



How AI can help with NHS Productivity this year





Executive Summary

Artificial Intelligence (AI) has enormous potential to transform NHS productivity. Much attention is given to the opportunity of clinical AI to accelerate diagnosis and provide clinical decision support. However, it has, thus far, proven challenging to scale clinical AI in the NHS, due to the complexity of risk and regulation. The most immediate opportunity to drive productivity and efficiency from AI in the NHS is through the application of AI assistants in patient and corporate services where lessons can be learnt from other industries.

AI assistants can be designed to tackle administrative tasks so that we can maximise productivity gains. We have targeted areas highlighted by data analysis, working in collaboration with staff, to design and implement high-impact changes. Quantifying the benefits delivered is crucial, as is maintaining an ethical, secure, and transparent approach in AI assistant design, a cornerstone for any AI initiative. Key success factors include extensive staff involvement and education regarding AI's capacity to eliminate repetitive tasks, and make their role more interesting, fostering acceptance.

Leveraging high-quality data pinpoints priority workflows and facilitates the quantification of results. A transparent approach to AI assistant design is equally important to ensure trustworthiness in the programme.

Working across four NHS Trusts, IBM has demonstrated success showcasing how AI-driven automation can reduce the elective backlog through patient waiting list validation, accelerate administrative processes such as clinical coding and reduce operational burdens such as answering HR queries. These systems are now in regular use in some parts of the NHS and have been designed based on an open, technology-agnostic approach.

Organisations in other industries are scaling AI productivity assistants and systems across enterprises to transform productivity and elevate employee and customer experience at pace. The greatest impact has resulted from simplifying, optimising and automating organisation-wide processes, to accelerate administrative and operational tasks. Developed over years, these approaches have demonstrated a step-change improvement of 20% for customer and employee experience and savings in administrative functions of up to 40%.

A coherent approach would support delivery of AI assistants to drive efficiency and productivity at scale in the NHS. This should include pump-prime funding to underpin capacity and capability for change, consistent standards and a library of evidenced AI assistants for use by local organisations, underpinned by staff education. Ethical and explainability standards should form a key part of this AI assistant library.

Together with local empowerment of staff to select and design for their workflows and priorities, this will enable organisations to begin the journey to scale AI-enabled change and spread the benefits across the NHS.

The Opportunity: Transforming NHS Productivity with AI

Healthcare and Life Sciences have witnessed decades of groundbreaking innovation, from advances in imaging and genetic testing to cutting-edge treatments that have improved patient care and outcomes. Healthcare systems are increasingly challenged to deliver with increased patient complexity and expectations, staff shortages and a fragmented system including a complex technology landscape. Healthcare organisations therefore find themselves with rising costs and declining experience among patients and staff as well as reduced productivity.

Artificial Intelligence (AI), when machines are developed to mimic human intelligence, can be highly effective in some settings. While humans excel at activities requiring imagination and ethical input, AI is well-suited to tasks such as pattern identification and carrying out repetitive tasks as well as summarising information. Humans working with AI, taking the best of the capabilities of each, can be called “Augmented Intelligence.”

Recently, Generative AI and AI agents have emerged, enabling some tasks of synthesis to be outsourced to machines.

Multi-Agent AI systems can act autonomously and even work together in teams to deliver against a defined goal. A variety of AI assistants are now available for use in the NHS in clinical services as well as in operational functions. For example, AI-based software such as Brainomix is used across the NHS to accelerate diagnosis of stroke¹. The majority of funding has been directed to imaging programmes, but in very few clinical services are AI assistants used systematically to enable digital transformation at scale. For example, while AI-based assistants have been shown over more than five years to be effective at reviewing breast cancer images, the approach to implementation has been unclear - a trial is now underway across the NHS to support a roll out.²

There are high expectations that AI can be part of the solution: A Health Foundation survey showed that 81% of NHS staff and 61% of the public support the use of AI for administrative purposes³. However, the uptake of AI across the NHS has been slow compared to many other industries and systems.

