

# PUBLIC HEALTH 2040: HOW TECHNOLOGY AND AI IS RESHAPING THE WIDER PUBLIC HEALTH WORKFORCE

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# INTRODUCTION

This is the second of three briefings analysing the key challenges facing the wider public health workforce (WPHW) over the coming years, building on engagement with those working across public health which we set out in our report 'The Unusual Suspects'. Throughout this engagement, several major external challenges were identified, each of which has the potential to significantly change how we deliver public health services in the future.

This briefing will examine the impact of new technological developments and products available to the WPHW, including the increased prevalence of Artificial Intelligence (AI) across public health. As well as looking at the public policy changes needed, we will be setting out how RSPH and the sector itself can meet these challenges, whether that is through training on utilising new technology and AI, changing how we recruit staff, or working with industry to shape the future of these technological developments.

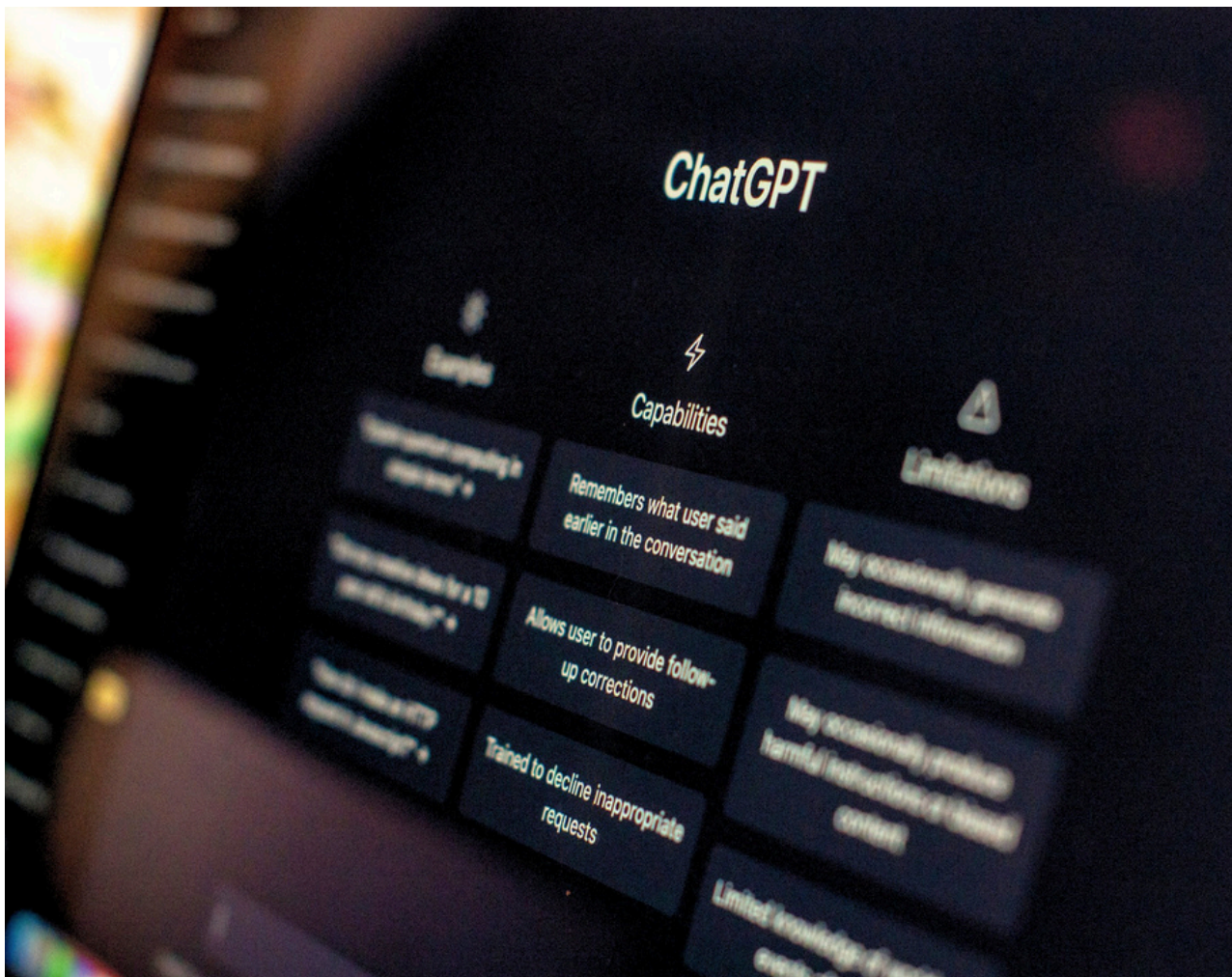
Recent rapid developments in AI and new technological equipment and products available to the WPHW have led to questions over the potential long term impacts they can have on the productivity and capacity of the WPHW. Widespread access to new technology such as generative AI has sparked fears about the potential threat to jobs in many industries across public health as technology is currently transforming, and will continue to transform, the nature of work. If this can be properly implemented with input from the workforce, then it will not only extend the scope of work capable in public health, but also enable staff to switch their time and attention to tasks where the workforce can add important and necessary value, which supports their capacity at a time of huge workload pressure.

