The Nightingale:

Time to get serious about addressing the social, behavioural and environmental influences on health

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Summary

We know a lot about what causes good and bad health. We know that just 10 to 25 per cent of our health and well-being is linked to the availability and quality of the healthcare we receive. It's our behaviour and the social and economic environment we live in that matters as much, if not more. This intuitively makes sense: what makes us healthy and happy (or not) are the places we live and work, the people we spend time with, and the impact this has on our opportunities and lifestyles.

Despite this strong evidence, more than 90 per cent of the national health budget is spent on treating disease.[1] We spend remarkably little on upstream prevention or on promoting good health.

This imbalance is mirrored in research. Little more than five per cent of the UK's health research budget is spent on prevention research, and there is yet to be any agreed systematic approach to modelling and evaluating the health impacts of wider changes in social and economic policy. The consequence is a glaring gap in knowledge, leaving even the most committed policymakers and commissioners at a loss as to what to support or how to prioritise.

In contrast, and despite evidence of rapidly declining returns,[2] the UK continues to increase its investment in biomedical research, spending close to £4 billion each year on the handful of conditions considered most amenable to pharmaceutical intervention.

The current Government has indicated a willingness to address this imbalance.[3] They're not the first. The prevention green paper expected this summer will join a long list of Government reviews and commitments to improving the health of the public. A promise to follow through with funding could go some way to ensuring its success – but it won't go far enough. Because although we know a lot about what causes ill health, we know far too little about how to design and implement solutions to prevent it.

This means it's not credible to just push more money into existing research institutions.

Firstly, because what's needed cuts across disciplines, including not just public health but also social sciences and other fields of knowledge (such as design, data and digital). And secondly, because it needs an intensive R&D model that creates evidence-based solutions at pace, using a combination of creative ideas, practical experimentation and rigorous evaluation which goes well beyond research alone.

For example, transforming urban spaces in ways that promote physical and mental well being, supporting physical activity and community connection, requires engagement of planners, architects, sociologists and community groups, as well as researchers, to shape and promote initiatives and measure their effects.[4] Development of better ways to improve mental health for young people, requires the involvement of young people, health and education practitioners, and policy makers. Should this lead to ideas for new digital tools and peer support, this requires further collaboration with human-centred designers, psychologists and technologists, as well as experts in evaluation and rapid learning.

We need experiments of this kind on a much larger scale than in the past to generate actionable intelligence equal to the scale of the problems – bridging the valuable work being done by academics – and by social and digital entrepreneurs.

'The Nightingale'

Over the past five years, the Government has made two big and bold commitments to health research – investing hundreds of millions in biomedical and genetic research through the establishment of the Francis Crick Institute[5, 6] and Genomics England.[7] We support these initiatives.

But a third, and equally bold, commitment is now long overdue. We urgently need an equivalent step-change in R&D investment focussed on the social, behavioural and environmental determinants of health. This requires investment commensurate with the scale of need and opportunity – we propose a budget of around £140 million per year by 2025.

With the 200th anniversary of Florence Nightingale's birth next year we believe the best way to celebrate her contribution to public health research and practice would be to create a world-renowned centre of innovation and research excellence in her name. With an ambition and investment equivalent to the Crick and Genomics England, 'The Nightingale' could attract and connect the finest minds from across the research, design and technology sectors, building R&D capability alongside research teams and communities right across the UK. In less than ten years, this could generate hundreds of new actionable insights, enabling national and local governments, public and voluntary sector organisations, businesses and communities, to reduce health inequalities and improve health. Its aim, in other words, would be to shift priorities, funding and action with results that would in time benefit everyone.

The Nightingale: Time to get serious about addressing the social, behavioural and environmental influences on health

Nesta is an innovation foundation. We bring bold ideas to life to change the world for good. In health, our work includes research, funding and support for new networks, relationships and technologies that help to create a more people-powered and knowledge-driven future for health and care. In this paper we propose a new centre of innovation and research excellence to equip us with the knowledge we need to improve the social, behavioural and environmental determinants of health.

For too long the UK has promised to tackle health inequalities and improve health but hasn't followed through with sufficient investment or action. This means we know a lot about what causes good and bad health, but woefully little about how best to improve it. As the Government prepares its green paper on prevention, it simply won't be enough to double down on their commitment and hope for different results. It's time for a radical shift in investment, infrastructure and evidence, building our collective understanding of how to create and sustain the best conditions for good health, through a step-change in investment for evidence-based solutions.

