jaam

INTELLIGENT AUTOMATION **In Healthcare**

Opportunities for private healthcare providers

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Can intelligent automation power healthcare transformation?

A raft of challenges, from economic uncertainty to skills shortages, are making it increasingly difficult for healthcare providers to deliver high-quality, timely care that meets the evolving needs of the communities they serve.

In this paper, we outline key problems facing the healthcare sector today and explore how healthcare organisations, particularly those in the more agile private sector, can harness automation and AI technologies to address these issues, rethink their operating models, and drive the sector forward.

What is intelligent automation

Intelligent automation is the combination of artificial intelligence capabilities with process automation technologies such as robotic process automation (RPA), business process management (BPM), document management and other solutions. This allows an organisation to broaden the scope of work that can be automated.

INTRODUCTION

The need for innovation in healthcare

Traditional healthcare delivery models are under intensifying pressure as healthcare providers around the world try to balance growing patient numbers with the global economic downturn, workforce shortages, employee burnout and other challenges.

The cost-of-living crisis, Russia's invasion of Ukraine and the lingering COVID-19 pandemic are all weighing on global economic activity. The downturn has been sharper than expected. IMF[1] forecasts show that global growth declined from 6.0% in 2021 to 3.4% in 2022, with a fall to 2.9% predicted for 2023. Inflation, higher than it has been in several decades, rose from 4.7% in 2021 to 8.8% in 2022.

As healthcare providers navigate these issues, they also face a relentless rise in demand for their services, driven in part by a growing and ageing population. By 2050, one in four people in Europe and North America will be over the age of 65.[2] In the UK, waiting times are increasing.[3] NHS England[4] data for June 2022 revealed there were more than 350,000 people who had waited over a year for treatment – more than 220 times higher than before the pandemic.

Key Challenges Facing Healthcare Providers

A shortfall of healthcare professionals

Despite being one of the world's largest employers[5], the NHS is facing a workforce crunch across primary and secondary care. The British Medical Association (BMA)[6] reports that there are currently 2.8 doctors per 1000 people in England, compared to the EU average of 3.7 per 1000 people. The healthcare workforce is growing, but at this rate, the gap will only close by 2046.

GP practices across NHS England are also under strain, due to declining GP numbers, recruitment and retention challenges, and rising demand. In 2021/22, there was a shortage of around 4,200 GPs in permanent roles.[7]

The BMA[8] has warned that increasing vacancies create a "vicious cycle": there's more pressure on existing staff, leading to higher stress levels, absence and attrition.

Dr Fiona Donald[9], the president of the Royal College of Anaesthetists, echoes this sentiment:

> The shortfall means the NHS will struggle to tackle the backlog and places extra pressure on colleagues to complete extra shifts"

1. https://www.imf.org/en/Publications/WEO/Issues/2022/10/11/world-economic-outlook-october-2022
2. https://www.mckinsey.com/industries/healthcare-systems-and-services/our-insights/transforming-healthcare-with-ai
3. https://commonslibrary.parliament.uk/nhs-pressures-in-england-waiting-times-demand-and-capacity/
4. https://www.cqc.org.uk/publication/state-care-202122/access#waiting
5. https://www.kingsfund.org.uk/audio-video/key-facts-figures-nhs
6. https://www.bma.org.uk/news-and-opinion/nhs-in-midst-of-workforce-shortfall
7. https://www.kingsfund.org.uk/publications/health-and-social-care-england-myths
8. https://www.bma.org.uk/advice-and-support/nhs-delivery-and-workforce/workforce/nhs-medical-staffing-data-analysis
9. https://www.theguardian.com/society/2022/mar/03/staffing-crisis-deepens-in-nhs-england-with-110000-posts-unfilled

Clearly, the healthcare sector needs a solution for attracting and recruiting more doctors, nurses and operational staff, as well as improving the retention of existing skills and talent.

> **"General practice is in crisis because of difficulties in recruiting and retaining GPs, alongside a growing and increasingly complex workload. As a result, GPs are working harder than ever before, but patients are still finding it difficult to get appointments."** – The Kings Fund[10]

Workforce burnout

A high-pressured or emotionally draining working environment combined with heavy workloads and long working hours can impact physical and mental wellbeing, leading to burnout.[11]

Even before the pandemic, doctors in the UK were struggling with these issues. A 2018 BMJ survey[12] of doctors from multiple specialties and grades across the UK, found that close to one third (31.5%) were experiencing a high level of burnout. Those working in emergency medicine and general practice were the most impacted. Following the Covid-19 outbreak, this challenge intensified, with 92% of trusts across the UK telling NHS Providers that they had concerns about staff wellbeing, stress and burnout.[13]

Unfortunately, this is an issue that puts everyone's health at risk – clinicians and patients. Studies found that doctors with high levels of burnout were 45% to 63% more likely to make a major medical error within three months than those with low levels.[14] Patient satisfaction is also notably higher in healthcare environments that ensure the health and wellbeing of their teams.

