Digital First Primary Care AI and Automation Grants: Pilot summary report

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Health Innovation Network South London

digital first Connected Primary Care

NHS England

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As the demands on general practice continue to rise, providing high-quality and timely care for patients has become increasingly challenging, straining available resources. The escalating workload necessitates a re-evaluation of how primary care processes are managed.

To optimise the allocation of practice resources and alleviate strain, the integration of artificial intelligence (AI) and automated processes is emerging as a powerful solution. These technologies act as productivity enablers, enhancing GP practice efficiencies and creating additional capacity for patient care. By leveraging AI and automation, GP practices can also improve both patient experience and outcomes.

This Primary Care AI and Automation Grants pilot summary report is a collaboration between the NHS England (London) Digital First team and the Health Innovation Network South London (HIN). It is not an academic research endeavour, but rather a reflection on the frontline implementation and delivery of the innovative 12 month general practice AI and Automation pilots. It details the journey, themes and lessons learnt across the pilots, offering recommendations for future implementations of AI and automation.

The pilots were devised with the primary goal of freeing up time for GP practice staff, recognising the ever-increasing demands on GP practices. AI and automation solutions were introduced across six key themes: pathology, new patient registrations, call and recall, workforce rota management, clinical safety and clinical document management. The aim was to streamline high volume, low-risk, routine tasks. In doing so, it was hoped that healthcare professionals could redirect their time and expertise towards more impactful patient interactions and complex care needs.

This report illustrates the potential benefits of automating routine tasks, enhancing efficiency and optimising resource allocation. Importantly, these advancements contribute to the overarching goal of ensuring that patients receive better care. The solutions also speed up time-consuming processes in GP practices, such as the long-term conditions (LTCs) review and recall process, enabling more time for staff to review results and enhance patient care. By freeing up valuable time and resources, primary care providers can focus on delivering more personalised, timely care, as well as improving patient experience and outcomes.

This report sets out key learnings, helping to inform decision-making and amplifying the potential of digital solutions. In this way, the findings and recommendations of this report contribute to a collective vision of the future, where AI and automation increases primary care productivity, delivers better care for patients and improves the working lives of GP practice staff.

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3. Executive summary

The NHSE (London) Digital First Primary Care AI and Automation Grants Scheme has proven to be a transformative initiative. Over the last year, it has provided 11 pilot sites with up to £65,000 of seed funding each for new AI and automation initiatives and scaling of existing solutions. These pilots have demonstrated the benefits and challenges of implementing AI and automation in primary care settings across London.

These benefits include the potential of AI and automation to save time, enhance consistency in processes, reduce variation, increase productivity, improve patient care and increase staff satisfaction. The solutions have also highlighted the valuable lessons learnt and challenges faced when implementing and scaling AI and automation solutions in primary care. It is hoped that this grants scheme has laid the groundwork for further innovation in this space.

Impact and opportunity

The implementation of AI and automation in primary care has demonstrated productivity gains, however, only a few of the pilots met their initial projected impact trajectories. This was due to a number of challenges, such as delays going live. With routine tasks being automated, most of the pilots have demonstrated that the primary care workforce was able to redirect their focus towards more complex and patient-centric responsibilities, optimising resource allocation across six key themes.

The six themes are:

- pathology;
- new patient GP registrations;
- call and recall;
- workforce rota management;
- clinical safety; and
- clinical document management.

In London, 14 automations were launched across 11 pilots. During the pilots, approximately 18,000 online new patient GP registrations were validated, processed and automatically uploaded into clinical systems. Furthermore, approximately 20,000 normal pathology results were automatically reviewed and filed into clinical systems without the need for human input. The automation of text messages to patients that confirm test results also reportedly led to reductions of up to 20%* of phone calls to GP practices. (*This information was from the use of GPAutomate in a NWL GP practice outside of the pilot.) Moreover, the GP practice resource required for call and recall for patients with LTCs was dramatically decreased. One pilot was able to recall 50% of diabetic and hypertensive patients within five weeks, a process that would have previously taken months.

These AI and automation solutions have saved thousands of hours of clinical and administrative time, allowing GP practice staff to focus on other priorities, from supporting frequent attenders and complex patients to upskilling and training. It was also noted that staff felt they were able to take a coffee break during the working day due to a reduction in workload. These examples begin to demonstrate the scale

of the opportunity presented by the integration of AI and automation, including how these solutions can improve patient care and access, as well as staff health and wellbeing.

Scalability

Delivering AI and automation at scale is essential for realising the optimum benefits of these solutions, as well as making the solutions cost effective for GP practices and primary care networks (PCNs).