We propose a new centre of innovation and research excellence to turn this ambition into reality, drawing expertise from across public health and behavioural and social sciences, with the best practices from human-centred design, citizen science and asset-based community development. We suggest calling it 'The Nightingale', in honour of Florence Nightingale's vital contribution to public health research and practice.

Prevention is better than cure

> "The nation's health is partly the result of the quality of the health or social care we receive. It also depends on the social and economic environment in which we are born, grow up, live, work and age – as well as the decisions we make for ourselves and our families. Most experts agree these are more important than health and social care in ensuring longer, healthier lives."
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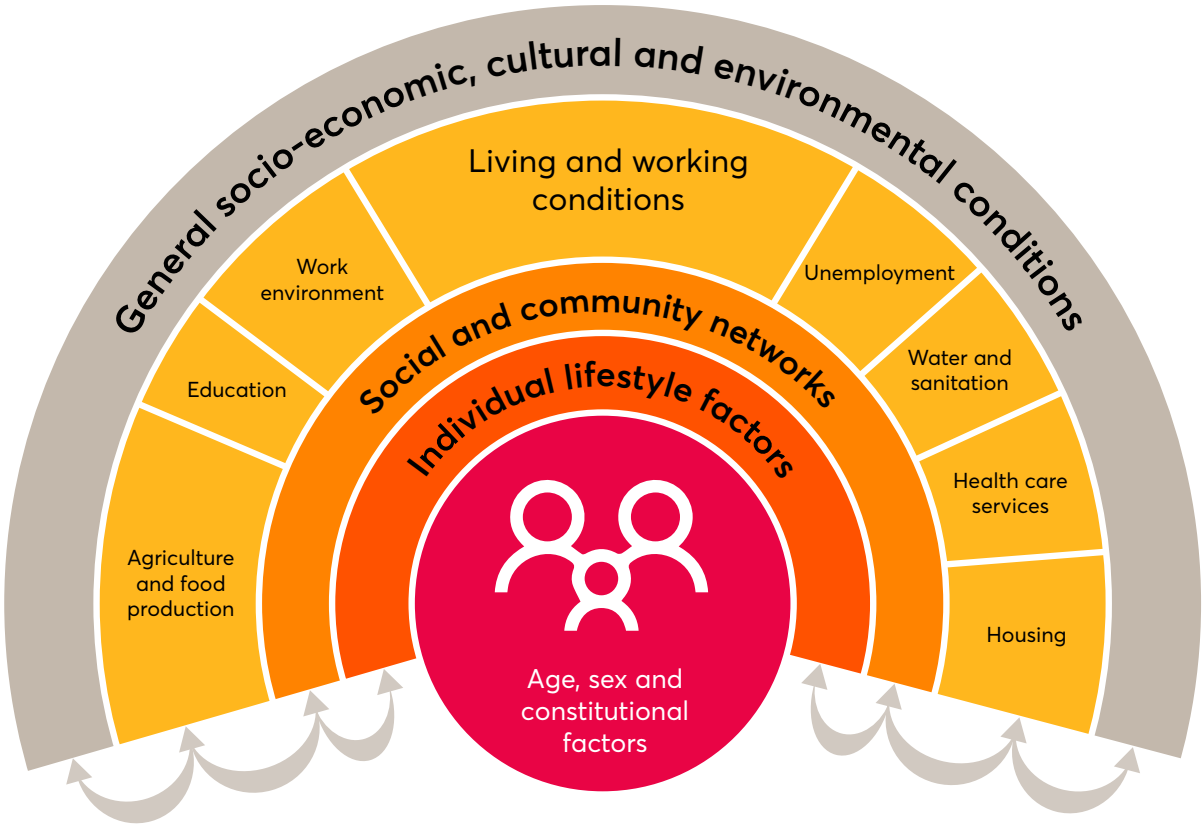
> **DHSC 2018**[8]

We know a lot about the causes of good and bad health – from our individual biology and lifestyles, to our social and community networks, to the wider socio-economic and cultural environment we live in (see figure on next page). Few dispute that prevention is better than cure – why wait until people are sick and need expensive healthcare services when it is possible to take earlier action to help many more people lead a long, healthy and happy life? But it has proven much harder to turn this into a consensus around action, primarily because there hasn't been enough research and experiment, over sufficient time, to generate the actionable intelligence that decision-makers need.