> **"Burnout is a widespread reality in today's NHS and has negative consequences for the mental health of individual staff, impacting on their colleagues and the patients and service users they care for. There are many causes of burnout, but chronic excessive workload is a key driver and must be tackled as a priority."** – House of Commons Health and Social Care Committee Report, 2021-22.[15]

Inefficient information management

Clinicians and staff need access to current, accurate information at the point of care to deliver services efficiently and support decision-making. However, approaches to sharing information often rely on manual systems or outdated technologies.

For example, Bloomberg[16] reports that in the US, at least 70% of healthcare providers still exchange medical information by fax. This is largely due to lack of interoperability between electronic healthcare record (EHR) systems and other technology platforms that are used to run clinical and administrative processes. Lacking the tools needed to transfer information between different systems, internally and externally, many healthcare professionals still use fax machines to bridge these gaps and enable collaboration and communication with other teams, clinics, hospitals, labs and service providers.

10. https://www.kingsfund.org.uk/publications/health-and-social-care-england-myths
11. https://mentalhealth-uk.org/burnout/
12. https://bmjopen.bmj.com/content/10/1/e031765
13. https://committees.parliament.uk/publications/6158/documents/68766/default/
14. https://www.gmc-uk.org/news/news-archive/what-is-the-role-of-the-regulator-in-wellbeing
15. https://committees.parliament.uk/publications/6158/documents/68766/default/
16. https://news.bloomberglaw.com/health-law-and-business/health-care-clings-to-faxes-as-u-s-pushes-electronic-records

Key Challenges Facing Healthcare Providers

Unfortunately, a heavy reliance on faxes, printouts, handwritten notes and other outdated modes of information sharing hampers data accessibility and overall efficiency. The longer it takes to source the information and insights needed for clinical care and operational decision making, the slower these processes run – contributing to delays and waiting lists.

Going paperless is not enough. In an environment where information is gathered from many different, fragmented sources, this creates a scenario where staff have to act as the "integration points" between these systems. Manually looking up information or copying and pasting data into a report drains time and increases the risk of human error. A key priority going forward is to improve data quality and access, and system interoperability.

Budget pressures

The Covid-19 pandemic and the global downturn are placing pressure on healthcare budgets. NHS England could face a £7 billion budget shortfall next year.[17]

One area of focus for healthcare organisations looking to control costs is optimising the management of administrative activities, which can drain money, time and human resources. In the US, for example, research by Health Affairs[18] revealed that at least half of all administrative spending "does not contribute to health outcomes in any discernible way".

It seems that there's a dire need for innovation and transformation in the healthcare sector. Automation and AI-enabled technologies have the potential to help address the challenges set out above. While public healthcare systems like the NHS are working to harness technology to improve outcomes for patients and staff[19], healthcare providers in the private sector often have greater flexibility to adopt technology and embrace digital transformation.

The following sections discuss the value of intelligent automation in healthcare, specifically looking at how private healthcare providers can harness these technologies to drive much-needed innovation and change.

17. https://www.theguardian.com/society/2022/oct/06/nhs-england-health-budget-shortfall-extra-costs
18. https://www.healthcaredive.com/news/Health-Affairs-administrative-spending-wasteful/633774/
19. https://transform.england.nhs.uk/digitise-connect-transform/nhsx-delivery-plan/

SECTION 02

Can automation play a role in addressing these challenges?

Automation has the potential to help to address the challenges facing the healthcare sector by reshaping how processes are run, decisions are made, information is used, and resources are allocated. The following sections explore how automation technologies can support healthcare providers' efforts to:

Reduce workloads in clinical and operational areas

Increase the efficiency of clinical operations

Build innovative care delivery models

Improve patient access to high-quality care

Before going into detail on the types of technologies that drive automation, along with their key use cases and the tangible benefits they can deliver, here is a quick look at the state of automation in healthcare and other sectors.

A quick overview of the automation landscape

Across all sectors of the global economy, technology adoption continues to pick up pace. The World Economic Forum[20] reports that spending on digital transformation surpassed $1.3 trillion worldwide and it is growing at a whopping 10.4% year on year. Process automation is a key focus area. The July 2022 McKinsey Global Survey[21] found that automation continues to take hold in all industries and regions: 70% of organisations are at least piloting automation technologies – up from 66% in 2020, and 57% in 2018.

While capability, accessibility and affordability improvements are making it easier for organisations of all sizes to embrace automation solutions, the COVID-19 pandemic has been a major catalyst. Close to half (46%) of the companies surveyed by McKinsey[22], across all sectors, say the COVID-19 pandemic accelerated their deployment of new automation technologies. Key motivators – apart from social distancing, of course – were the need to innovate business models and increase process efficiency.

Attitudes to automation in healthcare

In the healthcare sector, the pandemic saw a rapid increase in services being provided remotely, via telehealth solutions. Before COVID-19, GPs in the UK were conducting around 3 million telephone appointments a month. During the pandemic, estimates show this number reached 11 million.[23]
This has helped to reshape the way both patients and healthcare providers view virtual healthcare delivery models. According to the UK Office of National Statistics[24], in August 2020, 68% of people said they would be 'comfortable' or 'very comfortable' attending an online appointment.

