



FPM Response to the House of Lords Science and Technology Committee inquiry into Innovation in the NHS: personalised medicine and AI, call for evidence

In March 2026, the House of Lords Science and Technology Committee put out a call for evidence for their newly opened inquiry into innovation in the NHS, exploring personalised medicine and AI.

The inquiry will seek to explore a broader question: why does the NHS adoption of the UK's cutting-edge life sciences innovations often fail, and what could be done to fix it? The inquiry will examine the gap between early-stage research, clinical trials and NHS-wide delivery with a focus on personalised medicine and AI, considering the system blockages, procurement, clinical pathways, and organisational aspects of the question, such as the role of regulators and clinical/professional bodies. It will examine the fragmentation of the overall NHS structure leading to uneven deployment of innovations in the NHS, questions around how the cost of personalised treatments can be reduced, and as well as concerns about the clinical academics and clinical trials infrastructure needed to rapidly deploy innovations within the NHS.

This response contributed to by the FPM Patient Partnership Forum, New Technologies Expert Group, Clinical Trials Science and Regulations Expert Group, and Rare Diseases Expert Group.

FPM submitted its response (below) to the House of Lords Science and Technology Committee on 7th April 2026.

Questions

Personalised medicine and AI: the scientific background

1. What is the current state of the science underpinning personalised medicine – including genomics, AI-driven diagnostics, and advanced genomic therapies? What are the most significant near-term opportunities for patients to benefit in the NHS?

Personalised medicine is advancing rapidly, with genomics, AI-enabled diagnostics, and emerging gene and cell therapies now demonstrating clear clinical value. The NHS is well positioned through its Genomic Medicine Service to act upon these advancements, but



major gaps remain in real-world evidence collection, data integration, and equity of representation.

There are risks associated with data integration which need highlighting, both in the context of data integrity and privacy (it is possible to identify people if there is enough information held about them).

Short term opportunities include broader genomic testing in cancer and rare disease, pharmacogenomics in primary care, and validated AI tools in imaging and pathology. AI in imaging has had some gains, but for diagnostic purposes it still underperforms when compared with experienced clinicians in more complex cases.

Medium term opportunities depend on stronger digital infrastructure, workforce training and capability, and sustained investment in research, learning health systems, and long-term registries.

There is the challenge of scale, speed, and data generation in the UK. There is a wealth of genomic data, but it is often siloed and not always accessible for researchers to access the data and the subjects for analysis, hypothesis formation, and target identification, to then progress into clinical trials. The fact that this is personalised should mean that smaller studies in targeted subjects would be possible, but clinical trials remain challenging to conduct in the UK and is a potential disincentive for innovators and investors.

The role of AI in personalised medicine

2. What role could AI realistically play in accelerating the development and reducing the cost of personalised medicine? How close are we to understanding and realising its potential and what barriers need to be removed to fulfil it?

AI can accelerate personalised medicine by automating genomic interpretation, optimising drug-discovery pipelines, and reducing development costs. But its full potential depends on better data quality, data interoperability, and regulatory clarity.

Existing AI tools are most effective in variant-effect prediction, target identification, and molecule design, with standout examples in protein-structure prediction and AI-guided compound screening (though adoption is often impeded by fragmented datasets). Recent advances, especially models like AlphaGenome, are significant because they improve prediction of functional genetic variation.

Government ambitions are realistic only with sustained investment in digital infrastructure, high-quality datasets, and research capacity.



Health data research infrastructure

3. Personalised medicine depends on large scale genomic and health data being accessible and linked together. What further research infrastructure, in terms of data accessibility, compute etc. – is needed to support the development of personalised medicine and AI? Where are the gaps in current provision? How should the Government help ensure that its health data infrastructure is fit to deliver on this promise?

Personalised medicine requires interoperable genomic–clinical datasets, secure trusted research environments, and scalable computer power to support multi-modal AI. However, UK infrastructure remains fragmented, with inconsistent data standards, limited linkage, and variable NHS digital maturity. NHS digital infrastructure is too fragmented, this hinders progress.

Government can help ensure that its infrastructure is fit for purpose through clear data governance and clear rules on data guardianship. Bodies such as HDR UK, Genomics England, and the Genomics AI Network should prioritise shared standards, real-world validation, and equitable data representation. Progress in linking NHS and genomics data is uneven, and legacy IT systems still hinder deployment.

Recent choices of external companies responsible for healthcare data do not instil trust and confidence in patients and clinicians. Public trust demands transparent governance, clear consent models, and accountable industry partnerships.

The life sciences sector

4. How effective is the UK at translating its strengths in life sciences research into clinically validated personalised medicine and AI tools, and into its industrial base in the life sciences?

The UK's strong life sciences potential has not fully translated into clinically validated personalised medicine and AI tools, often due to slow trial start-up, fragmented data, and regulatory uncertainty.

Key barriers include limited adaptive trial capacity, challenges validating AI in real-world NHS settings, and procurement pathways that disadvantage SMEs. These issues risk pushing innovators and investors overseas. Strengthening trial infrastructure, speeding regulatory review, and creating clearer NHS adoption routes would improve retention and scale-up.