Source: Dahlgren and Whitehead (1991)[9]

This gap between broad support for prevention in principle and much weaker support for prevention in practice is becoming ever more of a problem. On average, people are living longer, but increases in average life expectancy appear to have stalled. This masks a more worrying picture for some groups, with the discrepancies between richest and poorest now greater than ever. People living in deprived areas can expect to live seven to nine years less than those in the most affluent areas and nearly twenty years less in good mental and physical health.[10] An ever-increasing body of evidence shows that health services acting in isolation cannot hope to close these gaps, because they are driven by factors far beyond its reach.[11] What's needed is a concerted effort to address 'the causes of causes' and reduce inequalities.

The 'causes of causes'

'Fair Society, Healthy Lives' Sir Michael Marmot's landmark review[12] identified six priority areas for action.

- Early child development.
- Education and life-long learning.
- Employment and working conditions.
- Minimum income needed for health living.
- Healthy and sustainable environments in which to live and work.
- A social determinants approach to prevention – addressing the causes of the causes.

Over the past two decades, successive governments have acknowledged this and committed to doing something about it. There have been landmark reports,[13] strategic plans[14] and a plethora of new bodies, including an executive agency of Government, Public Health England. Each one has reinforced our understanding of the wider determinants of health. But there has been little progress towards addressing them. Investment in prevention may have trebled between 2004 and 2014[15] but it started from a very low base. As Matt Hancock says *"Each year, we are spending £97 billion of public money on treating disease and only £8 billion preventing it across the UK – that's an imbalance in urgent need of correction."*[16]

Another green paper is expected this summer, following the Government's interim vision for prevention last autumn.[17] This renewed commitment has been widely welcomed – but there remains scepticism about its potential impact. Will it have the cross-government support needed to address the wider determinants of health? Will it be able to provide enough clarity about the action to be taken, or how it will be funded? The fact is, some hard choices are going to need to be made, and they will be struggling to find the evidence they need to support them.

According to Dame Sally Davies, the Chief Medical Officer for England, we are at the cusp of a fifth wave of public health, what she and her collaborators call a 'culture of health'.[18] In their vision 'the value of health and incentives for healthy behaviour are maximised, healthy choices are promoted by default, and the factors that promote unhealthy behaviour are minimised'. We share this vision. But the 'factors' which promote healthy or unhealthy behaviours are complex and often outside people's control, and we're far less optimistic about how soon this can be achieved without a step-change in investment and an R&D focus on evidence-based solutions.

The current patterns of public spending partly reflect what the public thinks is important. NHS funding remains a key priority for voters[19] and in a recent survey, over a quarter of the public (26 per cent) said they had donated money to medical research in the past four weeks.[20]

Recent research by the Health Foundation and FrameWorks Institute[21] shows that the public thinks individual behaviours and access to health care have the greatest impact on health, that ill-health mostly depends on bad luck (for example, a genetic disposition) or bad decisions.

