of reasoned action (82, 83): this theory sees intention as the main determinant of behaviour and, in turn, intention is determined by a person's attitudes towards that behaviour and the subjective norms of influential people and groups that could influence those attitudes.

Theory of planned behaviour (84): this theory builds on the theory of reasoned action by including the individual's perceived behavioural control over the outcome as a factor influencing the probability of undertaking a behaviour.

Key frameworks and tools for public health practitioners

Behaviour-centred design (85): unites the latest findings about how brains learn with a practical set of steps and tools to design successful behaviour change programmes.

E. Sociology

Sociology examines the individual's social action (agency) and the community's social and physical context (structure). The focus lies predominantly on the context in which people live, interact, work, and play (rather than on the individual, which is the focus of psychological disciplines). The influence of social class on health status, health behaviour, and access to and use of health services, is one of the earliest and most examined social influences on health.

Key concepts and theories

Social determinants approach to public health (86): public health programmes that intend to address social determinants and to have a great impact on health equity.

Social practice theory (87): the study of social practices and how they change over time, incorporating an understanding of both individual human agency and the social structures that individuals act within.

Normalisation process theory (88): this theory is concerned with factors that promote or inhibit the implementation of complex interventions, from early implementation up to the complete integration (or normalisation) of the intervention into everyday practice. It can be useful for developing and evaluating interventions.

Social model of health (89): this model depicts the relationship between the individual, the contexts in which they live (ie, from social communities to wider socioeconomic and structural factors), and their health.

Key frameworks and tools for public health practitioners

ISM Model (90, 91): a practical tool for designing effective policy interventions, bringing together Individual, Social, and Material factors that affect behaviour..

Social Model of Health (92): this model depicts the relationship between the individual, the contexts in which they live (ie, from social communities to wider socioeconomic and structural factors), and their health.

F. Other useful public health tools

Intervention design, implementation, and reporting

- Behaviour Change Wheel (32, 33)
 - The Behaviour Change Wheel is a synthesis of 19 frameworks from multiple domains, sectors and disciplines. It includes COM-B at the hub (capability, opportunity, motivation as influencing factors in a model of behaviour), surrounded by 'intervention functions' to deliver behaviour change techniques (BCTs) and 'policy categories' as the outer layer.
- **EPOC taxonomy**
- **TIDieR** for reporting of interventions: template, checklist and guide
- **PARiHS** framework for implementing research into practice
- **Health Behaviour Change Competency framework**
- **Lifeguide** for creation of interactive web-based interventions
- NIHR/CIHR Guidance on taking context into account in population health research (forthcoming)

Evaluation

- **MRC Guidance on developing and evaluating complex interventions**
- **MRC Guidance on process evaluation of complex interventions**
- **MRC Guidance on natural experimental evaluations**
- **The Magenta Book** – HM Treasury guidance on evaluation
- **PHE Resources for Evaluation in Health and Wellbeing**
- **Frameworks for evaluability assessment**