¹ <https://www.digitalhealth.net/2024/12/all-107-stroke-centres-in-england-using-ai-technology-says-nhse/>

² <https://www.gov.uk/government/news/world-leading-ai-trial-to-tackle-breast-cancer-launched>

³ <https://www.health.org.uk/reports-and-analysis/analysis/ai-in-health-care-what-do-the-public-and-nhs-staff-think>

Where? Rapid impact can be delivered in administrative and operational areas

Many AI assistants have been developed to accelerate clinical decision-making, including diagnostic and prescribing decisions. Initially, there was a lack of clinical grade randomised controlled evidence⁴ on these tools and regulators were unclear on how to appropriately address such technologies. Over the last five years, the evidence base has been strengthened substantially and it is clear that AI can be effective in the clinic. For example, DERM was recently approved to autonomously make clinical decisions.⁵ However, barriers remain to rolling out these technologies in real-world clinical practice including challenges of workflow integration, staff capacity and buy-in to change.

Delivering Rapid Impact with AI in Healthcare Operations

We believe that the most immediate opportunity for AI assistants to deliver productivity impact lies in optimising patient services and corporate services. These areas offer significant efficiency gains with lower regulatory hurdles and reduced clinical risk, providing an ideal starting point to demonstrate the benefits of AI-driven transformation and to deliver impact at pace. Such programmes can build credibility for the use of AI across the system and help create the change case for the use of AI in other settings.

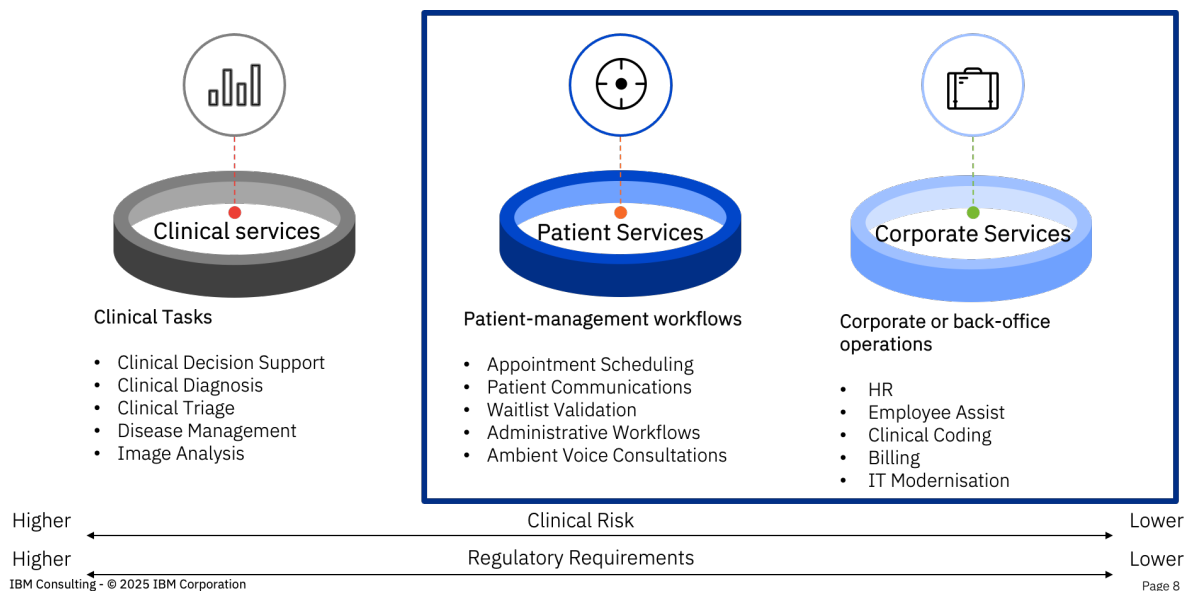


Fig 1: Starting AI programmes in lower risk, less regulated operational settings will accelerate impact

⁴ <https://erictopol.substack.com/p/all-eyes-on-medical-ai>

⁵ <https://skin-analytics.com/ai-pathways/derm-performance/>

Operational services include Patient Services and Corporate Services

Patient Services – Patient Management Workflows

AI assistants can streamline non-clinical and clinical-adjacent tasks, reducing administrative burden and improving patient interactions. Key applications include:

- Appointment Scheduling – automating scheduling to reduce inefficiencies and improve resource allocation.
- Patient Communications – enhancing patient engagement through AI-driven chatbots and optimised reminders.
- Waitlist Validation – using AI to prioritise and manage waiting lists efficiently.
- Administrative Workflows – reducing manual workload by automating routine documentation tasks.
- Ambient Note Taking – enabling clinicians to focus on patients during consultations and check the notes and actions at the end of the session

Corporate Services – Strengthening Back Office Functions

Back-office processes, often overlooked in digital transformation, present an opportunity for AI assistants to deliver cost savings and operational efficiencies:

- HR and Employee Assistance – automating recruitment, onboarding, and support services.
- Clinical Coding – using AI to assist with accurate coding and claims processing.
- Finance – optimising financial workflows to improve cash flow and reduce administrative errors.
- IT Modernisation – enhancing system interoperability and automating service management.