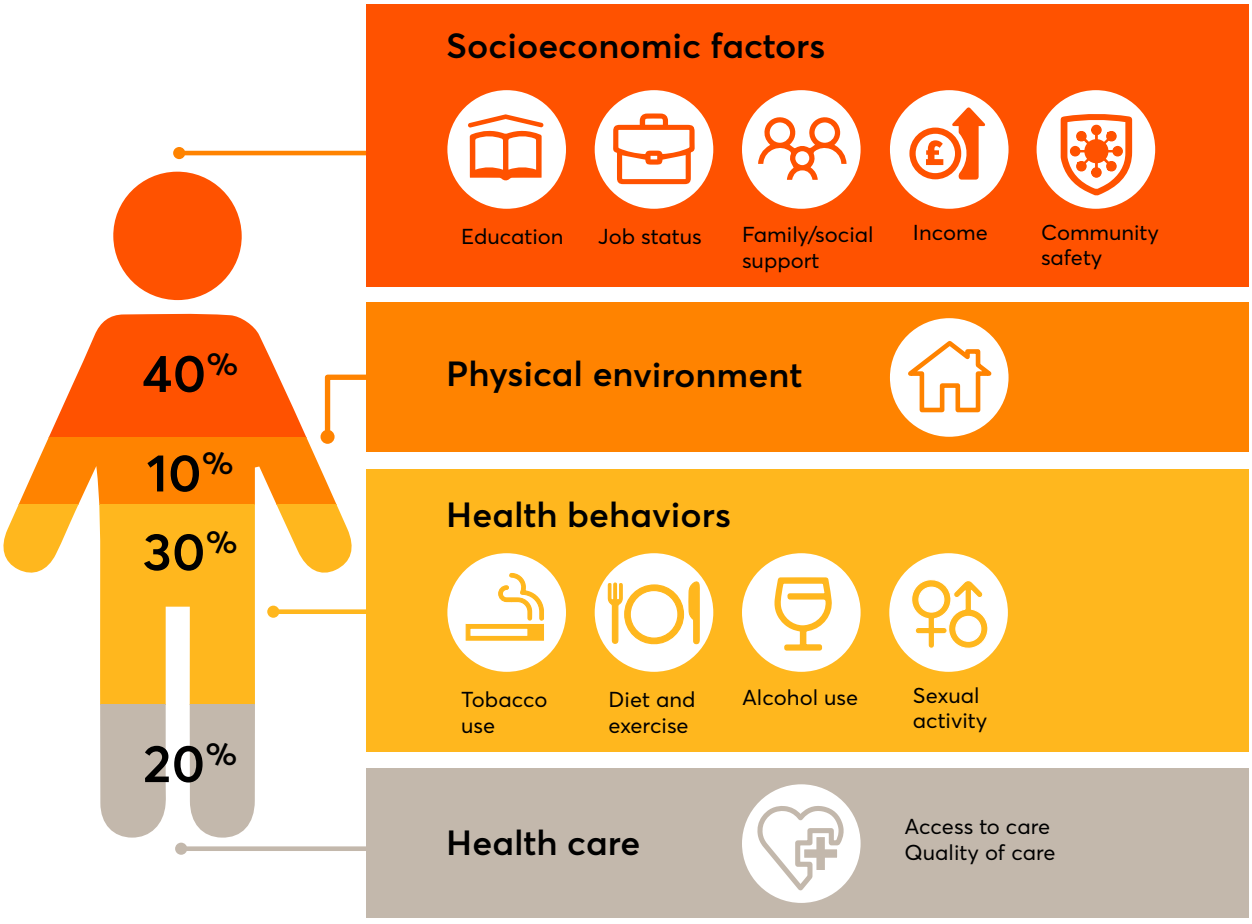
So, it may not be surprising that we continue to prioritise healthcare spending over prevention. But we know that underlying attitudes are changing with growing awareness of the impact of things like diet and clean air. It's also clear that when the public is fully engaged in questions about health, they are willing to make tough decisions and support more of a 'Health in all Policies' approach.[22]

Finding the balance

Brighton and Hove was able to introduce the sugary drinks levy before it became national policy because they had strong support from local residents. They achieved this by promoting the levy with positive messaging about food and healthy eating, and by working closely with education providers and community groups.[23]

On a larger scale, the Finnish-based North Karelia project[24] has shown the power of a community approach, involving multiple stakeholders, including employers and the local private sector, to achieve favourable and sustained population health outcomes. Since 1972, when a physician, Pekka Puska, was embedded in the community with the task of reducing deaths from heart disease, the North Karelia project has gone on to lower male cardiovascular mortality by around 80 per cent, by shifting the focus from trying to change individual behaviour to improving the physical and social environment.

The urgent problem is that all the evidence tells us that health services account for just 10 to 25 per cent of health outcomes (depending on different estimates[25]) and those services are struggling to keep up with demand. In this context, the ongoing imbalance of investment becomes impossible to defend. This is why NHS England's Universal Personalised Care vision also called for more research and evidence to shift efforts away from a dominant biomedical focus and do more to harness the participation of people and communities.[26]



Source: Social Determinants of Health – University Wisconsin Population Health Institute

We also know that spending on public health can result in strong returns on investment (average 4.1 for local interventions and 27.2 for national activities).[27] This tells us that shifting attention to prevention makes sense for health and well-being, for the long-term sustainability of our healthcare services, and the wider economy too.[28]

These choices and dilemmas are very relevant to the use of digital technologies in health – an increasingly important factor that has the potential to significantly improve prevention. More than half a century after they started affecting daily life digital technologies continue to be overlooked in public health, though they are expected to be a significant focus of the new prevention green paper. In the past there has been surprisingly little research into the many ways in which digital technologies can contribute to prevention. For example, there has been less engagement with how social media influences behaviours and very little funding for systematic R&D to understand how digital interventions can support behaviour change, whether in relation to obesity or mental health. This is in stark contrast with the approach on pharmaceuticals – large-scale funding for systematic clinical trials, followed by adoption – and must be addressed if 'predictive prevention'[29] is expected to be rolled out at scale.

