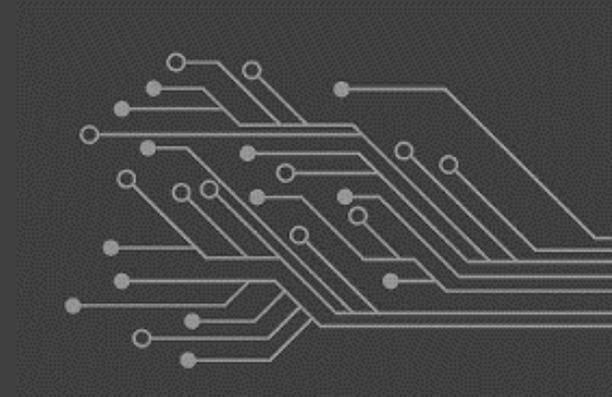


RSA

21st century enlightenment

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Patient AI
Towards a human-centred
culture of technological
innovation in the NHS
A partnership between the RSA
and NHSX



On the RSA (Royal Society for the Encouragement of Arts, Manufactures and Commerce), founded 1754.

The RSA believes in a world where everyone is able to participate in creating a better future. Through our ideas, research and a 30,000 strong Fellowship we are a global community of proactive problem solvers.

Tech & Society is an RSA programme of work that explores how to increase the agency that people have over the way that organisations design and employ technology.

Through deliberative methodologies and innovative conversations, we seek to bring together programmers and citizens, technologists and regulators to place cutting-edge developments in service of the greater good.

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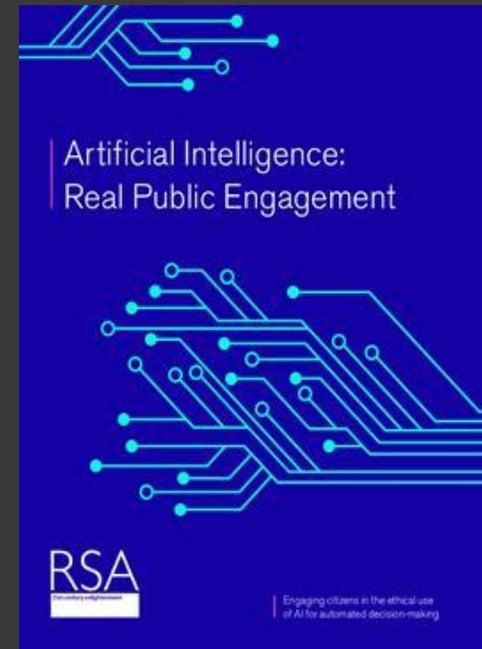
Convening a network of system-changers who can help build a human-centred culture of innovation

Why did the RSA and NHSX come together?



Earlier RSA work dived deep into the proliferation of AI in health; through a series of expert and citizen engagement processes we uncovered three principal uses across the health system:

- **Automating tasks.** For example, the NHS 111 system is experimenting with AI for patient triaging by using natural language processing to recognise words that indicate urgency, and redirecting callers accordingly.
- **Analysing large datasets.** For example, AI is being used to review the 2.5m scientific articles that are published each year in order to make recommendations that are specific to an individual's healthcare profession.
- **Predicting conditions through complex pattern recognition.** Emerging apps, like SkinVision, are identifying users' likely conditions and making related suggestions for redress.



Previous RSA work has shown that citizens have a high level of faith in clinicians' and NHS regulators' judgements around new technology. *We wanted to understand if clinicians and managers felt empowered on the other side. We asked:*

What is the human story behind the cultural environment in which technological adoption takes place? How can we make technological uptake ever more human-centred? What ideas might improve the quality of technological adoption and so deliver ever higher standards of care?

'We don't want people thinking that we're developing scary, monster type products.'

An NHS clinical chair

Methodology and definitions

- Over the course of June and July 2019, the RSA conducted in-depth interviews (according to Chatham House rules) with a range of professionals developing, procuring and using data-driven technologies across the country. A sample of questions asked is included in the accompanying report's Appendix 1.
- We spoke with 12 key people across the health system; each interview was approximately one hour in length.
- As well as the principal research questions, we also posed several additional questions around topics such as safety, public challenge *inter alia*.
- The findings described in this report emerged from inductive analysis of the interview transcripts. Key excerpts are included throughout and in Appendix 2 at the end of the accompanying report.

AI (artificial intelligence):
'The field of computer science dedicated to solving cognitive problems commonly associated with human intelligence.'

Even in this relatively small set of conversations, there was striking convergence on what needed to be done to smooth the ingress of radical technologies into the health system and create a genuine, human-centred culture of innovation around technological innovation in the NHS.

The findings

Patient adoption



During our research we encountered embedded scepticism that technological adoption was not so much about patient care or improving quality of life and health, but to satisfy a political or commercial imperative.

Understanding and agreeing on the purpose of technological implementation is the starting point for a more constructive conversation.