How? A human-centred, ethical and data-driven approach

Our approach to digital transformation in the NHS is built on staff involvement, focusing efforts on the most pressing challenges evidenced by data analysis and user research, underpinned by an ethically open approach to foster trust.

IBM's AI Ethics Principles guide us within our organisation and across all projects', ensuring AI is developed and deployed responsibly. We believe that AI should augment, not replace, human intelligence, supporting clinicians and administrators in making informed decisions. We believe

that NHS organisations should retain control of their data and that insights belong to their creator, ensuring privacy, security, and compliance. Furthermore, we believe that transparency and explainability are fundamental – AI systems must be designed in a way that allows users and the public to understand how decisions are made, fostering confidence. By embedding these principles into our approach, we drive sustainable digital transformation that empowers the NHS.

IBM's Intelligent Workflow Approach to the Adoption and Integration of AI tools

For AI to deliver sustained impact, implementation must go beyond individual tools and focus on integrated, intelligent workflows. IBM's approach is phased and ensures AI is embedded within existing processes, aligning with organisational goals while maintaining staff involvement and trust.

1. **Analyse & diagnose** – leveraging data-driven process mining insights to quantify operational inefficiencies and identify root causes of problems and then working with local teams to determine intervention priorities.
2. **Design & prioritise** – focusing on the identified opportunities, working with staff to apply design thinking to develop solutions, such as AI assistants or simpler automation tools balancing feasibility and impact potential including time to impact.
3. **Implement & monitor** – deploying prioritised interventions, using process mining dashboards to track adoption, measure behavioural changes, and quantify value.

This structured approach ensures that adoption and development of tools is targeted, effective, and scalable, driving measurable improvements while maintaining transparency and trust across healthcare staff. By starting in lower-risk areas, organisations can build momentum for AI adoption, demonstrating tangible benefits to pave the way for broader transformation.

Conditions for success in delivering digital transformation with AI

From our experience, we have identified conditions for success in utilising AI assistants to augment processes and deliver digital transformation including staff involvement, education, data availability and explainability. We recommend prioritising pragmatic, high-impact opportunities to demonstrate that the approach works.

Involving staff and patients in the selection, design and seamless integration of AI assistants into existing workflows is essential for adoption. It is important to **educate** teams on how AI can help, citing the opportunity to remove repetitive tasks, allowing people to focus on more interesting activities and that there will always be a need for a human in the loop. No AI system can work without reliable access to suitable well-structured

data, held in a system and by teams which enable access for such purposes. AI assistants must prioritise transparency, ensuring that their outputs are **explainable**, reliable, and accountable to maintain confidence in automated processes.

A clear focus on quantifiable, near-term **impact** in improving patient outcomes or enhancing operational efficiency, is crucial to show teams on the ground and senior sponsors that the approach works so as to gain backing for longer term delivery and support to explore additional opportunities. This allows organisations to build experience of change and allows subsequent phases to build on success, driving wider organisational transformation.