The research gap

> "We must take a much broader view of the drivers of health and the types of evidence we need to intervene – now and in the future – for the promotion of health and the prevention of disease."
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> **Academy of Medical Sciences 2016**[30]

One significant reason for the lack of investment in prevention is a lack of clarity about how to spend it well. The reason for this is that the long-standing bias towards funding healthcare is mirrored in the way that research is prioritised and funded, resulting in a serious gap in R&D infrastructure and investment where new solutions and actionable insights are desperately needed. The most recent detailed analysis of the UK's health research landscape estimated that just 5.4 per cent of research funding is spent on prevention and public health research.[31] More than 80 per cent goes towards biomedical research – what we call the 'biomedical bubble' – even though there is clear evidence of rapidly declining returns.[32]

Alongside the historic under-investment in prevention research and preventive services, is a further bias within the public health sector towards particular types of research – notably quantitative analysis of the patterns and causes of ill health, and a focus on targeted interventions to address 'risky behaviours'. Many public health practitioners advocate the importance of using multiple levers simultaneously, but this can be challenging to orchestrate and makes it difficult to isolate cause and effect. As a result, and as Harry Rutter and colleagues point out, *"research funding, research activity, and the published evidence base are all heavily skewed towards studies that attempt to identify simple, often short term, individual-level health outcomes, rather than complex, multiple, upstream, population-level actions and outcomes"*[33] which actually reflect the wider context in which people live.

Overall a lot is known about the scale of the problems and what needs to be improved, but there has been little investment in exploring exactly what should be done or in then sharing what is known to work. This is further constrained by a lack of coproduction and representation in research – a notable criticism of the Institute for Fiscal Studies' major new study of inequality, chaired by Professor Sir Angus Deaton, that is otherwise expected to make a significant contribution to our understanding of the inter-relationships between income, wealth and health.

We have made some good progress in the UK, but it has been relatively small scale and largely uncoordinated. This is why the Academy of Medical Sciences called for a new Strategic Co-ordinating Body for Health of the Public Research (SCHOPR), which has now been established with support from across the four nations. With no single research council focussed on the health of the public, this is an important step to prioritise and coordinate research across the field. But without any new investment and a further shift to evidence-based solutions (rather than new research alone), it is unlikely this can achieve anything close to the step-change that is so urgently needed.

Key developments

- The National Prevention Research Initiative, established by the Medical Research Council and 16 other partners, awarded £34 million to 74 projects between 2005 to 2010.
- Six Public Health Research Centres of Excellence, established by the UK Clinical Research Collaboration In 2008, have spent £37 million over 10 years building academic capacity to link policy and practice.
- In 2014, the National Institute for Health Research (NIHR) funded 13 Health Protection Research Units (HPRUs); new partnerships between universities and Public Health England. They are now running a further £56 million competition to fund 14 new HPRUs for the next five years (2020 to 2025).
- NIHR have also funded 13 Collaborations for Leadership in Applied Health Research and Care (CLAHRCs), with a total budget of £144 million over five years. The CLAHRCs provide a forum for collaboration between the NHS and academia, and many of them have some focus on prevention, early intervention and public health.
- The UK Prevention Research Partnership (PRP), a new alliance of research funders, is investing £50 million over the next six to seven years, supporting research into the primary prevention of non-communicable diseases.
- One of the NIHR Policy Research Units, set up to inform Government and arms-length bodies, is hosted by the London School of Hygiene and Tropical Medicine, and has a specific interest in public health.
- Several of the What Works Centres also have a relevant interest, for example, the Centre for Ageing Better and the What Works Centre for Wellbeing.
- Since 2015, the Wellcome Trust has supported a community of researchers who are taking on the challenges that food systems, increasing urbanisation and climate change pose to our health, through its Our Planet, Our Health programme.
- Since 2017, the Health Foundation has also made a significant contribution to changing the conversation about health and strengthening the evidence base to support population-level policy action and intervention.