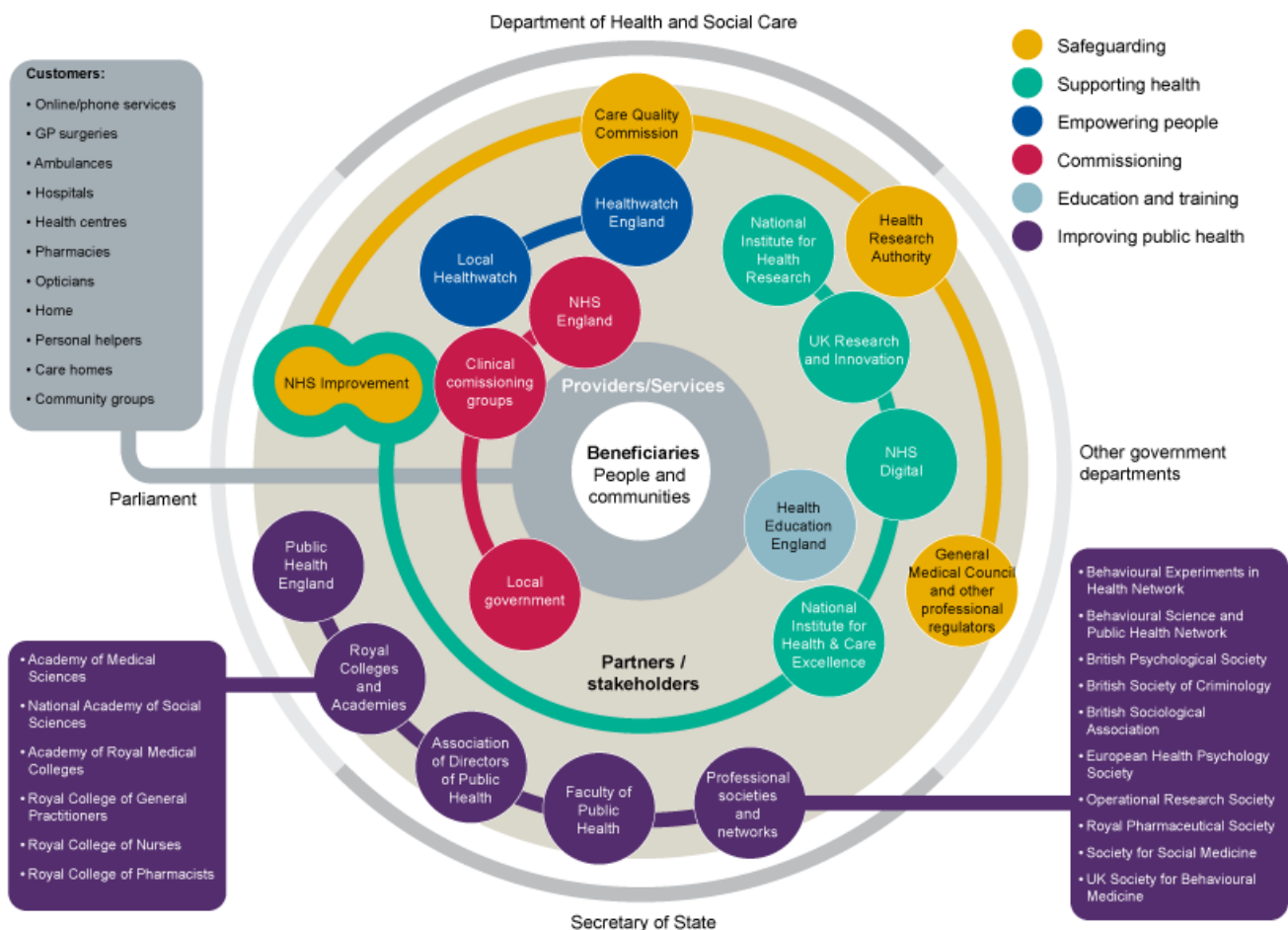
5. Leadership and delivery organisations

Leadership is vital to enhance the delivery of the behavioural and social sciences in the public health system and to embed transdisciplinary approaches. Without a concerted and systematic drive, strengthening practitioners' capability within the system is likely to be patchy and sporadic. As an initial step, this strategy focuses on the national public sector players, but we recognise that many others – voluntary and community organisations, employers, private sector agencies, faith communities, and more – have a very important part to play. The key stakeholders that contributed to discussions about this strategy, who are acknowledged in the appendix, are grouped as follows:

- National policy and delivery organisations
- National professional societies, learned bodies, and networks
- Research funders, thought leaders, and think tanks
- Royal Colleges and Academies

The infographic below proposes a systems map of these stakeholders and their primary role in delivering or enabling the use of the behavioural and social sciences in public health (Figure 4).

Figure 4. System map of key stakeholders enabling the use of behavioural and social sciences in public health in England



6. The first steps to implementation and a road map

The road map and first steps to implementation, described below, were identified, compiled and enhanced through workshops and collaborative working amongst stakeholders. Activities for the road map were categorised into 8 areas of focus. The first steps to implementation are outlined in a timeline for the first 2 years after launch of the strategy in September 2018 (Table 5). We recognise that while broad, the list of stakeholders, the road map, and the first steps to implementation are not fully comprehensive and therefore will be jointly reviewed and appropriately updated.