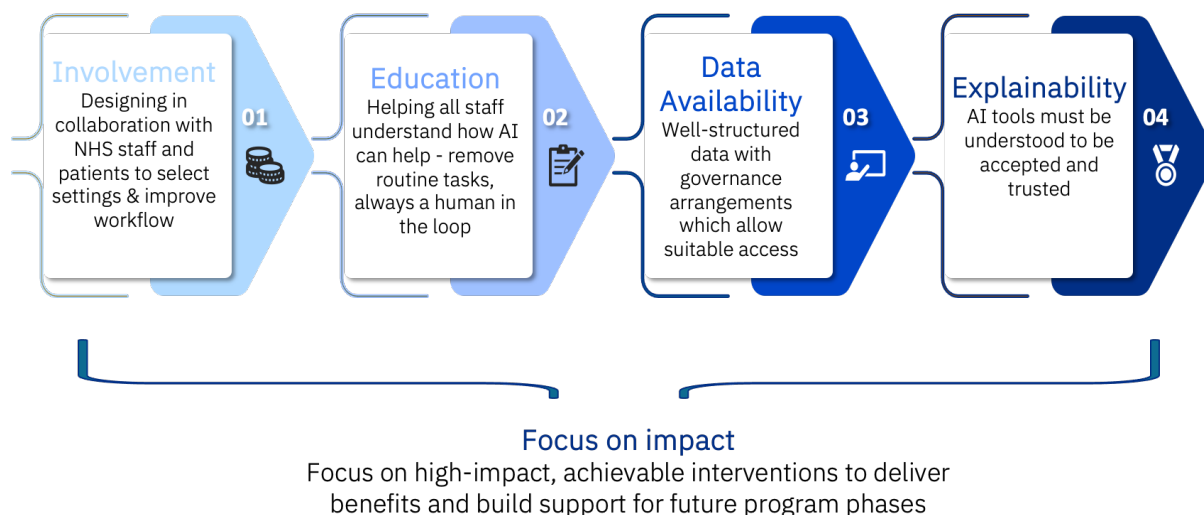


Fig 2: Conditions for success in delivering digital transformation with AI assistants

NHS Successes: We have delivered significant impact in three NHS settings

1. IBM & UHCW NHS Trust - Transforming Patient Waitlists with Generative AI

IBM partnered with teams at University Hospitals Coventry and Warwickshire NHS Trust (UHCW) to review their current patient flows and processes and identify challenges and bottlenecks which could be addressed to deliver an impact on hospital productivity. One key opportunity was to transform patient waitlist management.

Faced with a backlog of 90,000 patients and clinical letters requiring reconciliation, UHCW sought to optimise their process while maintaining a patient-centric approach. They sought to address the challenge of manual validation between clinical letters and patient waitlist status, a laborious task that required significant staff time.

Despite prioritising patients with longer wait times, the backlog persisted, leading to increased clinical risks, breaches of referral-to-treatment (RTT) targets, and financial penalties.

Working with the patient access and outpatients booking teams, we developed a Generative AI assistant. This assistant reads patient letters and proposes a patient status classification, comparing it with the patient's existing status in the Electronic Patient Record. Discrepancies are then highlighted for staff validation. The tool also generates a summary of where in the text the waitlist status was derived, aiding staff to reference relevant content. The pilot waiting list validation accuracy scored 93%.

The AI-driven assistant dramatically reduced the time taken to check the UHCW patient waitlist, saving around 10,000 hours compared to manual coding. This transformation had a significant impact on UHCW's operations. The AI assistant now reads the entire waiting list and its associated letters in around 2-3 hours. The team were able to identify that 17% of patients had been

incorrectly classified, leading to unnecessary follow ups.

Scaling this pilot into production enabled a 99% reduction in the time taken to review letters, and over 10% reduction in the elective waiting list. This efficiency allows UHCW to prioritise

patients more effectively, improving the accuracy of the waiting list and reducing overall waiting times. This improves hospital productivity, patient experience and elevates the role of staff, freeing them up for other tasks⁶.

2. IBM & UHCW NHS Trust - Revolutionising Clinical Coding with Generative AI

UHCW NHS Trust faced a significant challenge in clinical coding. With 500,000 patient episodes to code annually for tariffs, planning, and quality measurement, manual coding was a time-consuming and costly process, taking 12 minutes per episode and costing £1.2m and 12,000 days of effort annually. Moreover, the distance between coding and clinical teams affected data quality, and training new coders was a lengthy and expensive process.

A joint project aimed to leverage Generative AI to automate the code generation process. Using retrieval-augmented generation, the AI assistant was trained on clinical coding standards provided as PDFs and passed the 3-hour coding exam in just 5 minutes. The system includes a user-friendly chatbot interface, enabling near-instant generation of ICD-10 and OPCS-4 codes, along with a summary of the coding logic and relevant sections of patient notes for

coder validation delivering an accuracy rate of 93%.

The Generative AI assistant reduces clinical coding time by over 50%, proposing a classification in seconds which then requires up to 5 minutes for the human in the loop to check compared with an average of 12 minutes for manual review and code selection. This efficiency has led to a targeted annual saving of £700k for UHCW and across the NHS, this would scale to over £150m of savings in clinical coding.