20. https://www.weforum.org/agenda/2022/09/health-information-system-digital-transformation-healthcare/
21. https://www.mckinsey.com/capabilities/operations/our-insights/your-questions-about-automation-answered
22. https://www.mckinsey.com/capabilities/operations/our-insights/your-questions-about-automation-answered
23. https://www.kingsfund.org.uk/audio-video/key-facts-figures-nhs
24. https://www.nuffieldtrust.org.uk/files/2020-12/QWAS/digital-and-remote-care-in-covid-19.html#6

Similarly, the annual GP Patient Survey[25] found that more patients across the UK are using online services to book appointments with their GP, have an online consultation, request repeat prescriptions or access their medical records. Over half (55%) had accessed such online services in 2022, compared to 44% in 2021.

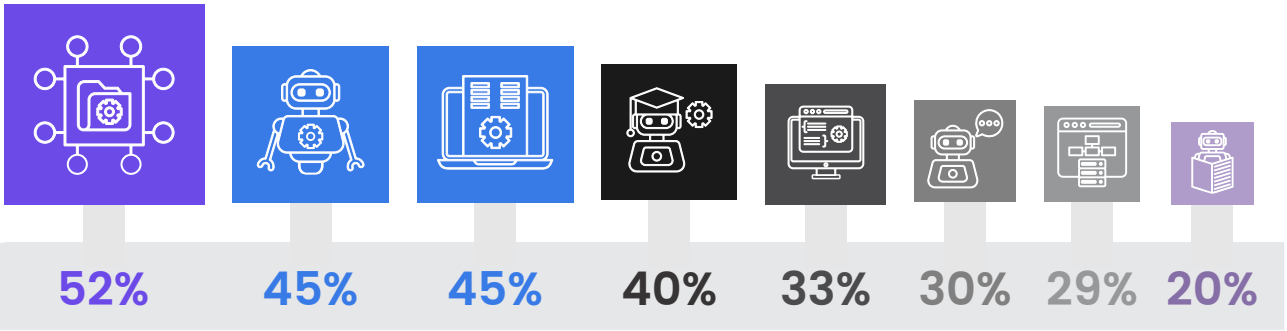
Healthcare providers are also shifting their mindsets toward digital solutions. Research by the Deloitte Centre for Health Solutions[26] found that 80% of UK-based healthcare organisations increased the adoption of digital technologies during the pandemic "to provide virtual support and more effective ways of engaging with patients". And this trend is expected to continue. A survey of health executives by the Boston Consulting Group[27] found that two-thirds of providers expect the use of virtual consultations to accelerate over the next one to three years.

It's about more than just virtual consultations. In another study conducted by Deloitte[28], it was revealed that healthcare providers are looking to digitally transform their relationship with patients. Most are hoping to achieve a better patient experience (92%) as the top desired outcome, focusing on newer forms of care delivery using digital technology.

Which technologies are being adopted?

According to the McKinsey Global Survey[29], the automation technologies that are most commonly being deployed (beyond the pilot phase) by organisations across industries are as follows:

The most commonly deployed technologies by % of all companies surveyed



52% are deploying intelligent document management tools
45% are deploying RPA
45% are deploying business process management / case management solutions
40% are deploying machine learning algorithms
33% are deploying low or no code platforms
30% are deploying voice assistants, chatbots and conversational agents
29% are deploying process mining, discovery and documentation tools
20% are deploying natural language processing

Source: McKinsey Global Survey

25. https://gp-patient.co.uk/downloads/2022/GPPS_2022_National_infographic_PUBLIC.pdf
26. https://www2.deloitte.com/uk/en/pages/press-releases/articles/covid-19-forces-adoption-of-digital-technologies-for-uk-healthcare-clinicians.html
27. https://www.bcg.com/publications/2021/dynamic-and-digital-new-reality-for-health-care
28. https://www2.deloitte.com/uk/en/insights/industry/health-care/digital-transformation-in-healthcare.html
29. https://www.mckinsey.com/capabilities/operations/our-insights/your-questions-about-automation-answered

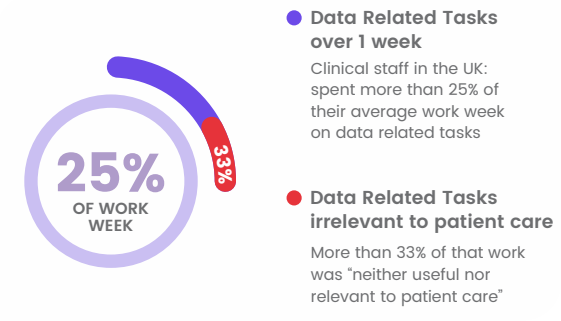
SECTION 03

Technologies that enable automation in healthcare

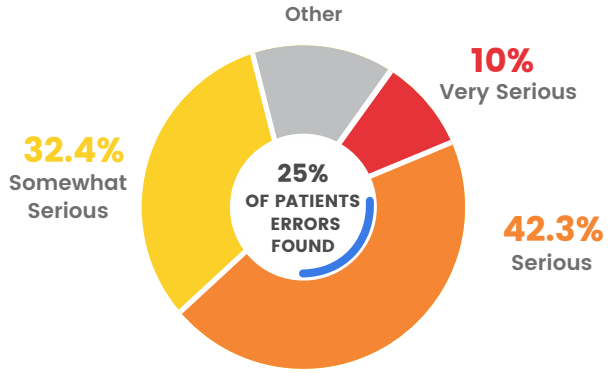
This section unpacks the type of technologies that healthcare providers can deploy to digitise, optimise and automate a broad range of administrative and clinical processes.