1. Evidence and theory

Increase the number of programmes, policies and interventions that are underpinned by evidence and theory from behavioural and social sciences, and aligned with guidelines (in transdisciplinary approaches where appropriate):

- 1.1. Raise awareness and credibility of the utility of the behavioural and social sciences for public health, so that practitioners understand the potential benefits
- 1.2. Promote relevant public health research that uses methodologies from behavioural and social sciences
- 1.3. Regularly review the use of the behavioural and social sciences in practice (local authority, NHS and their providers)
- 1.4. Increase the value and importance of behavioural and social sciences in systems thinking and whole systems approaches to public health
- 1.5. Promote case studies that highlight the explicit theory, evidence and mechanism of action behind interventions
- 1.6. Raise awareness and promote cost effective interventions where possible (such as digital interventions designed with behaviour change theory)

2. Leadership of our organisations

Make available knowledge and skills from the behavioural and social sciences mainstream within all organisations that commission, research, design, deliver or evaluate public health services:

- 2.1. Key stakeholders develop implementation plans to deliver on their functions of this strategy

- 2.2. Senior leadership of stakeholders subscribe to the strategy and provide support to staff who are leading on behavioural and social sciences
- 2.3. Promote the employment of people with behavioural and social science training directly within public health teams, to support public health organisations in developing this specialised skill set

3. Wider system leadership

System leaders commit to a systems thinking approach, to work collaboratively across organisations, to be aware of how complexities affect the impact of their work, and to use transdisciplinary approaches where appropriate:

- 3.1. Acknowledge the value added from behavioural and social sciences, advocate for them, and celebrate success
- 3.2. Encourage synergistic approaches to change behaviour across individual, group and population levels (where appropriate)
- 3.3. Provide topic-based leadership for various public health functions (eg, Making Every Contact Count, health literacy, self care, tobacco, obesity, physical activity, alcohol, occupational health, immunisation, screening etc.)
- 3.4. Promote evaluation of behavioural and social science interventions and behavioural and social science approaches
- 3.5. Facilitate coordination of activities and resources across the system
- 3.6. Encourage systematic investigation of the cost-effectiveness of interventions
- 3.7. Use a comprehensive approach to identify key behaviours that need to change

4. Access to expertise

Assist policy makers and decision makers to understand and apply evidence and approaches from behavioural and social sciences to public health problems:

- 4.1. Increase opportunities and resources for behavioural and social science experts to work with policy-makers and practitioners
- 4.2. Map and increase opportunities for fellowships, placements, and internships for behavioural and social science academics into non-academic organisations
- 4.3. Signpost to centres of excellence for behavioural and social science

5. Tools and resources

Support the development, continuous improvement, and implementation of a coherent and systematic framework for a behavioural and social science approach through the provision of a range of tools and resources:

- 5.1. Develop and promote tools to enable practitioners, policy makers and commissioners to use behavioural and social sciences
- 5.2. Produce and update intervention design, practice, and commissioning guidelines
- 5.3. Develop and optimise access to behavioural and social science tools and frameworks (eg quality standards, evaluation frameworks, commissioning templates)
- 5.4. Agree a quality framework and processes for how and when to apply existing tools

6. Capacity building

Build a public health workforce that is appropriately skilled and competent to commission and deliver behavioural, social and structural interventions:

- 6.1. Conduct a needs assessment of the level of behavioural and social science knowledge and skills required by segments of the workforce
- 6.2. Strengthen behavioural and social sciences (knowledge, skills, use) in pre- and post-service training, and focus on practice change
- 6.3. Leverage financial incentives for the workforce to develop capability, opportunity, and motivation
- 6.4. Develop training pathways at all levels of expertise
- 6.5. Ensure that behavioural and social sciences in professional competencies and standards are implemented and assessed effectively
- 6.6. Regulate and support professional requirements where appropriate
- 6.7. Consider an accreditation system for behavioural and social science providers to give quality assurance
- 6.8. Provide online training and development resources
- 6.9. Facilitate workshops and scientific meetings