The impact of this initiative is profound. At the minimum viable product (MVP) stage, the approach has already reduced coders' time by 58%. IBM and UHCW are now planning the next steps in this project to further enhance the solution and aim to roll it out to the clinical coding teams.

⁶ <https://www.ibm.com/case-studies/uhcw-nhs-trust>

3. AI in Healthcare: 'Enquire' HR Virtual Assistant

At East & North Hertfordshire NHS Trust, the COVID-19 pandemic led to a surge in inbound calls to the Health at Work team, creating an urgent need for a scalable digital solution. To address this, a cloud-based call centre was swiftly implemented, but maintaining sufficient staffing levels remained a challenge due to the unprecedented demand. In response, the Trust partnered with IBM to design and deploy an AI-driven solution across all People Team services. The result was an AI-powered virtual assistant capable of providing instant, 24/7 responses to high-volume, low-complexity enquiries, alleviating the burden on HR teams.

The virtual assistant handled 13,000 enquiries in the first year and successfully managed 82% of employee requests, offering accurate and concise answers based on policies, procedures, interactive guides, and multimedia resources. A paired development approach was also introduced, enabling employees to train and enhance the AI assistant, ensuring long-term adaptability and self-sufficiency beyond the initial rollout.

This AI-powered assistant not only improves accessibility and efficiency but also delivers substantial time savings, with an estimated 2,700 hours saved in the first year by reducing the number of inbound calls to the contact centre. By automating responses to routine queries, HR teams are able to focus on more strategic, complex tasks, improving staff productivity. This shift has led to a better employee experience, as staff receive immediate, accurate information without delays, while HR personnel are relieved from their most routine, repetitive tasks.

The implementation of this AI assistant has also resulted in cost savings of over £100,000 per year by automating routine enquiries as well as optimising resource allocation and reducing reliance on contact centre staff for repetitive tasks. These efficiencies are not only delivering ongoing financial benefits but also allow HR and administrative teams to focus on higher-value activities, ultimately enhancing service delivery and staff engagement.



The Future: Leaders in other industries are delivering productivity at scale using emerging AI in operational settings

In other industries, the use of AI to drive productivity is anticipated to transform organisations, from accelerating drug design to transforming software development. But organisation-wide transformation based on AI is not yet commonplace. Most examples of the use of AI at scale remain in transforming operational functions, personalising experiences and automating workflows outside of core business development activities, underscoring the fact that the best place to start is away from the front line of NHS clinical care.

While patient-facing AI innovations continue to evolve, immediate and measurable gains can be achieved by deploying AI in administrative and operational processes. The following case studies illustrate how long-term programmes leveraging AI are driving efficiency and cost savings at scale in healthcare administration, enterprise operations, and regulatory content generation, highlighting its potential in the NHS.

1. Health System Transformation: Call Centre Automation & AI Platform

Elevance Health has been on a journey to move from people in call centres to using AI to deliver exceptional digital-first AI-first experiences and to enable patients to reach their health plan 24x7 via an award-winning [Sydney Health mobile app](#), via the [Anthem.com](#) website or to switch to SMS through voice commands. Healthcare providers logged into their tailored system can seamlessly reach out to Elevance via chat, carrying the full context to expedite service.

Starting from 46m phone calls per year in early 2020, Elevance Health has had huge success moving 24% of those interactions to digital in under 2 years. IBM has partnered with Elevance Health to co-create their digital and AI experiences, focusing on improving customer

satisfaction and effectiveness of AI interactions.

Today, *Sydney Health* has the conversational maturity to answer complex healthcare questions. This includes rapid personalised responses more than 90% faster than keyword searches or complex questions which require AI to read and summarise unstructured documents or dynamically change the dialogue.

This has enabled Elevance to continue to improve customer satisfaction scores reaching 86%. This success demonstrates how AI can enhance service delivery, reduce administrative burden, and improve the overall patient experience—a model that could be replicated across NHS operations.

2. IBM Back-Office Productivity Transformation: Optimisation and Automation

Over more than twenty years, IBM has modernised its back-office operations automating manual tasks, simplifying workflows, and leveraging technology to accelerate decision-making. In 1999, a programme began to simplify and align data and operational processes. This standardisation enabled AI and automation to be applied across the different elements of the organisation.

