Global Policy Network

Global Medicines Policy Series 2025

The Future of Medicines Optimisation: Driving Innovation, Equity and Better Use: A Policy Brief

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The Future of Medicines Optimisation – Driving Innovation, Equity and Better Use

Executive Summary

This policy report summarises insights and recommendations from the Global Policy Network's UK Medicines Policy Series Roundtable Five, held on October 7, 2025. The session, titled *"The Future of Medicines Optimisation – Driving Innovation, Equity and Better Use,"* brought together senior pharmacy leaders, NHS system leaders, digital health experts, and representatives from innovation networks. The discussion focused on how digital innovation, Artificial Intelligence (AI)-enabled clinical decision support, and predictive analytics can be leveraged to improve medicines optimisation, patient outcomes, and system efficiency across the NHS.

Delegates emphasised that medicines optimisation must move beyond siloed disease pathways and fragmented services toward integrated, data-enabled, and equitable approaches. Pharmacy professionals were seen as pivotal in supporting digital adoption, acting as enablers and as critical safety-net actors when digital systems fail.

Despite progress, roundtable participants identified several persistent barriers: digital inequalities, fragmented and low-quality data, regulatory ambiguity for digital therapeutics and AI tools, workforce capability gaps, and short-term commissioning frameworks that fail to capture long-term value. These challenges continue to limit the NHS's ability to translate digital potential into consistent, safe, and scalable improvements in medicines use. Overcoming these barriers is essential if the NHS is to realise the ambitions of its 10-Year Plan to improve efficiency across the healthcare system through digital transformation.

This report is timely because it moves beyond the high-level digital ambitions set out in the NHS 10-Year Plan to confront the practical barriers that continue to limit progress; as Lord Darzi's report observed, the NHS remains in the foothills of digital transformation. As digital health accelerates internationally, with countries modernising care models at varying pace, this brief provides clear system and national level actions to ensure the NHS can turn national intent into meaningful, equitable delivery.

Introduction

Digital transformation is now central to the NHS vision for personalised care, safer medicines use and more proactive population health (NHS, 2025). Rising demand, workforce pressures and widening inequalities have intensified the need for better use of data, more consistent access to information and improved coordination across care settings. Tools such as shared records, digital prescribing, and AI-enabled clinical

decision support offer significant potential, but adoption remains uneven and integration across pathways is still limited.

Across international health systems, digital approaches to medicines use are becoming increasingly prominent. Countries such as Estonia have implemented national digital medicines records, providing hospitals, pharmacies, and patients with real-time access to prescribing information. By keeping the system universal and patient-centred, measurable improvements in accessibility and quality have been achieved (Public Sector Network, 2024). Similarly, Australia's My Health Record consolidates medicines, immunisation, and clinical data to support safer prescribing and improved care continuity (Australian Digital Health Agency, 2024).

These examples reflect a global shift toward integrated, data-enabled medicines optimisation. While approaches vary in pace and scale, countries are broadly moving in the same direction: strengthening digital infrastructure, expanding the clinical role of pharmacy, and using data to improve safety, consistency, and patient outcomes. The NHS now faces an opportunity to match this momentum by embedding digital innovation more systematically across medicines pathways.

This roundtable discussion on medicines optimisation within the NHS 10-Year Plan was therefore highly timely. Delegates explored how the NHS can translate digital potential into practical improvements for patients, identifying the system changes required to deliver safer, more integrated, and more equitable medicines use. The insights from this session underpin the recommendations set out in this report.

Persistent Challenges and Strategic Priorities in Pharmacy

Persistent Challenges and System Pressures

Delegates recognised progress in digitisation but stressed that significant challenges continue to inhibit medicines optimisation, particularly data fragmentation and digital exclusion.

Data Fragmentation and Interoperability

Delegates repeatedly described fragmentation of data as a major barrier to safe and effective medicines use. Pharmacy teams routinely collect clinical information, but the absence of a universal medication record limits its usefulness across care settings.