7. Research and translation

Advocate for behavioural and social science research funding streams in public health and the development of collaborative and multidisciplinary research capacity (with a focus on applied approaches):

- 7.1. Strengthen the portfolio of health research with increased support for research involving behavioural and/or social science
- 7.2. Encourage representation of behavioural and social scientists on funding panels
- 7.3. Develop new funding streams for implementation science, which may include the use of behavioural and social sciences, to promote the uptake of

behavioural and social science research findings into clinical, organisation and policy contexts

- 7.4. Encourage research funders to collaborate in the funding of multi-disciplinary research
- 7.5. Encourage funding of knowledge exchange and impact generation capacity, capability, and activity, to make best use of high quality evidence that is fit for purpose and enable academics to work with policy makers and practitioners
- 7.6. Continue to judge behavioural and social science funding applications based on pathways to impact plans and engagement with end users
- 7.7. Encourage collation and funding of datasets that collect behavioural and social science data that can inform public health research and policy
- 7.8. Encourage funders to support multi-disciplinary training for researchers from MSc studentships to post-doctoral research posts, including new training avenues to support multi-disciplinarity
- 7.9. Support the development, uptake and adoption of behavioural and social science innovations in the health and social care system

8. Communities of practice

Strengthen or establish vibrant networks/communities of practice, improve quality of service, and promote exchanges of scientific information and professional experience:

- 8.1. Facilitate knowledge of resources available across the system
- 8.2. Map and strengthen liaison between organisations
- 8.3. Support early career networks
- 8.4. Strengthen collaboration across disciplines and between different functions of the public health system
- 8.5. Strengthen links and knowledge transfer between behavioural and social science research centres that produce high value evidence, and the public health professionals that use it

Table 5. Proposed timeline for implementation of the first steps in the strategy

Timeline	Priority category	Exemplar deliverables
On launch	Tools and resources	Partners have created an initial list of useful and validated behavioural and social science tools for public health practitioners in this strategy (to be signposted from all partner websites if possible)
	Communities of practice	Behavioural Science and Public Health Network create a community of practice formed from the Health Psychology in Public Health Network
	Communities of practice	Behavioural Science and Public Health Network and Public Health England create an online forum to provide support to public health practitioners who want to apply behavioural science to improve health outcomes. This will include development of a resources and tools section
	Research and translation	Department of Health and Social Care establish new Behavioural Science Policy Research Unit
	Evidence and theory	Partners support calls for case studies that highlight theory, evidence and mechanism of action and publish these on knowledge hubs
Year 1	Multiple categories	Local Government Association, Association of Directors of Public Health, Behavioural Science and Public Health Network, and Public Health England conduct an initial survey of the behavioural and social sciences in practice across local government
	Leadership of our organisations	Public Health England develops and publishes its internal behavioural science implementation plan
	Access to expertise	Partners establish a panel of behavioural and social science experts who are willing to advise public health policy-makers and practitioners
	Tools and resources	Behavioural Science and Public Health Network and Public Health England host a live online list of behavioural and social science models of practice and case studies
	Research and translation	Public Health England explore the potential for enhanced behavioural and social science research infrastructure
	Capacity building	Behavioural Science and Public Health Network to host an online list of supervisors, trainees and public health opportunities to support Stage 2 Health Psychology training
	Capacity building	Health Education England publish Behaviour Change Framework and supporting toolkit for workforce development
	Research and translation	Research to understand the role of individual and organisational behaviours and develop solutions will be important to the new Economic and Social Research Council priority area of Innovation in Health and Social Care