The HR transformation has been a key feature with IBM's "Ask HR" now answering 93% of employee queries, resulting in 40% cost reduction, enabled by AI and Generative-AI powered

chatbots accelerating and personalising queries. Similarly, "Ask IT" resolves 80% of IT issues. Our enterprise-wide transformation has also streamlined procurement and developed intelligent supply chain management.

Our new employee experience has delivered a 20% improvement in engagement scores and \$3b in total savings. This example highlights how AI can transform back-office operations and the potential for the NHS to reduce inefficiencies, optimise resource allocation, and enable staff to focus on higher-value tasks.

3. Content Generation: Accelerating Patient Access by Automating Regulatory Authoring

Writing clinical trials documents for submission is a complex and time-consuming step in bringing life-saving treatments to patients – often taking up to six months from clinical trial completion, delaying patient access to treatments as well as return on investment for companies.

IBM has developed a regulatory content generation engine to dramatically reduce document preparation time using a Multi-agent AI framework. This system includes full transparency and explainability through AI-powered agent chat, human-in-the-loop validation to maintain compliance and quality standards and built-in fact-checking controls against original data sources.

This system creates content which has 90% overlap with human-written drafts so that team members can focus on strategy and finalisation of reports. This enables a 50–70% reduction in submission cycle times within three

months. This approach has been validated according to Good Clinical Practice guidelines for regulatory compliance based on the consistency of the outputs. This case study illustrates how AI can streamline complex, knowledge-intensive processes, a key consideration for NHS operations that require extensive documentation and compliance.

These examples demonstrate how AI adoption in back-office and operational functions can unlock significant productivity gains. The NHS can replicate these successes by prioritising AI-driven efficiencies in administrative workflows, patient communications, and regulatory compliance. By taking a strategic, scalable, and staff-inclusive approach, AI can help the NHS reduce operational burdens, offset the ever-growing workload of staff and improve service delivery, ultimately enhancing patient outcomes.

What next? – A call to practical action: How to deliver at scale in the NHS

Driving the Adoption of AI Assistants for Productivity

Leaders across industries are leveraging AI at scale to enhance productivity, particularly in operational services including patient services and corporate services where automation yields rapid efficiency gains. While clinical services AI innovations in life sciences and diagnostics hold long-term promise, the NHS can prioritise immediate, high-impact AI applications that rapidly improve staff experience, and deliver quantifiable productivity impact.

The examples we have showcased here have demonstrated open approaches which can be delivered using a variety of models, clouds and architectures.

To enable the NHS to use AI assistants for productivity to accelerate measurable improvements, a structured, scaled approach is essential. The Health Foundation with UCL Partners⁷ and the Health Innovation Alliance⁸ have recently brought together catalogues of use cases and proposed actions to address this opportunity. More strategic and coherent national or regional action and guidance to support local staff is needed to take advantage of these opportunities. An approach could include the following actions:

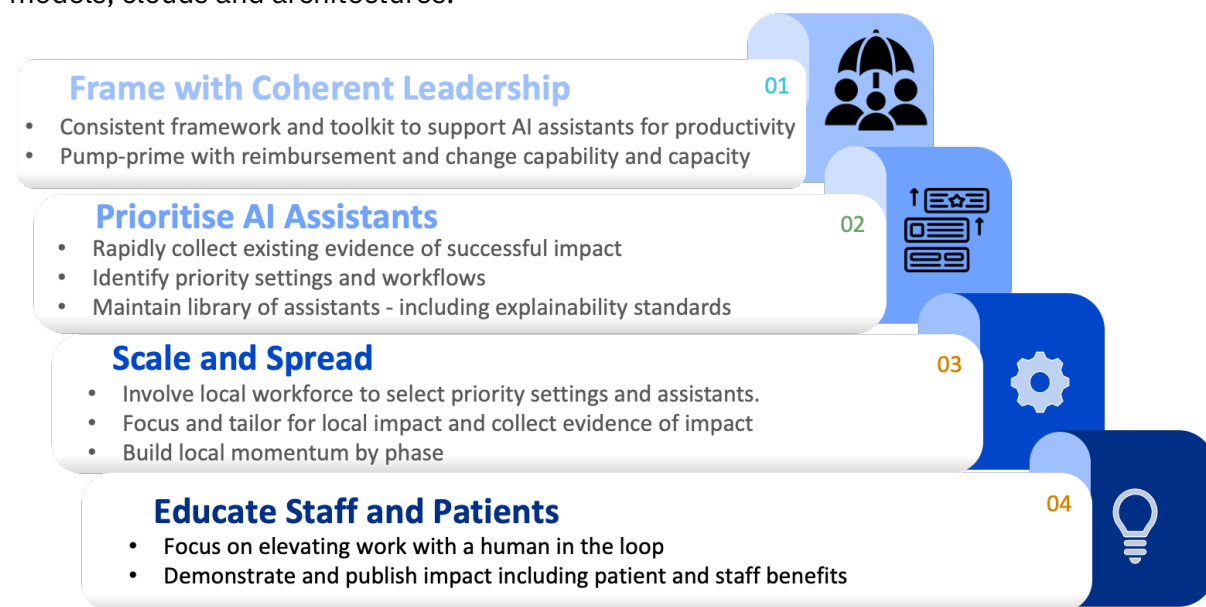


Fig 3: How to spread and scale AI assistants for operational productivity in the NHS

⁷ <https://s42140.pcdn.co/wp-content/uploads/UCLP-AI-in-London-healthcare-03.25-final.pdf>

⁸ <https://health-innovation.org/wp-content/uploads/2025/03/HIA-AI-Use-Cases-Report-2025.pdf>

1) Frame the approach with national or regional leadership

- a. Establish a framework to guide the adoption of AI assistants for productivity including a toolkit to support roll out locally across the NHS
- b. Define standardised best practices for implementation, evidence collection, ethics, and governance
- c. Provide pump-priming funding to accelerate AI deployment
- d. Build reusable capacity and expertise to support and sustain AI-driven transformation

2) Create a library of high value AI assistants

- a. Rapidly collect evidence of existing AI implementations which have successfully delivered value across the NHS
- b. Identify and publicise priority settings and workflows where AI can deliver the greatest efficiency gains
- c. Maintain a library of AI assistants for productivity, that meet explainability and transparency standards

3) Scale & Spread Locally

- a. Empower staff to select priority settings and pain points for their Trust and identify AI assistants from the library that align with operational needs, building on data available from the FDP
- b. Support tailoring and roll out of AI assistants to specific local challenges for maximum impact
- c. Systematically collect and analyse local evidence of AI's impact on productivity and service delivery
- d. Build momentum through phased implementation, ensuring learnings from initial deployments inform wider rollouts locally and feeding back to central efforts

4) Educate staff and patients

- a. Elevate AI's role as an augmentation tool, reinforcing the human-in-the-loop approach to ensure responsible AI adoption
- b. Run awareness campaigns to demystify AI, alleviate job security concerns, and demonstrate AI assistant's role in upskilling and enhancing staff capabilities
- c. Showcase success stories to highlight measurable benefits for both staff and patients

Conclusion

There is a proven opportunity to address the urgent challenge of NHS efficiency and productivity using AI assistants, focused on patient and corporate services where there is lower risk and fewer regulatory challenges than in clinical services. These types of repetitive operational and financial tasks can be effectively accelerated using AI assistants, so that staff can focus on more interesting and higher-value activities including validation and review.

Programmes to scale AI-enabled transformation across organisations have been proven in other industries. Spreading these proven approaches across the NHS can make a significant difference to NHS waiting lists and increase productivity in corporate functions in the short term, while the benefits of AI in clinical services will surely follow in the medium term.

Authors

Dr Nicole Mather

Lead Partner | Data & AI for Healthcare & Life Sciences
nicole.mather@ibm.com

David Bibbs

Managing Director | IBM Technology UKI Healthcare & Life Sciences
David.bibbs@ibm.com

Kerman Jasavala

Associate Partner | IBM Healthcare & Life Sciences
kerman.jasavala@ibm.com

Dr Mark Davies

Chief Health Officer, IBM
mark.p.davies@ibm.com

Jim Michael

Senior Managing Consultant Analytics | IBM Healthcare & Life Sciences
jim.michael1@ibm.com

Catherine Heylings

Senior Consultant | IBM Healthcare and Life Sciences
Catherine.Heylings@ibm.com

Parts of this document were refined using AI