Technological progress has the potential to improve public health's ability to promote the health of all people in all communities. Widespread data from social media, web search engines and news media providing information about the social determinants of health is more nuanced than that from traditional sources and this data can therefore help identify trends and patterns in health-related outcomes. (1) AI could also be used to analyse large amounts of data, like electronic health records, to find patterns and predict the likelihood of diseases, which increases the effectiveness and precision of health interventions, resulting in better results for public health. (2) This may also mean that key stakeholders and policy makers will be more open to the role that AI can play in identifying patterns which lead to ill health, and targeting appropriate interventions accordingly. (3)

Health promotion activities are often currently broad in their nature, in order to ensure they reach the target audience. Improved population level diagnostics would mean that these interventions can potentially be improved to be better targeted to those that need it most which improves the efficiency and effectiveness of these interventions through AI. (4) By providing the workforce with the expertise, and most crucially the capability, to accurately assess the most appropriate interventions at a regional and national level, we can ensure that communities already facing inequalities in health and lower life expectancy receive the support they need.

Over recent months, we have engaged with representatives across public health including those working in pest control, environmental health, water treatment, housing, workplace health, cleaning and hygiene, physical fitness, planning and emergency preparedness to understand the challenges they face, and the support which they need to ensure that they can access and utilise the benefits of new technology and AI in public health.

We know that the WPHW are best placed to advise on how we can capture the benefits of technological development in order to promote the health of the public. However, we also know that they must have the appropriate resources, capacity and training to provide this advice – without which, we may yet see the potential of these technologies go to waste.



# THE IMPACT OF TECHNOLOGY AND AI

## Training, skills and expertise

A common theme that rose from our engagement with the WPHW was that the majority of workforces are welcoming to the idea of new technology which can complement their work and allow them to devote more resource to areas which require more human interventions.

In order to realise this potential, we need to ensure that the current workforce, along with any new recruits into public health, have the right training, skills and expertise to operate these new products and equipment.

In particular, members of the WPHW were sceptical of new technologies if they were not given the training to work with these new products in their current public health roles. They identified that more training and education is needed to operate new technology and if they are not convinced that this equipment can provide the benefits it promises, they may be hesitant to use them.

**THE MAJORITY OF WORKFORCES ARE WELCOMING TO THE IDEA OF NEW TECHNOLOGY - WE NEED TO ENSURE THAT THEY HAVE THE RIGHT TRAINING, SKILLS AND EXPERTISE TO OPERATE THEM.**

There is also evidence to show that members of the health care workforce in general are divided on whether automation and AI in health care is an overall positive or negative addition. (5) This is due the prospect that health care will become more 'impersonal' with less human contact. (6)

At the same time, new technology and AI in public health could allow staff to switch their time and attention to tasks that cannot be automated, and to focus on activities where humans can add more value. (7) Given current workforce shortages and rising demand for services, it could mean staff spending less time on routine admin and more on direct service delivery. (8)

To maximise the benefits of AI we must ensure that it is used in circumstances that support the human-led interventions delivered by the WPHW. In order to accomplish this, the WPHW must be involved in the design and rollout of new products from the beginning, rather than being an afterthought.

## Fears of being replaced

We also identified that a significant part of the workforce has fears that they may eventually be replaced by technology as they are worried that their roles may be dominated by the input and use of technology - including in instances where this replacement is cost-efficient but leads to poorer outcomes.

There is some scepticism about the true impact that new technology will have on their roles, rather than the ideal objective of using this to complement their work and allow them to focus on more pressing areas. In particular, as we see AI becoming more commonly used across sectors including public health, the workforce must be given the opportunity to receive adequate training suited to their needs to grow their expertise in this field. (9)

Regardless of technological changes over the coming years, the diverse skills of the WPHW will still be needed to address the various, wide-ranging issues that can impact public health in the future. New technology used in public health should be utilised to harness their expertise rather than risk forcing people out of roles that will be performed less effectively in their absence.