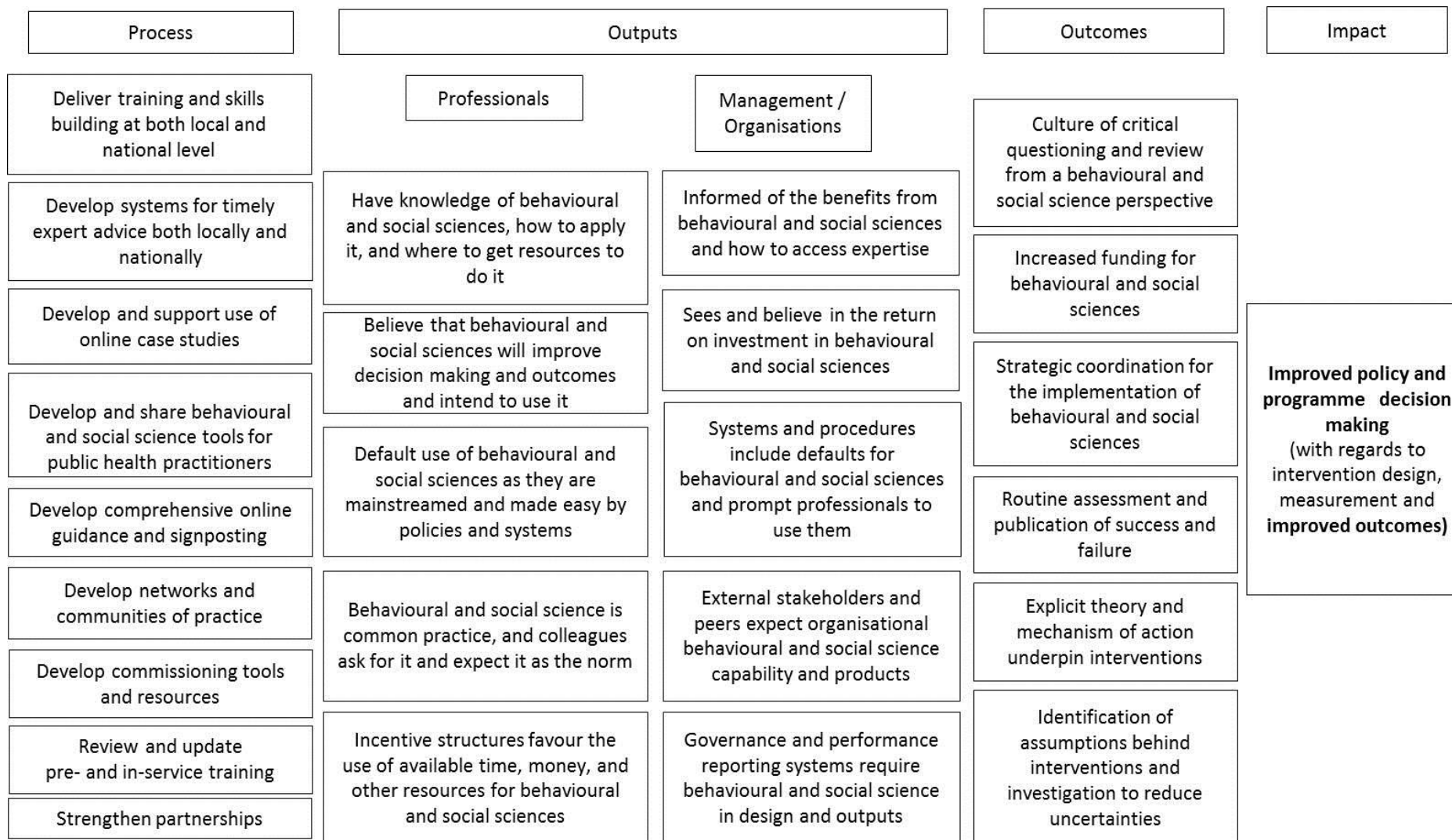
Year 1	Access to expertise	Behavioural Science and Public Health Network and British Psychological Society Division of Health Psychology create a contact directory of behavioural science experts and public health professionals
	Communities of practice	Behavioural Science and Public Health Network establish Fellowships to promote the mutually beneficial relationship between behavioural science and public health.
	Guidance for employment	Association of Directors of Public Health and Local Government Association produce a brief guide to employing behavioural and social scientists in public health with a template job description
Year 1-2	Access to expertise	Economic and Social Research Council seek feedback from PHE on their Impact Toolkit to better enable academics to engage with local decision makers and public health professionals
	Communities of practice	Partners form a central network to strengthen liaison between organisations and invite others
	Tools and resources	Coventry University with Warwickshire County Council, with support of Public Health England, develop their commissioning guidance that supports the procurement and delivery of quality behavioural science
Year 2	Leadership of our organisations	Partners assess the number of organisations that subscribe to this strategy
	Capacity building	Health Education England and partners review pre- and post-service training for behavioural and social science competencies
	Capacity building	Faculty of Public Health reviews whether behavioural and social sciences in professional competencies and standards can be implemented and assessed more effectively
	Capacity building	Partners scope a system for voluntary accreditation for behavioural and social science providers
	Tools and resources	All partners aim to signpost to each other's tools and websites for behavioural and social sciences
Ongoing	Evidence and theory	Partners support public health applications for funding support such as the Local Government Association behavioural insights programme
	Evidence and theory	Partners apply behavioural and social science theory and evidence to our own products and services (eg General Medical Council training on unconscious bias for decision makers; Department of Health and Social Care Collaborate programme to improve open policy making)
	Wider system leadership	Health Education England and Public Health England continue to embed behavioural science into the delivery of Making Every Contact Count