Talent loss is also a real concern; competitive funding, stable career pathways, and internationally attractive research environments are essential to keep leading clinicians, data scientists, and innovators in the UK.



Deployment in practice

5. Translating cutting-edge medical science into routine NHS treatment has long been recognised as a problem. Considering personalised medicine and AI as an example, what are the key systemic barriers, such as procurement processes, workforce, or IT infrastructure, that prevent or delay the deployment of proven innovations across the NHS? Which of these barriers are the most important in practice?

The biggest barriers to translating personalised medicine and AI into routine NHS care are fragmented IT systems, complex procurement, limited implementation capacity, an overstretched workforce, digital immaturity, and inconsistent data standards.

There is also an issue of perceived cost effectiveness which limits access and uptake. There is passive resistance for uptake, even for NICE approved interventions based on budget constraints. Unless these come with dedicated budget or opportunity cost decisions, inertia prevents the adoption. A more adaptive trial process that exponentially increases trial participation and experience in the UK with an adaptive and flexible evidence-based pricing model would assist uptake.

Effective progress requires interoperable infrastructure, streamlined procurement, and protected time for clinical academics.

Good practice exists in genomics, radiology AI, and integrated care pilots, but scaling demands national standards and sustained investment. From a patient perspective, clear communication, equitable access, and transparent data governance are essential to building confidence and supporting uptake.

Regulating AI and personalised medicine

6. How should the NHS and relevant regulators, including the Medicines and Healthcare products Regulatory Agency (MHRA) and the National Institute for Health and Care Excellence (NICE), as well as professional and clinical bodies, balance the need to evaluate new personalised and AI-driven treatments with making innovative treatments available to patients? To what extent is the regulatory framework around personalised medicine and AI appropriate and proportionate, and where could it be improved?

Regulators must balance rigorous evaluation with timely access by adopting adaptive, proportionate pathways that assess personalised and AI-driven treatments throughout their lifecycle rather than only at approval. The current framework is improving.



The MHRA needs greater capacity in data science and computational assessment, drawing lessons from more agile regimes such as the FDA's iterative AI oversight. MHRA collaboration with independent AI experts would facilitate support and input in specialised topics.

NICE's methods for digital and personalised technologies require faster appraisal. Strengthening post-market monitoring, clarifying requirements for AI as a medical device, and improving coordination across bodies would make regulation more responsive and innovation-ready.

The health economics of personalised medicine and AI

7. One major barrier to personalised medicine is that it can be expensive and it may vary in effectiveness depending on individuals. This means it may not fit within NICE cost-effectiveness models and the NHS's desire to standardise the care people receive. Are current appraisal frameworks and commissioning models for the NHS appropriate for personalised medicine? What are the health economics implications of personalised medicine?

Personalised medicine often struggles to meet NICE cost-effectiveness thresholds because benefits vary between individuals and therapies. This is especially the case in genomic and cell-based therapies, which remain expensive.

Current appraisal and commissioning frameworks are only partly suited to these treatments, as they favour standardised interventions with predictable population-level outcomes.

Wider deployment should reduce costs through economies of scale, streamlined manufacturing, and better patient stratification.

More flexible health technology assessment (HTA) methods, outcome-based reimbursement, and unified commissioning pathways would better reflect the health-economic value of personalised approaches and support equitable access across the NHS.

Population based models for HTAs are not well suited to personalised medicines, as personalised medicines have the benefit to be more cost effective due to their targeting of patients based on genomics to better guarantee a positive response. This works if the intervention is priced appropriately (one that reflects the value of the outcome delivered) but a standard quality-adjusted life year (QALY) based approach is not usually appropriate and a highly specialised technology approach may be better.



Faculty of Pharmaceutical Medicine

of the Royal Colleges of Physicians of the United Kingdom

5-11 Theobalds Road
London, WC1X 8SH
+44 (0)20 3696 9040
fpm@fpm.org.uk
www.fpm.org.uk

Another consideration is if relevant patients are spread over a broad geographical area. In that case, there needs to be logistical assistance to gain adoption at specialist centres. This is important if specialists or specific techniques are required for administration.

The Government's strategic approach to innovation in the NHS

8. What should the Government do, at a strategic level, to strengthen the feedback loop between medical research, the life sciences industry, and the NHS, so that innovations developed domestically can be adopted at scale in the NHS, and clinical insights from the NHS can feed back into R&D and the life sciences sector? What would be the most important interventions you would prioritise to improve this process? What does the NHS most urgently need to do to position itself to benefit from innovations in personalised medicine and AI?

The Government should strengthen the feedback loop between research, industry, and the NHS by creating coordinated, interoperable data infrastructure, clearer adoption pathways, and long-term partnerships that link discovery to delivery.

The NHS needs unified governance for innovation, streamlined procurement, and national standards to scale personalised medicine and AI.

Current structures remain fragmented, despite excellent organisations such as Genomics England and NIHR in the mix, with unclear ownership across national bodies, ICBs, and Trusts.

Reducing fragmentation, expanding real-world evaluation capacity, and investing in workforce and digital maturity are essential to ensure innovations reach patients equitably and at scale.