Automated Document Generation

Across the UK, most healthcare providers have an electronic healthcare record (EHR) system in place.[30] However, staff still spend a substantial amount of time on documentation and paperwork. One government study[31] discovered that clinical staff were spending up to 10 hours a week collecting or checking data, equating to more than a quarter of their average workweek. Furthermore, over a third of that work was "neither useful nor relevant to patient care".



When clinical or admin documents are written from scratch or collated by copying and pasting information from multiple sources, this not only takes time, but also creates an opportunity for human error. One study in the US[32] surveyed over 20,000 patients who were given access to their own records. On reading these, 25% found mistakes: close to 10% were classified as 'very serious', 42.3% as 'serious' and 32.4% as 'somewhat serious'.



25% of patients in the US found errors in their medical records

Document generation technology seeks to reduce the risk of human error and save time by creating templates of documents that are produced on a regular basis, such as consent forms, test reports, invoices and contracts. The team can then use the templates to intelligently assemble the documents needed, pulling in data from internal or external systems, according to business rules that the organisation defines.

This reduces the time and effort associated with finding information, manually entering data, compiling reports and checking for accuracy.[33]

To support a more digital, efficient approach to managing data, this type of technology can be easily integrated with a healthcare provider's existing EHR platform and other sources, making it easier to gather and manage data and pull it all into one central place.

30. https://www.gov.uk/government/publications/a-plan-for-digital-health-and-social-care/a-plan-for-digital-health-and-social-care
31. https://www.southwarkcarers.org.uk/nhs-doctors-spend-10-hours-week-bureaucracy/
32. https://pubmed.ncbi.nlm.nih.gov/32515797/
33. https://www.docfusioncloud.com/docfusion-document-generation-and-automation/

Robotic Process Automation (RPA)

RPA, the fastest growing software market in the world,[34] provides the tools to build software robots that work in tandem with humans – or behind the scenes – to automate the routine, low-value tasks that drain time. Essentially, any task that can be digitised, is easy-to-define, and needs to be carried out repetitively can be handed off to a software robot.

Examples of tasks robots can be trained to perform:

- Transferring data from system to system
- Compiling draft letters or reports
- Auto-filling forms for review
- Working between systems to perform set actions
- Processing standard transactions
- Completing routine analyses, e.g. price comparisons

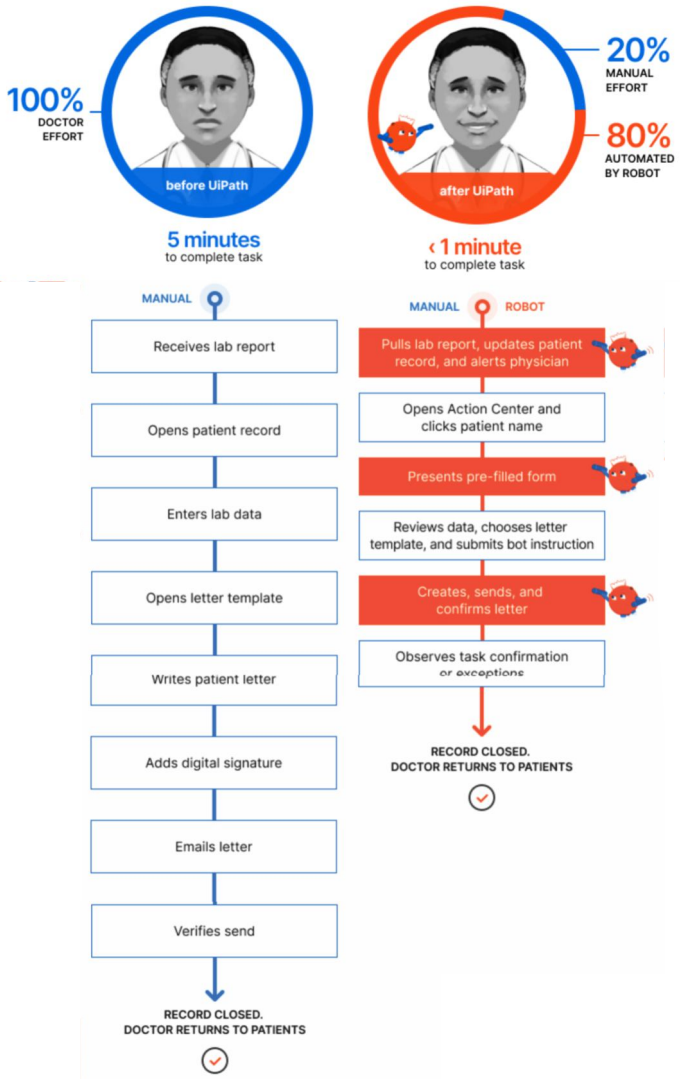
RPA technology works by mimicking the same steps humans use when completing a process on a desktop, laptop or mobile device. Using the organisation's existing software and systems, the software robot can be programmed to execute a wide range of process components – consistently and at robotic speed.