Ongoing	Wider system leadership	Royal College of General Practice commissioning guidance for Clinical Commissioning Groups to demonstrate the case for behavioural and social sciences
	Wider system leadership	Royal College of Nurses continue to develop web content to support behaviour change and initiatives to support MECC with NHS and Public Health England
	Capacity building	Public Health England delivers a rolling programme of Behavioural Insights Masterclasses to local public health practitioners
	Capacity building	UK Society for Behavioural Medicine, British Psychological Society and Public Health England encourage research and translation through support such as: seed awards; PhD funding; bursaries, prizes and awards for promising researchers; annual scientific meetings; research and practice CPD events; and support early career researcher networks
	Capacity building	Behavioural Economics in Health Network provides a PhD Summer School in Behavioural and Experimental Health Economics, with bursaries for PhD students in the UK and EU
	Capacity building	Behavioural Science and Public Health Network run award and networking scheme for research students and practitioners who are integrating behavioural and social sciences and public health; deliver Continuing Professional Development events for those working across these areas; host training recordings on their website; organise scientific meetings and practice-focused meetings; award bursaries; and organise practice-focused training sessions.
	Capacity building	Operational Research Society training course on behavioural operational research
	Research and translation	Initiatives like the UK Prevention Research Partnership should encourage all new funded projects to have a Knowledge Broker to join up evidence generated and the potential users of that evidence
	Research and translation	The UK Prevention Research Partnership is supported by 9 funders and is likely to feature behavioural and social sciences researchers and approaches
	Communities of practice	Economic and Social Research Council and PHE collaborate to signpost Economic and Social Research Council Impact Acceleration Accounts to public health professionals
	Communities of practice	UK Society for Behavioural Medicine Fellow role to support engagement with policy and practice

7. Theory of Change for this strategy

We developed a Theory of Change and associated logic model for this strategy, given that this document was collaboratively developed as a system-level intervention (Figure 5). The logic model outlines the impact we expect to see if this strategy is implemented as described and the mechanism of action (outputs and processes) by which we expect the impact to be achieved. This will guide the high-level management of the implementation of the strategy, though we expect individual leadership and delivery organisations to develop and manage their own strategies in alignment with this co-produced consensus guide. The logic model will also guide the proposed survey of behavioural and social sciences in practice in year one, the assessment of the number of organisations subscribed to the strategy that is proposed for year 2, and the evaluation of the strategy.

Figure 5. Logic model outlining the expected core Theory of Change for this Strategy



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Appendix 2. Key stakeholder acronyms

This section describes the key organisations involved in the planning, delivery and evaluation of behavioural sciences and their application to public health.

National policy and delivery organisations

Association of Directors of Public Health (ADPH) – represents and supports the practice of Directors of Public Health (DsPH). Captures and disseminates the views of DsPH, identifies and engages with the training needs of individuals holding the role and seeks to influence public health policy in line with the views of membership.