"*We have plenty of information, but the real challenge is turning that into insight and making sure it reaches the right people at the right time.*"

Delegates also discussed how data silos between primary, secondary, and community care impact timely continuity of care and prescribing decisions, ultimately risking patient safety. The continued fragmentation of medicines data poses avoidable risks to patient safety and can delay clinical decision-making at key transitions of care.

Research consistently shows that fragmented medicines information and limited access to comprehensive prescribing records are associated with a higher risk of medication discrepancies and errors at transitions of care. When accurate and up-to-date medicines information is not visible across settings, effective medicines reconciliation is compromised, increasing the likelihood of unintentional omissions, duplications, or inappropriate continuation of medicines. These risks are particularly pronounced when patients move between care settings, where delays in accessing complete medication histories can slow clinical decision-making and, in some cases, contribute to avoidable patient harm (Camucho et al., 2024).

Delegates stressed that digital innovation will not deliver sustained benefit unless interoperability issues are resolved. There was clear consensus that a national Single Medication Record now constitutes essential digital infrastructure; without it, the NHS cannot deliver safe, consistent, or joined-up medicines optimisation across care settings. A universal read-write medicines record was identified as the single most impactful digital intervention available to reduce duplication, medication errors, and unwarranted variation, while supporting continuity of care and addressing inequalities. In this wider policy context, NHS England must prioritise and accelerate the delivery of the Single Medication Record, ensuring read-write access for all providers and patient access via the NHS App no later than 2028.

However, another participant cautioned that progress should not be stalled while waiting for national solutions. As they stated, the NHS already holds extensive data and "*the power of data is using what we already have intelligently*."

Digital Inequalities

Digital exclusion was highlighted as a significant barrier by participants. Approximately 16% of UK adults lack basic digital skills (Good Things Foundation, 2024), and older adults, people with disabilities, and those living in socioeconomically deprived areas are disproportionately affected. Ensuring equitable access to digital tools is therefore essential to prevent the widening of health inequalities. Delegates reflected on the need for tailored engagement strategies to meet the diverse needs and literacy of different communities.

Delegates also noted that inequality is reinforced by variation in clinical pathways as well as access to digital tools. Decision support technologies have long been used in healthcare and offer further potential to reduce variation in care. For example, AI tools can surface the most relevant clinical guidance for individual patients, supporting safer and more consistent decision-making across diverse patient populations.

Strategic Focus Areas for Improvement

Trust, Engagement, and Patient Factors

Trust and patient empowerment are challenges in digital medicines optimisation. Patients need assurance and confidence in the systems and clinicians managing their care, whilst clinicians must trust the reliability and quality of digital tools and data.

Co-designing solutions with patients was emphasised as essential to ensure innovation, inclusivity, and meaningful adoption, consistent with evidence that patient engagement improves both uptake and outcomes of digital health interventions (Greenhalgh et al., 2017).

Delegates noted the practical implications: "*If you don't have that trust with the patient, that person is never going to engage with the system*." Delegates highlighted community-led engagement models as particularly effective for building trust and understanding barriers and motivations in populations experiencing elevated levels of digital exclusion. They emphasised that pharmacy teams, because of their accessibility and established relationships with patients, are well placed to act as trusted anchors for digital inclusion, supporting patients to engage with digital tools alongside their medicines use. This highlights a need for national and system-level digital inclusion strategies to explicitly recognise and embed pharmacy within delivery plans, rather than treating digital inclusion as a standalone or purely technological issue.

Regulatory Frameworks and Governance

The rise of digital therapeutics and AI-enabled decision support has outpaced current regulatory frameworks. Delegates highlighted uncertainty over clinical accountability (particularly outside standard working hours), insufficient post-market surveillance, and gaps in integration with local clinical pathways.

Effective governance is essential: research shows that poorly implemented e-prescribing and AI systems can inadvertently introduce errors if accountability and workflow integration are unclear (Bates et al., 2001; Schiff et al., 2015). Participants stressed the need for updated governance models that reflect the dynamic nature of software-based interventions and ensure tools are safe, transparent, and clinically meaningful.
Clinical decision software functions as a regulated medical device, creating additional complexity for approval and assurance: "*unclear reimbursement and commercial pathways often impede adoption, and mean it often never reaches patients*." Delegates highlighted the importance of clear roles and responsibilities for oversight, aligned with professional guidance and clinical governance frameworks. Clearer national guidance would help reduce local variation in interpretation and unblock adoption.