A Forrester Research Total Economic Impact™ (TEI) study[35] conducted on the market-leading RPA platform, UiPath, found that using software robots to complete tasks typically performed by humans could save an organisation hundreds of thousands of hours by the third year and accelerate projects by 50% or more. These benefits and others can deliver 97% ROI over three years.

To the right is an example of how RPA can be used to save time in the healthcare setting:

UiPath[36] has calculated that a clinician can enlist the help of an RPA software robot to email test results to a patient in **one minute** rather than the five minutes it would usually take, enabling the clinician to **hand off 80% of this task** to automation.

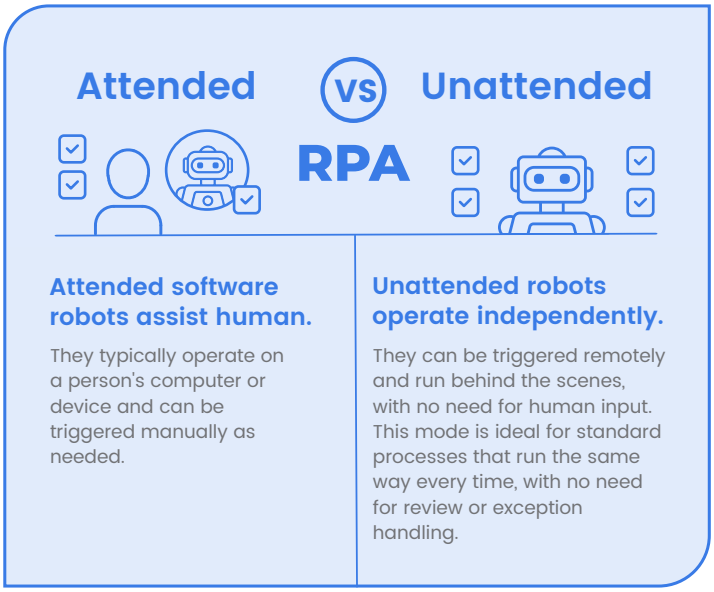
Example from healthcare: improving patient outcomes



34. https://www.gartner.com/en/documents/4005064
35. https://www.uipath.com/resources/automation-analyst-reports/forrester-study-total-economic-impact-of-uipath-automation
36. https://www.uipath.com/

With robots assisting behind the scenes, healthcare providers can reduce the amount of time clinical and operational staff spend on rote work, yet maintain human oversight and control throughout. The option to 'review rather than do' can be an attractive one, helping to explain why RPA adoption continues to pick up pace. Gartner[37] estimates that half (50%) of healthcare providers in the US will invest in RPA by 2023, with the goals of optimising costs and resources.

RPA also has the potential to positively impact the employee experience. One cross-industry study looked at the impact of RPA on the employee experience[38]. Among the teams interviewed, 86% had experienced increased efficiency, 66% were able to have more human interactions, and 60% could focus on more meaningful, strategic work.

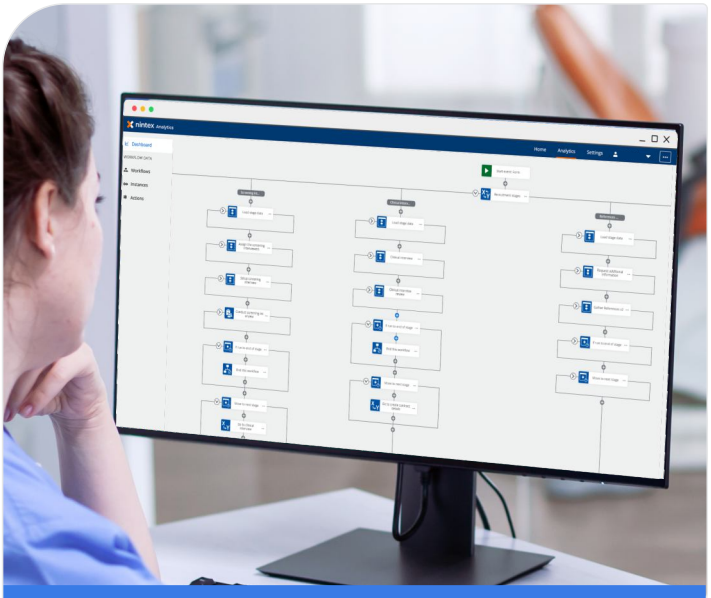


Workflow Automation

A workflow is a sequence of steps that need to be followed to complete a process. What a workflow automation solution does, is digitally orchestrate the flow of work between different people, software robots, data sources and systems. Through integration with EHRs, scheduling systems, laboratory systems, nurse call systems, billing systems and more, a workflow automation solution can swiftly and securely exchange information and keep processes moving.[39]

This technology can also provide the tools to create digital forms, which provide a much more standardised and streamlined way to gather and process information than physical intake forms, manual data entry and email, for example. The system can trigger a software robot to automatically extract, merge and post medical data into the EHR, letters and reports.