The PRP, in particular, has an excellent ambition: to co-develop and coordinate research programmes with policymakers, professionals and industry, to engage experts from a wide range of disciplines, and provide substantial long-term investment for whole system interventions.[34] The bids it has received so far have mostly included new analyses and modelling of determinants of ill health or top-down interventions to reduce selected risky behaviours.[35] With one notable exception, Bradford ActEarly, they haven't yet fulfilled the aspiration for more transdisciplinary approaches and coproduction. This highlights a significant challenge: it's not enough for the funders' ambitions to change, the interests and capabilities of the bidders need to change too.

Bradford ActEarly[36]

The Bradford Institute of Health Research has received £6.6 million to bring together researchers, policy makers and people living and working in Bradford, to develop new projects to improve the health and happiness of children and families living in Bradford. They aim to start by understanding what people think is important and then co-produce a range of upstream interventions, evaluating impact on inequalities across a range of outcomes, including health, development and education, as well as longer term impacts across the life-course. In a second phase of the work, they aim to test the replicability of the approach in a deprived area of London.

We need a different approach

"What is striking is that there has been so much written often covering similar ground and apparently sound, setting out the well-known major determinants of health, but rigorous implementation of identified solutions has often been sadly lacking."

Derek Wanless 2004[37]

The systematic underfunding of research, and failure to develop and implement proven interventions, has resulted in a vicious cycle, with too few people seeking to achieve too much without clear evidence of what to prioritise.

This is why we believe it's time to try something different; a major investment to champion a more inclusive, experimental and collaborative approach. A new centre of innovation and research, bringing together and working with experts from across public health and the behavioural and social sciences, as well as the best practitioners from human-centred design, citizen science and asset-based community development.

New solutions won't come from the lab and it's unlikely they can be tested in traditional trials. They're going to need creative, rigorous and grounded research and development approaches that use the best experimental and participatory methods involving diverse groups in local communities. There'll be a need for new ways of thinking about evidence and impact – ways to make sense of the complex interrelationships between factors,[38] as well as understanding what is useful and how to get evidence used.[39] Work is needed both upstream to understand underlying patterns of causation, and downstream to test out specific interventions, and to generate evidence and insights that can be actioned by decision-makers and practitioners.

'The Nightingale'

A well-designed, well-networked and well-funded institution is now needed to spearhead a shift in priorities, ethos, research and action. Learning from the experiences of the National Prevention Research Initiative[40] and others, it should:

1. **Build on existing evidence and expertise** to broker knowledge and relationships across previously disparate fields, fostering new ways of thinking and translating learning into actionable insights. It should position itself as the authoritative voice across the evidence base, whilst also building networks of researchers and practitioners to test and spread new ideas and approaches for research and development.
2. **Promote collaboration with the public and local communities**, championing a more inclusive and participatory approach to R&D, doing with rather than to. We know that context is critical – what works in Brighton is unlikely to be the perfect solution for Bradford and vice versa – but there is also an opportunity to do more to draw lessons from these diverse environments and contexts so that great ideas can be tested and applied elsewhere. Only by working closely with communities and testing solutions in the real-world, can we understand what matters to them and what will work best for different groups in any given place – reducing not increasing inequalities.[41]
3. **Emphasise real-world experimentation and implementation of solutions**. Build on the strengths, limitations and learning from the What Works Centres, prioritising experimentation, evaluation and dissemination of actionable insights, so that decision-makers and practitioners can learn from them and develop and test them out with their local communities. Be clear about who the audience is – who are the champions and who needs to be persuaded, and experiment with different models and standards of evidence – from measures of cost-effectiveness to statistical models to ethnography and more creative qualitative techniques.
4. **Establish a formal network** of collaborating universities and research centres to connect and amplify the excellent work that is already underway and maximise the impact of existing and new research – together they will be worth more than the sum of their parts. It can also provide opportunities for a wider pool of researchers to engage in transdisciplinary work, including new entrants from diverse fields – such as human-centred design, citizen science, asset-based community development. This will help develop the next generation of health of the public researchers – a challenge that has been identified elsewhere as a barrier to significant change.[42]
5. **Invest big**. Everyone is agreed that action is needed to address the social, behavioural and environmental influences on health; so now we need a step-change in investment, commensurate with the scale of need, opportunity and ambition.