Commissioning and Funding

It was highlighted that return on investment for digital interventions is typically realised over several years, whereas commissioning cycles are annual. This misalignment often discourages investment in prevention-focused, data-driven tools.

As one system leader stated: "*We need long-term commissioning frameworks that recognise value beyond immediate cost savings*."

Delegates emphasised the need for strategic commissioning frameworks that incentivise preventative interventions, reward long-term benefit, and support equitable digital adoption across communities. Evidence-informed evaluation of return on investment was emphasised as essential to drive sustainable implementation and secure stakeholder buy-in. The move to a strategic commissioning approach will be beneficial for future ventures, supported by the recently published strategic commissioning framework (NHS England 2025).

Strengthening the Integration of Pharmacy

While many delegates saw digital transformation as essential to improving safety and continuity, others emphasised that poorly integrated systems can increase workload and expose staff to new operational risks. Discussion around addressing these risks and strengthening pharmacy integration focused on implementation of a single medication record, increased pharmacy leadership, and cross-sector collaboration.

Integrated Digital Systems

Delegates agreed on the need for a national single medication record accessible to pharmacy teams across all care settings. One participant summarised: "*We need one consolidated digital space where pharmacy teams across all sectors can access the same information*."

Evidence demonstrates that well-implemented integrated digital tools can reduce errors and improve patient outcomes, reinforcing the need for interoperability, real-time updates, and patient-centred access. However, achieving this requires investment in data quality, interoperability standards, and workflows that allow real-time, patient-centred access without increasing administrative burden.

Workforce Capability and Leadership

Pharmacy leadership was recognised as central to embedding digital innovation. Delegates stressed the need for enhanced digital competency, clarity on regulatory responsibilities, and confidence in supporting patients using digital therapeutics,

particularly as pharmacy teams often act as the last line of support for patients navigating digital platforms.

This aligns with findings from the Health and Social Care Committee's *Digital Transformation in the NHS* Report (2023), which identifies gaps in training, uneven digital literacy, and insufficient staff involvement in digital change programmes. The Committee recommends embedding digital skills across all professional development pathways and ensuring staff are equipped to use new tools effectively.

To support pharmacy workforce capability, delegates similarly called for investment in digital skills development, protected learning time, and meaningful involvement of the pharmacy workforce as a strategic partner in digital system design and implementation. Positioning pharmacy teams in leadership roles would accelerate adoption in medicines pathways and ensure systems are clinically safe, user-centred, and aligned with real world workflows.

Cross-Sector Collaboration

Collaboration across academia, industry, NHS organisations, and innovation networks is essential to generating evidence, ensuring coherent implementation, and supporting sustainable digital models. Delegates warned that fragmented local adoption risks widening inequalities and undermining system-wide benefits.

Delegates also highlighted the importance of engaging pharmaceutical and medical technology companies early in pathway design, to ensure solutions are scalable, evidence-based, and aligned with NHS priorities.

Policy Changes: What should we stop and start doing?

Delegates discussed the actions needed to deliver truly integrated, patient-centred pharmacy, empowered by technology. They highlighted two essentials: embedding innovation along the patient pathway and creating clear, sustainable routes for evidence and reimbursement of digital therapeutics.

Embed Digital Innovation Along the Patient Journey

Predictive analytics and AI were highlighted by delegates as powerful tools for prevention and clinical decision-making, particularly when combined with local pathways and data on social, environmental, and geographic determinants of health. Delegates noted that these tools will only realise their potential if supported by high-quality, interoperable data and workflows designed to account for human factors and system-level change.

There was strong consensus that there is a huge opportunity for technology to integrate care for people with multiple long-term conditions.

"People with long-term conditions end up with multiple technologies and multiple pathways — it's confusing and difficult to manage."