Not all processes in the healthcare setting are simple and easy to define, but there are workflow automation technologies available that can be applied to non-linear, complex workflows. By defining rules, it's possible to switch back and forth between different workflow stages as required. If a step or deadline is missed, this is immediately flagged so a manager can intervene.



Example of a Nintex workflow in a healthcare setting

37. https://www.gartner.com/en/newsroom/press-releases/2020-05-21-gartner-says-50-percent-of-us-healthcare-providers-will-invest-in-rpa-in-the-next-three-years
38. https://www.uipath.com/blog/rpa/impact-of-rpa-on-employee-engagement-forrester
39. https://www.hipaajournal.com/healthcare-workflow-automation/

In addition to reducing bottlenecks and delays, workflow automation can support compliance programmes, providing audit trails to demonstrate the process steps followed. Most platforms also provide dashboards and analytics that practice managers can use to track KPIs and access insights that support resource allocation and other decisions.

To better understand the return on investment delivered by its workflow automation software, Nintex[40] commissioned Forrester Research to conduct a Total Economic Impact™ study. The research revealed the following.

The Total Economic Impact™ of Nintex workflow automation software[41]:

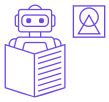
- **176% average ROI**
- **<11-month payback period**
- **Minimum 15% increase in employee productivity**

> **"Through healthcare workflow automation, paperwork can be eliminated and be replaced with electronic documentation, repetition can be reduced, approvals and sign-offs can be received faster, and all information processed through automated workflows is much easier to access and find."** – HIPAA Journal[42]

Artificial Intelligence (AI)

This is a vast field of computer science that focuses on giving technology the ability to mimic certain aspects of human intelligence. There are many sub-sets of AI, including[43]:

Machine learning (ML)
The application of mathematical models to data, with the goal of extracting insights and patterns that the human brain would likely miss.



Deep learning (DL)
A type of machine learning that uses multiple algorithms and works with complex, high-dimensional data including images and speech.

Natural language processing (NLP)
Enables digital systems, such as chatbots, to interact with humans using spoken or written language.

Computer vision (CV)
The ability to capture, analyse and extract meaning from images such as photos or videos.

While there are myriad applications of AI in healthcare, including the potential for AI to help detect cancer[44] and diagnose mental disorders[45], there are many more practical use cases that could save time, support decisions and give clinicians more capacity to deliver care.

40. https://www.nintex.com/resources/tei-nintex-platform/
41. https://www.nintex.com/resources/tei-nintex-platform/
42. https://www.hipaajournal.com/healthcare-workflow-automation/
43. https://www.gartner.com/en/topics/artificial-intelligence
44. https://www.cancer.gov/news-events/cancer-currents-blog/2022/artificial-intelligence-cancer-imaging
45. https://www.nature.com/articles/s41746-022-00631-8

One example is an AI-driven speech recognition and transcription solution that works alongside clinicians to document and annotate clinical encounters. For instance, the Dragon Ambient eXperience (DAX) from Nuance[46] can record and transcribe conversations between clinicians and patients, to automatically create draft clinical notes and store them directly in the EHR for review and sign-off. In addition to time saved, the benefits of this type of solution include better data quality and a more personal patient experience. Nuance reports[47] that healthcare providers using their DAX solution are spending 50% less time on documentation. Also, 8 out of 10 clinicians agree that the overall quality of their documentation has improved; and 83% of patients feel their clinicians are "more personable and conversational" when using Nuance DAX.

The tangible benefits of AI in healthcare are becoming clearer. Gartner[48] predicts that by 2023, 20% of all patient interactions will involve some form of AI enablement within clinical or nonclinical processes, up from less than 4% in 2021.

Chatbots & Virtual Assistants

Chatbots, also known as virtual assistants, can be designed to provide patients with virtual support, answering common questions, scheduling appointments and more – interacting conversationally across multiple channels including web, phone, messaging, text and more. They can also support healthcare professionals, by helping them to retrieve information or access services from other departments, such as HR or IT. The goal is to speed up the delivery of services to patients and help healthcare professionals work more efficiently.

According to Nuance, organisations that use its Virtual Assistant technology to deliver patient support and other services, have, on average, seen a 40% decrease in query handling times and resolved 92% of questions or issues during the first interaction.[49]

When chatbots or virtual assistants are enabled with advanced natural language processing (NLP) and machine learning, and have access to high volumes of data, this falls into the territory of 'conversational AI'. This approach aims to increase a conversational agent's ability to handle the complexities and nuances of human dialogue, and interact more naturally and accurately.[50] In essence, the chatbot learns over time to become an even better and more efficient tool.