It is the 200th anniversary of Florence Nightingale's birth next year. As a key advocate of public health research and practice, we think it is fitting to dedicate this potentially world-leading centre of innovation and research excellence to her name.

Experimentation, what works and action

This vision for The Nightingale goes well beyond the traditional model of a What Works Centre which is mainly there to synthesise existing evidence and make it useful. Instead, it will also have to generate new evidence, and support others to do so. It will also have to combine that role with advocacy – promoting and spreading the best new methods so that in time they become common practice.

This implies a mission that is bold and broad, and supported at a scale that will allow it to tackle some of the biggest health challenges of our time. This would include designing ground-breaking experiments that could generate new actionable insights for national and local decision-makers so that they can take informed action to improve health and reduce inequalities. This could include exploring the real-world health and equity impacts of changes in social or economic policy[43] at a city or regional level. Or it might include building a deeper understanding of how people interact with each other, with digital solutions and with their environments – what we call People Powered Health – perhaps at more of a neighbourhood level or with particular groups. These options should all be on the table and The Nightingale should seize the opportunity to model a more inclusive and coproductive approach, not only to research, but to prioritisation and decision-making as well.

This suggests that to be successful, The Nightingale will require the following complementary innovation and research capabilities.

Shape	**Horizon scanning**: identifying existing, emergent and anticipated health challenges nationally and locally, as well as new innovation and research methods, and emerging social, economic, environmental and digital solutions which have potential to improve health outcomes.
	Develop best practice R&D methods: encourage experimentation in new participatory and transdisciplinary R&D methods, including new models for developing and evaluating complex interventions, and publish guidance for researchers and decision-makers.
	Build a network of researchers, developers, practitioners and citizens: connect and convene to share knowledge and ideas, and create and test new methods and solutions, including, but not limited to, subject matter experts, public health researchers, behavioural and social scientists, statisticians, human-centred designers, technologists, community developers, and people with lived experience.
Support	**Research and Development funder**: provide grants for collaborating centres and/or other research organisations and delivery organisations with aligned aims and approaches (ie transdisciplinary, action-orientated, meaningful coproduction and community engagement).
	Test-beds: identify, fund and support a number of sustainable test beds to support ongoing research and experimentation in real-world conditions with engaged local communities.
Share	**Evidence hub**: gather and share high quality evidence from a diversity of existing and new data sources, publishing actionable insights and tools for decision-makers to integrate health considerations into their daily work.
	Promote: experiment with creative methods for dissemination so that evidence is shared widely and has a clear route to impact. Be an active champion for inclusion of health considerations into wider policy-making.

Conclusion

Better understanding of the social, behavioural and environmental influences on health and how they can be improved is long overdue. Although a huge amount of good research and practice is underway, the whole adds up to less than the sum of its parts. This means that decision-makers lack the insights that could help them prioritise budgets and action.

That's why we need a step change in investment with a dedicated centre of innovation and research excellence, a counterpart to the Crick Institute and Genomics England, with a profile and budget to match the importance of its work.

Sometimes the argument is made that public health interventions are less expensive to design and deliver than biomedical solutions, and this justifies spending less. But on the contrary, evidence that addressing social determinants is more cost-effective and has the potential for greater impact suggests we should be spending more. The Crick had an income of £145 million in research grants[44] in 2017/18 and we believe The Nightingale should be built on a similar scale. We propose a budget of around £140 million per year by 2025. This would enable it to attract and connect the finest minds from across disciplines, share knowledge and build collaborations across the research community and delivery infrastructure, generating hundreds of new actionable insights over the course of the next ten years.

There is widespread agreement that something needs to change and we have no time to waste. It may be impossible to divert funding from an increasingly stretched NHS and a long time before cash savings will be realised. But we can't keep inflating the 'biomedical bubble' at the current rate. It's time for a more equitable distribution of research funding and to focus our investment where we can get the biggest returns – for society and for the economy.

We all aspire to live longer, healthier lives. Increased investment in the social, behavioural and environmental determinants of health offers obvious benefits to everyone. Creating a well-funded new centre is not a panacea – but a concentration of funding, energy and attention, which could make a huge difference by mobilising useful knowledge that will, in turn, reduce inequalities and change millions of people's lives for the better.

Endnotes

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