To achieve this, digital innovation must be embedded across patient journeys, not attached to individual disease pathways. Delegates warned that if each long-term condition has its own technology solution, patients can become overwhelmed. A system wide approach that consolidates tools and reduces unnecessary complexity is therefore essential.

Reimbursement Pathways and Evidence for Digital Therapeutics

Delegates highlighted the need to create practical reimbursement models and distribution channels that allow clinicians to prescribe digital therapeutics confidently. Clear funding streams, alongside pathways for clinician education and patient support, are essential to integrate these tools into everyday care.

Evidence generation must reflect the dynamic nature of digital therapeutics, which are updated iteratively, rather than following traditional medicine approval pathways. Flexible evaluation methods, combined with national data infrastructure, are needed to ensure tools are effective, equitable, and scalable. Policy action should also encourage market competition while avoiding monopolies, so safe, evidence-based innovations reach patients efficiently. Clearer national guidance on standards, reimbursement, and evaluation would accelerate adoption and provide the industry with a predictable route to scale.

Key Insights

1. Embedding Digital Innovation Along the Patient Journey:

Digital tools must be integrated into patient journeys from the outset. Technology should act as an enabler, supporting prevention, consistent care, and clinician decision-making.

2. Strengthening Workforce Capability:

Pharmacy teams need enhanced digital skills, support in AI-enabled decision-making and confidence to manage patients using digital therapeutics. Leadership roles for pharmacy will be central to driving system-level change.

3. Patient Engagement and Shared Decision-Making:

Trust, co-design, and transparent communication underpin successful digital adoption. When patients understand how tools support their care, engagement and outcomes improve.

4. Cross-Sector Collaboration:

Collaboration across academia, NHS organisations, industry, and community partners is essential for consistent implementation and for generating robust evidence of the value of technology in improving patient outcomes.

5. Regulatory and Governance Modernisation:

Clear lines of responsibility, updated governance models and consistent assurance frameworks are needed to ensure safe and effective use of digital medicines technologies. There needs to be a much better-defined scope for example, of what is a regulated medical or AI device.

Recommendations

Technology can be harnessed in innovative and inclusive ways to streamline practice and create greater time and capacity for patient-facing and clinical tasks (NHS England, 2023). Realising the benefits of AI and digital technologies depends on having the right foundations in place, including high-quality data, clear governance, workforce capability, and interoperable digital infrastructure to support safe and effective use.

These enabling conditions underpin the recommendations that follow, which focus on actions to ensure digital transformation supports safer, more integrated, and equitable medicines optimisation.

- **For NHS England and DHSC**

NHS England and DHSC should urgently prioritise and accelerate plans to implement a national single medication record across all care settings as a cornerstone to unlocking safer, integrated, and efficient care. They should also establish a clear regulatory and clinical governance framework for digital therapeutics and AI-enabled decision support, clarifying accountability and ensuring tools are safe, transparent, and aligned with clinical workflows. Finally, national digital strategies should strengthen support for digital inclusion and formally recognise the role of pharmacy teams in helping patients navigate digital tools, ensuring digital transformation reduces rather than widens inequities.

- **For ICBs:**

ICBs should embed pharmacy leadership within digital, transformation and population health structures, ensuring medicines optimisation and data insight shape pathway design from the outset. They should also adopt strategic commissioning approaches that recognise long-term value, enabling investment in digital tools that improve adherence, prevention, and safe prescribing over time. In doing so, ICBs should prioritise commissioning of consistent, equitable implementation across communities, reducing the risk of postcode variation in digital access and capability.

- **For NHS Digital and the Royal Pharmaceutical Society (and future Royal College of Pharmacy):**

NHS Digital should lead the development of national standards for digital medicines systems, data interoperability, and the safe deployment of AI-enabled clinical decision support, working in close consultation with professional bodies including the Royal Pharmaceutical Society. These standards should support consistent implementation across the NHS and align with existing professional guidance, clinical governance frameworks, and regulatory requirements.