This translates into more time saved and efficiencies gained. One study by DRUID found that adopting conversational AI in healthcare delivered annual cost savings of $3.6 billion.[51]

46. https://www.nuance.com/healthcare/provider-solutions/speech-recognition.html
47. https://www.nuance.com/healthcare/ambient-clinical-intelligence.html
48. https://www.gartner.com/en/newsroom/press-releases/2020-05-21-gartner-says-50-percent-of-us-healthcare-providers-will-invest-in-rpa-in-the-next-three-years
49. https://www.nuance.com/healthcare/patient-engagement/patient-support-solutions.html
50. https://www.ibm.com/cloud/learn/conversational-ai
51. https://www.druidai.com/chatbots-for-healthcare-pharma

Combining these capabilities to enable intelligent automation

In isolation, these technologies all offer great benefits. But bringing them together can be truly transformative – helping to unleash the full potential of process automation. In an interview with the World Economic Forum, an expert in the field, Pascal Bornet[52], explains that the goal of intelligent automation is to automate business processes from end to end:

> **"It delivers business outcomes on behalf of the employees working hand-in-hand with them to deliver faster, better, cheaper services. This improves not only the employee experience, but also the customer experience."**

One example he shared is the procure-to-pay process. Using a combination of RPA, machine learning, natural language processing and workflow automation, vendors can be selected, orders can be sent out, invoices can be received, and payments can be processed.

Working in combination, these technologies can automate more process components than they could on their own. The World Economic Forum estimates that intelligent automation has the potential to save 10 million lives per year. It can do this by helping to support clinical trials, disease diagnoses and avoiding medical errors.[53]

52. https://www.weforum.org/agenda/2021/09/what-is-intelligent-automation-how-help-us/
53. https://www.weforum.org/agenda/2021/09/what-is-intelligent-automation-how-help-us/

SECTION 04

How to capture these opportunities: Use cases for automation in healthcare

Automation has the potential to help clinicians, practice managers and operational teams like HR and finance use time and resources more efficiently, access decision support more easily, and increase capacity for quality patient care.

The more ways automation supports clinicians, practice managers and admin staff in their roles, the more opportunities they will have to focus on the activities that require their specialist skills and professional expertise. Whether this includes patient communications, consultations, procedures, clinical reasoning, diagnostics or even analysing operational KPIs, this is the critical work that impacts clinical outcomes and the overall patient experience. It also shapes a practice, clinic or hospital's ability to attract and retain skilled staff, and drive growth.

McKinsey & Company[54] estimates that healthcare providers have the potential to automate as many as a third (33%) of all tasks they currently manage. Outlined below are just a few examples of the ways in which automation and AI capabilities can be harnessed to digitise, streamline and enhance common processes in healthcare.

Appointment scheduling

An automated patient registration and appointment scheduling solution allows patients to book appointments online, at a time that is most convenient for them. This saves administrative work, streamlines bookings and can even support improved access to care. A Medical Economics[55] study in the US found that 20% of patients can get same- or next-day appointments when self-scheduling is available, and more than 50% can see their clinician within a week.

Automated reminders help to address missed appointments, another pain point for many private healthcare providers. Missed appointments not only disrupt productivity and impact the bottom line, but also waste time that could have gone to other patients who need care.

Clinician recruitment and onboarding

It's possible to automate key components of the clinician recruitment process using digital application forms to eliminate paperwork, and software robots to compose and send emails, manage the availability of busy candidates and clinicians, and schedule interviews. Automated first-level screening can help to vet all candidates quickly and filter out those who do not meet minimum requirements. Using workflow automation, HR can ensure all critical information, such as registration numbers, certification details and references, is obtained, validated, stored and processed in compliance with all relevant regulations, including the GDPR and data privacy laws.

Once candidates have been through the (human-led) interview and selection process, automated onboarding can get new starters up and running immediately without overloading existing clinical and administrative teams.

54. https://www.mckinsey.com/business-functions/operations/our-insights/making-healthcare-more-affordable-through-scalable-automation
55. https://www.medicaleconomics.com/view/how-technology-can-help-solve-doctor-shortage

Key technologies that can be used here include:

Document generation to draft, review, approve and digitally sign contracts.

RPA to handle orientation, scheduling, calculate earnings and set up systems access.

Workflow automation to orchestrate the process and report on progress.

Once team members have settled in, HR and practice managers can continue using workflow automation to keep on top of annual reviews, training, certification and other key people management processes.

Clinical coding

The process of converting patient treatment and diagnosis information into numerical codes for patients can be a complex, labour-intensive process. However, it's a critical one as coding accuracy is crucial for reimbursement, research and more. While computer-assisted coding is by no means a new concept, AI provides the potential to not only save time, but also improve accuracy and transparency.

Using AI-based automation, there's the potential to extract key information from clinical records and other information sources, such as lab results and imaging, and codifying it according to the relevant disease and diagnostic classification systems. This data could then be reviewed and signed off by a human expert.[56]

Patient flow management and triage

Poor patient flow – the transfer of patients through the different stages of care – has been shown to negatively affect patients, healthcare professionals and the overall quality of care.[57] Conversational AI can interact with patients remotely or as they enter the healthcare facility, gathering relevant information and asking questions about their symptoms.