Department for Health and Social Care (DHSC) – responsible for government policy on health and adult social care. Supports and advises ministers to develop policy, sets direction in terms of domestic and international health, operates in oversight of health and care framework and of arm's length bodies.

Faculty of Public Health of the Royal College of Physicians of the United Kingdom (FPH) – drives the training and ongoing professional standards of public health professionals, promotes research and understanding of public health and partners at a local and national level to improve public health policy practice.

General Medical Council (GMC) – ensures that newly qualified doctors are able to apply social science principles, methods and knowledge to medical practice and integrate these into patient care. It provides quality assurance for the delivery of education and training and promotes the pursuit of evidence-based improvement in the quality of care.

Health Education England (HEE) – leads on the development of the core PH workforce including specialists, practitioners, and the wider PH workforce. It commissions education and training in line with its mandate from Government¹

Local Government Association (LGA) – is the national voice of local government. We work with councils to support, promote and improve local government. We are a politically - led, cross party organisation which works on behalf of councils to ensure local government has a strong, credible voice with national government. We aim to influence and set the political agenda on the issues that matter to councils so they are able to deliver local solutions to national problems.

National Institute for Health and Care Excellence (NICE) – non-departmental public body providing national evidence-based guidance and advice to improve health and social care. Provides guidance for public health, health has social care practitioner and information services for commissioners, practitioner and managers and develops quality

¹ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/411200/HEE_Mandate.pdf

standards and performance metrics for commissioners and providers of public health, health and social care.

NHS England (NHSE) – responsible for arranging the provision of health services in England. Sets priorities and direction for the NHS, commissions healthcare services and assesses and supports clinical commissioning groups in accordance with its government mandate².

NHS Improvement (NHSI) – responsible for overseeing foundation trusts and NHS trusts, as well as independent providers that provide NHS-funded care. We offer the support these providers need to give patients consistently safe, high quality, compassionate care within local health systems that are financially sustainable. By holding providers to account and, where necessary, intervening, we help the NHS to meet its short-term challenges and secure its future.

Public Health England (PHE) – brings together public health professionals, scientists and researchers to provide evidence-based professional, scientific expertise and support focused on improving health and wellbeing and reducing health inequalities. It delivers specialist public health services, provides practical advice to LGAs and partnership with the NHS and NHS Improvement. Behavioural science is embedded in teams and directorates and through specialist teams which strengthen the behavioural science component of projects and trials and shares knowledge and expertise.

National professional societies and networks

Behavioural Experiments in Health Network (BEH-net) – an international network of researchers and practitioners whose mission is to foster the use of experimental methods and behavioural insights in health economics, policy, management, and practice, and to inform policy and management interventions in the area of health and healthcare.

Behavioural Science and Public Health Network (BSPHN, formally the Health Psychology in Public Health Network) – brings together and provides a forum for behavioural and social scientists, health psychologists and public health specialists to increase the synthesis between behavioural science and public health.

British Psychological Society Division of Health Psychology – applies its science to the prevention, promotion and maintenance of health and wellbeing and the analysis and improvement of the health care system and health policy formation. It also works to develop professional skills in research, consultancy, teaching and training.

British Psychological Society Division of Occupational Psychology – undertakes activities to support well-being within the work environment.

² https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/600604/NHSE_Mandate_2016-17.pdf

British Society of Criminology (BCS) – a network of academics and professionals who are engaged with research, teaching or practice related to crime, criminal behaviour and the justice systems in the UK.

British Sociological Association (BSA) – has the primary objective of promoting sociology through events, journals, a professional network and special interest groups, and representation on key bodies both nationally and internationally to influence policies.

European Health Psychology Society (EHPS) – brings together an international network of health psychologists to promote research and application of health psychology across Europe. Promotes interchange of information with other professional psychological societies and has formal association with the UN.

Operational Research Society (OR) – supports the application of appropriate analytical methods to help those who run organisations make better decisions. Its focus is on improving the complex social and technical systems and processes that underpin everybody's daily lives. Operational Research is the 'science of better'.