‘What’s really important, if you’re [...] trying to influence the way people think about this, is to bring the public with us, to be sure that the safeguards are in place’

Response given by an NHS clinical chair

The response to embedded scepticism is patient adoption. Patient adoption of radical technologies, such as AI, is key to their successful integration in the health system.

Commissioners recognise that innovations and processes that bring clinicians along with managers and integrate seamlessly into the clinical workflow are more likely to endure than ‘big bang’ interventions.

They are open to **consultative and deliberative processes** that actively engage clinicians and citizens in conversations that surface ethical and practical considerations around the ingress of radical technologies.

There is a growing awareness of the ethical issues around AI and other radical technologies among the public – and at the same time clinicians are becoming increasingly wary of adoption without evidence or public conversation. Each news story about malfunction or misuse of, say, facial recognition tech or data abuse adds further fuel to the fire.

‘Whether it’s the state working with a citizen, or a doctor working with a citizen on an individual basis, can we have a sufficiently robust conversation around consent that you can make a valid decision about whether you want to be involved in, and be engaged in, the use of AI as a part of your care, or for looking after your own health.’

Response given by NHS Trust CCIO

Evidence is essential



Clinicians and patients alike value independent evaluations that clearly demonstrate the benefit of new tools above and beyond what is already in place. Participants in our research were keen to share ideas around what might help meet a robust evidentiary test.

- **Residual challenges of taking AI from lab to scale must be demonstrably overcome.** Both clinicians and commercial contractors were concerned that realistic expectations around new technologies are maintained and that belt-and-braces work has been done to demonstrate operational utility.
- **A rigorous anti-bias test must be fulfilled.** Just as AI can be used in the criminal justice system to increase stop and search of minorities, so bad procurement of AI (with minimal governance or from less reputable companies) in health can lead to, say, missed diagnoses against patients from certain communities. In so far as it is possible, bias must be mitigated and be shown to have been mitigated through research and testing.
- **Proving the benefits,** for example by deploying technology at the back end, rather than beginning at the front end, was mooted as an effective idea and a way to provide a relatively safe space for innovations to take root, both in terms of practical workflow and in the professional consciousness.
- **Evidence that models the impact of the innovation on clinical workflow** was always well received as a key part of the evidentiary picture that brokers good will – and is thus a key element of the ‘patient AI’ approach.
- **Making provision for continuous upskilling.** This was outlined by many participants as a key concern. Absent a plan for upskilling and reskilling, technological uptake was certain to be suboptimal.
- **Sandboxing and piloting.** Pilots and sandboxes (controlled environments in which free experiments can take place) were mooted as useful tools for substantiating the evidence base and satisfying the demands of the clinical community.

‘The super users, the early adopters tend to have more rigorous training, some that get more because of their background and requirements, but everyone should go through a basic level of training and understanding.’

Response given by NHS England CCIO

‘In complex new surgical techniques, there is a proposed level of success that the surgeon comes to a colleague with. There isn’t an analogous thing for using this in AI technology... I think extending the ability to take a chance on something is what we need.’

Response given by an Intelligence Analyst at a hospital in the Midlands

Clinical champions



There remain structural barriers, from dysfunctional procurement models, to misaligned payment incentives and these need to be ironed out if the benefits of technological take up and innovation are to be truly realised. Perhaps even more important than financial alignment in this regard, however, is the need for cultural and conventional alignment.

One of the key ideas that surfaced from the research was that a network of Patient AI Clinical Champions be established across the NHS. This would not be a cadre of ‘hero doctors and nurses.’ ...

‘Where I’ve seen the most locally successful adoption of technology is because there has been strong sponsorship from a clinical leader. Absolutely true, but what it doesn’t do is allow it to be scaled because what we aren’t good at is understanding those conditions and replicating them. So how do you blueprint the charismatic leadership that takes people with you, that can acknowledge the risk for it to be comfortably held in a system. [...] we have to systematically exploit them.’

Response given by NHS England CCIO

... But rather system changers – those working within that help break down internal barriers, and create space for entrants to come in.

At the RSA we refer to such systemic changemakers as **public entrepreneurs**. Public entrepreneurs work ‘beneath the radar,’ against the grain of the system to create change in its fabric. Their work may not result in a single initiative or outcome or story but results in a broad cultural shift. Patient AI clinical champions would bring these actors together in a collaborative, supportive network.

In future, clinical champions may:

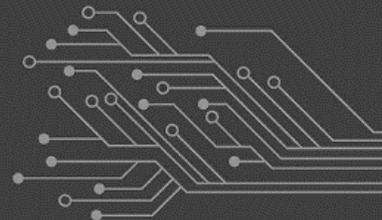
- Form a crucial layer in the **deliberative community** that must emerge around radical new technological innovations
- Provide a **community of knowledge and interest** through which to road-test and prototype new solutions to challenges around sandboxing and piloting
- Foster a **culture of technological innovation** by sharing best practice and helping make it happen.

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To read the report which includes commissioner and clinician conversations in full, or to watch the video from the field associated with this work please visit:

www.thersa.org/action-and-research/rsa-projects/economy-enterprise-manufacturing-folder/tech-and-society



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