Machine learning can also be used to aggregate and analyse current and historical information, to support triage decisions and place patients in line for care in order of priority.[58] In South Africa, for example, two doctors developed a cloud-based data analysis platform and recommendation engine that helps a small team prioritise HIV patients based on their clinical risk profile. The system also predicts how likely patients will be to follow treatment, so the team can pay close attention to the patients who may be at risk of non-compliance.[59]

Clinical decision-support

AI-enabled solutions can be designed to provide decision-support to clinicians, helping to process information from multiple sources and formats, and validate decisions to optimise clinical workflow.

One such solution is IBM Watson Patient Synopsis[60], "a radiologist-trained AI tool". This provides radiologists with faster access to pertinent information from their EHR platform, providing a contextual summary that saves time and effort, and streamlines the generation of historical reports to support diagnostic decisions.

56. https://www.oecd.org/health/trustworthy-artificial-intelligence-in-health.pdf
57. https://www.europarl.europa.eu/RegData/etudes/STUD/2022/729512/EPRS_STU(2022)729512_EN.pdf
58. https://www.druidai.com/blog/implementation-considerations-for-ai-chatbots-in-healthcare
59. https://www.oecd.org/health/trustworthy-artificial-intelligence-in-health.pdf
60. https://www.ibm.com/products/watson-imaging-patient-synopsis

SECTION 05

Automation best practices

McKinsey & Company[61] recommends the following:

① Take a top-down, strategic approach

While many companies begin by deploying technologies in a bottom-up way, often involving many "proof of concepts" in a thousand-flowers-bloom approach, successful organisations make automation a strategic initiative. That means doing the up-front work to identify and prioritise automation opportunities, thoughtfully evaluating where to invest resources, and assessing what new capabilities may be required. By creating a roadmap early, successful companies better deploy financial and human capabilities in a systematic way across the enterprise.

② Focus on people to capture value

Focusing more on technology itself rather than the people charged with using it can lead to wasted potential. For example, automating a portion of a person's workload without rethinking the role that person fills can leave that person only partly occupied, reducing the value automation could have produced. Rather, assess which types of work are to be automated, which organisational structures and roles could be redesigned to fill gaps in people's capacity and capture full value, and how to sustain the impact over time.

③ Design a deployment model to support scale

Create structures capable of deploying multiple technologies in sequence—such as digitising forms, orchestrating workflows, and then launching bots and algorithms—across specific processes or functions.

61. https://www.mckinsey.com/capabilities/operations/our-insights/making-healthcare-more-affordable-through-scalable-automation

CONCLUSION

In summary, intelligent automation solutions provide healthcare organisations with an opportunity to empower their people and innovate their processes, in order to realise the following benefits:

Increased capacity to deliver high-quality care

To address long wait times and/or a shortage of healthcare professionals, organisations can use automation and AI to deliver more services virtually and scale up their clinician recruitment programmes.

Improved productivity

By automating key process components, healthcare organisations can increase productivity without having to increase headcount. They can also reimagine roles, creating more time for patients.

Better employee engagement and morale

By making workloads more manageable, automation helps to decrease the risk of stress and burnout. It also allows clinicians and all staff to focus on more meaningful work. When people are empowered to add more value and focus on work that matters to them, they're likely to derive more satisfaction from their roles. A global Gartner survey[62], for example, found that 56% of employees (across all sectors) want to contribute more to society.

Enhanced cost control

By reducing rote work and the duplication of effort, automation helps to decrease operational costs. The 2021 CAQH Index[63] found that the US healthcare industry saved $166 billion annually by automating administrative transactions, from appointment scheduling to billing.

Ultimately, by making better use of staff time in both clinical and administrative environments, intelligent automation has a valuable role to play in reducing backlogs and enabling healthcare providers to deliver greater value to more patients.

62. https://www.gartner.com/en/articles/employees-seek-personal-value-and-purpose-at-work-be-prepared-to-deliver
63. https://www.caqh.org/sites/default/files/explorations/index/2021-caqh-index.pdf

Why choose us as your healthcare automation partner?

At jaam, our mission is to empower exceptional people with great technology. As a private healthcare provider looking to meet the pressing need for timely, high-quality patient care, we can work with you to develop the right intelligent automation strategy support your vision.

A thoughtfully designed healthcare automation solution will give you and your team more capacity to create a better patient experience and build a thriving practice.

One of our core strengths is helping organisations that are rapidly expanding to envision and deliver intelligent automation within weeks rather than months. We can work with you to accelerate and improve the efficiency of processes in almost any area of your practice, from the back office to the clinical environment.

Work with jaam to:

UNDERSTAND

Understand what needs automating, the resources and timelines required, and the return on investment you can expect from the proposed intelligent automation

DELIVER

·Deliver your intelligent automation solution quickly and successfully, drawing on a combination of deep technology expertise and project management experience.

SCALE UP

Scale up your intelligent automation capabilities over time, as your practice grows, and you expand to provide new care pathways.

Results we can help you achieve:

- Enhance the **patient experience**
- Simplify **processes**
- Increase **efficiency**
- Improve **team morale**
- Free up **funds**

If you'd like to learn more about the technologies, advisory services and delivery solutions we provide, get in touch.

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