Society of Social Medicine (SSM) – aims to promote the development of scientific knowledge in social medicine through multi-disciplinary scientific meetings, networking, communications and input to policy consultations.

UK Society for Behavioural Medicine (UKBSM) – helps to build capacity in the behavioural sciences by promoting exchange of scientific knowledge and professional experience, formal meetings and collaborative undertakings, and raising the profile of behavioural medicine in science and health policy.

Research funders, thought leaders and think tanks

Economic and Social Research Council (ESRC) – a member of UK Research and Innovation; funds high quality social science research, collection of social and biosocial datasets, knowledge exchange, and impact generation to make the best use of social science evidence for impact on policy and practice.

Medical Research Council (MRC) – a member of UK Research and Innovation; supports research in universities and hospitals, and its own units, centres and institutes in the UK, and in its units in Africa. The MRC supports research across the entire spectrum of medical sciences, including infections and immunity, molecular and cellular medicine, neuroscience and mental health, population and systems medicine, global health and translational research.

National Institute for Health Research (NIHR) – funds health and care research, and translates discoveries into practical products, treatments, devices and procedures, involving patients and the public in all its work. The NIHR ensures that the NHS is able to support the research of other funders to encourage broader investment in, and economic growth from, health research. It works with charities and the life sciences industry to help patients gain earlier access to breakthrough treatments and it trains and develop researchers to keep the nation at the forefront of international research. The

NIHR is funded by the Department of Health and Social Care to improve the health and wealth of the nation through research.

UK Research and Innovation (UKRI) – a body which works in partnership with universities, research organisations, businesses, charities, and government to create the best possible environment for research and innovation. Operating across the whole of the UK with a combined budget of more than £6 billion, UKRI brings together the 7 Research Councils, Innovate UK and Research England. Supported and challenged by an independent chair and board, UKRI is principally funded through the Science Budget by the Department for Business, Energy and Industrial Strategy (BEIS).

Wellcome - funds a broad spectrum of high quality research across science and humanities and social science disciplines. Schemes support researchers at all stages of the career spectrum and fund the highest calibre collaborative research projects. Population Health at Wellcome has a strategic focus on understanding health and disease, the design of effective interventions and using knowledge more effectively. Wellcome currently supports the “**Human Behaviour Change Project**” and the “**Behaviour Change By Design**” research programmes amongst others relevant to this space.

Royal Colleges and Academies

Academy of Medical Sciences – comprising elected fellows drawn from biological sciences, clinical academic medicine, public and population health, technology implementation, veterinary, dentistry medical and nursing care and underpinning disciplines. Celebrates excellence amongst medical science research, draws upon membership and evidence-base to provide advice and support, identifies and addresses support needs in the medical science community and fosters collaboration between academics, the NHS and industry and with international partners.

Academy of Royal Medical Colleges – coordinating body for the UK and Ireland's medical Royal Colleges which provide development or training in one or more medical speciality. Supports consistency in training and practice, contributes to training and ongoing development for postgraduate, qualified and international doctors.

Academy of Social Sciences – comprising individual Fellows composed of academics and practitioners from academia, the public and private sectors, learned societies and affiliates. It produces and disseminates theoretical and applied social sciences research, provides training and events and operates as a bridge between the social science community and governments.

Royal College of General Practitioners (RCGP) – provides education and training for over 50,000 GPs in the UK to understand how behavioural and social sciences can be implemented to support the delivery of high levels of care and address the challenges facing primary care and receive continued professional development.

Royal College of Nursing (RCN) – supports the education, professional development and professional practice of nurses – to enable them develop the skills to support

people with behaviour change through their understanding of local issues and communities.

Royal College of Physicians (RCP) – supports and provides education and training to physicians in the UK including the provision of training curricula and exams for physicians and guidelines for care. Develops evidence-based policy focused on person-centred care, public health challenges and academic medicine and research.

Royal Pharmaceutical Society (RPS) – represents pharmacists in Great Britain. Provides professional development and accreditation to members and the industry, provides medicines information and advice and promotes and commissions research to improve practice and patient care and safety.