Therefore, the WPHW should be given the support and opportunity to continue to utilise their expertise to continue protecting the populations health. At the same time, we have to ensure they have the assistance, education and training they need to understand the assistance that new technological developments can provide them by allowing them to further focus on human interventions. (10)



# Threats from the misuse of Technology and AI

With new technology comes new concerns around effective regulations and procedures to ensure that they are used to benefit public health, with any risks to breaches of data being addressed and prevented. The WPHW understand the support that new technology can bring them, but they also want further focus put onto ensuring that these developments are well regulated. This will allow public health organisations to continue protecting the public with clear protocols in place to implement the effective training and education programmes needed to operate effectively with new technology and AI. (11)

There are fears that an increased use of (and reliance on) AI to analyse sensitive data, along with organisations processing and holding far more data than they were previously able to as a result of these developments, could cause substantial problems. This could be as a result of companies sharing data and increasing their dependency on these new products without adequate mitigations in place to prevent data leaks and cyber-attacks.

**THE WORKFORCE UNDERSTANDS THE SUPPORT THAT NEW TECHNOLOGY CAN BRING THEM, BUT THEY ALSO WANT FURTHER FOCUS PUT ONTO ENSURING THAT THESE DEVELOPMENTS ARE WELL REGULATED.**

More appropriate and effective enforcement is needed, along with training and education on the correct use of AI, to prevent these issues from becoming more and more prominent. This is especially true for fraudulent data – where data can be manipulated and hacked.

Therefore, further measures must be implemented to ensure that there is a robust network and infrastructure to prevent any potential data breaches through strong cyber security protocols. Sensitive information held by health services, along with inadequate security, makes health care infrastructure a prime target for cyber-criminals. (12)

The WPHW wants to use AI safely, but they need to be given the assurances and knowledge to be able to identify any areas where this may be a concern, including the potential loss of internal information and highly sensitive data. (13)

Without measures in place to address these justifiable concerns, there may be a risk that the workforce grows more sceptical of the support that new technology can bring to their work, thereby risking disparities across the public health sector between organisations taking more or less cautious approaches to this new technology.

# RECOMMENDATIONS

It is clear that new technologies have the potential to deliver significant improvements in public health services, but also that the WPHW currently do not feel they have received the support they need to capitalise on these. Part of the solution to this is improving the training on new technology available to the WPHW, as part of our broader work as a society to equip our workforce to manage the challenges of the future.

It is important that any new significant changes in the technology utilised within public health are both fully understood by, and work in support of, the workforce themselves. This must be backed by national workforce planning, education and training strategy, providing more opportunities for the workforce to clearly identify and use the technologies they need which they believe will provide them the support they need. In order to support the WPHW, [the Government should publish a comprehensive workforce strategy, setting out how current and future staff will be supported to develop their careers and make the most of new technologies.](#)

Industry also has a responsibility to work productively alongside the WPHW to accurately and effectively identify where any new technology will provide them with the most benefits whilst making the most significant and positive impact to their work. (14) Unless they do this, then the transformative potential of new technologies may be squandered. As such, [industry must include the WPHW in the design of any new products with the potential to boost public health,](#) to maximise the effectiveness and practical value of new technology across public health to efficiently meet their current and future needs and focus on promoting positive health outcomes.

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# ENDNOTES

- 1 [Artificial Intelligence and Public Health: An Exploratory Study](#)
- 2 [Using artificial intelligence to improve public health: a narrative review](#)
- 3 [New £100 million fund to capitalise on AI's game-changing potential in life sciences and healthcare](#)
- 4 [Artificial intelligence: opportunities and risks for public health](#)
- 5 [What do technology and AI mean for the future of work in health care?](#)
- 6 [Harnessing the potential of automation and AI in health care](#)
- 7 [AI Should Complement Humans at Work, Not Replace Them, TIME Panelists Say](#)
- 8 [What do technology and AI mean for the future of work in health care?](#)
- 9 [Empowering Public Health with AI-Driven Workforce Development](#)
- 10 [New research calls for all health and care staff to be trained in AI](#)
- 11 [WHO outlines considerations for regulation of artificial intelligence for health](#)
- 12 [WHO reports outline responses to cyber-attacks on health care and the rise of disinformation in public health emergencies](#)
- 13 [WHO outlines considerations for regulation of artificial intelligence for health](#)
- 14 [Which technologies offer the biggest opportunities to save time in the NHS?](#)