The Royal Pharmaceutical Society (and future Royal College of Pharmacy) should continue to provide leadership on the safe, ethical, and effective use of AI and digital technologies in pharmacy practice, building on its existing policy, digital capability frameworks, and guidance (Royal Pharmaceutical Society, 2024). This includes supporting workforce development, promoting confidence in using AI-enabled tools, and ensuring these tools enhance patient safety, professional judgement, and equity of care.

- **For Education Providers, Industry, and Innovation Partners:**

Education providers should embed digital-first practice and data interpretation skills into undergraduate and postgraduate pathways, preparing the workforce for rapidly evolving digital roles. Curricula should reflect the increasing role of AI, digital therapeutics, and data-driven care models in clinical practice. In parallel, industry and innovation partners should co-design digital tools with pharmacy teams and patients, ensuring solutions are usable, equitable and aligned with real clinical workflows. These partnerships will be essential to generating evidence, building trust, and delivering technologies that meaningfully improve medicines optimisation and long-term adoption.

Attendees of Roundtable Five

The insights and recommendations of this report have been informed by a roundtable event which took place on the 7th October 2025 under Chatham House Rule. A diverse group of eighteen delegates from across the pharmacy profession, NHS leadership, digital health, MedTech, and the wider health sector contributed to the discussion and shared their experiences to shape the recommendations in this report.

Figure 1: Roundtable 5 Delegates Organisational Background

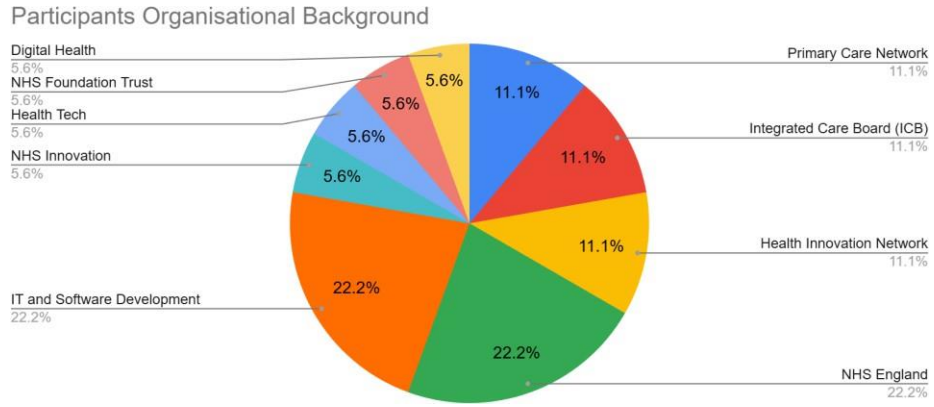
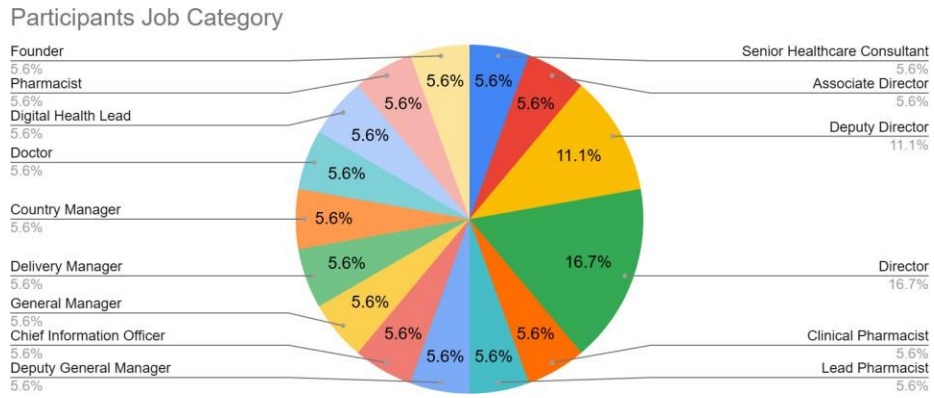


Figure 2: Roundtable 5 Delegates Job Category



Abbreviations

AI – Artificial Intelligence

DHSC – Department of Health and Social Care

ICB – Integrated Care Board

NHS – National Health Service

UK – United Kingdom

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