The pilots have provided many examples of how well AI and automation can be delivered at scale. These examples are further strengthened by good practice outside of the pilots, such as Modality Partnership's wider automation programme. Modality Partnership is a GP super-partnership serving 470,000 patients across 10 regions. They now have 35 live EMIS and TPP robotic process automation (RPA) processes in general practice and community outpatient settings. Over 100,000 items have been processed to date, saving both clinical and administrative time.

Elsewhere, Lancashire and South Cumbria Integrated Care Board (ICB) has successfully launched five RPA processes in general practice, with two further processes in development. This has saved thousands of GP practice staff hours since they launched the solution in 2022, demonstrating that RPA processes can be delivered at scale across an entire ICB footprint.

ICBs in London have started to respond to the early findings and learnings from pilots and good practice elsewhere. As a result, they are beginning to scale solutions across multiple boroughs.

Feasibility

The success of the AI and automation pilots in primary care was varied. This was partly due to the complexity and inconsistency of London's digital and organisational landscape, and how ambitious some of the pilots were in their scope. Findings from the evaluation also indicated that off-the-shelf products demonstrated a greater impact than bespoke solutions.

Innovating and shaping national policy

Various challenges associated with the implementation of AI and automation in primary care were identified throughout the grants scheme. By tackling these challenges, the grants scheme has helped to shape national policy, including the use of RPA and smartcards, WhatsApp and AI. As a result, decision-makers and stakeholders have been encouraged to consider AI and automation as a key component of future productivity initiatives.

Suppliers

The grants scheme has helped to invigorate the market, attracting a diverse range of AI and automation suppliers that are eager to contribute innovative solutions. This interest and participation reflects the growing recognition of AI and automation, and the potential role these solutions can play in improving primary care workloads. The increased competition amongst suppliers also broadens the selection of tools available to GP practices, as well as promoting a progressive environment for ongoing advancements.

Financial gains

Whilst the implementation of AI and automation pilots in primary care has led to time savings, translating these efficiencies into immediate cash releases will take time and requires further development and scaling. The regained time is often reallocated to other critical tasks or enhancing the quality of existing processes, rather than financial savings or decreasing workforce size.

It is noted that many of the cost savings included in the summary do not include costs of the automated solutions and overheads, therefore are not net savings.

The size and scope of the pilots in the grants scheme did not demonstrate optimal financial savings. However, there is the opportunity in the future to maximise savings through utilising multiple operation pathways to release additional resource time and savings, when working at scale.

A 12 month pilot may not provide a sufficiently robust timeframe to accurately determine the return on investment (ROI) and assess the long-term affordability of AI and automated processes. This builds the case for additional analysis to be conducted on the broader and scaled impact of AI and automation on resource allocation after the end of the pilots.

Consistency

A noteworthy outcome has been improved consistency across the targeted primary care processes. Process mapping and interrogating existing workflows contributed to standardising procedures, reducing variability and improving system efficiencies. By establishing a standardised rules-based approach to patient interactions and administrative tasks, the pilots have enhanced workflow reliability and predictability through AI and automation.

Adoption

Pilots have highlighted many challenges associated with the adoption of new technology at scale, particularly in the absence of national and regional guidance and frameworks. This has placed additional burden on ICBs, including Registration Authorities (RAs), Information Governance (IG) and Information Technology (IT) departments. These teams were not often factored into project plans and resource planning but were often required to assess each product locally. Tasks included examining how existing systems and processes could be impacted by the solution. In some cases, this caused bottlenecks in implementation.

The development of national primary care guidance and frameworks for AI and automation is essential for a smoother and more efficient adoption of these solutions. This is a clear next step, and the artefacts and lessons from these pilots provide guidance for people exploring AI and automation journeys in primary care.

Conclusion

The NHSE (London) Digital First Primary Care AI and Automation Grants Scheme was a successful initial step towards establishing the integration of AI and automation in primary care. The outcomes of this grants scheme not only demonstrate the practicality and benefits of AI and automation in primary care, but also provide a roadmap for wider adoption and sustained improvements through upscaling these solutions.

Methodology

Data collection

A variety of data collection methods were utilised in the individual pilot evaluations and reviewed to inform this summary. These include:

Data analysis

- Thematic analysis was employed to identify and analyse patterns across the data from the pilot evaluations.
- Quantitative data extracts from the pilot evaluations were reviewed and summarised.

Document analysis

- Relevant documents, such as pilot touch-point notes, project implementation reports, training guidance and patient feedback forms, were analysed to supplement information from the pilot evaluations.

Interviews and questionnaires

- Pilot sites conducted interviews and questionnaires with staff who were involved in the implementation and delivery of the automation pilots.
- Pilot sites conducted interviews and questionnaires with patients who had experienced automated processes.

Design

11 primary care AI and automation pilot evaluations were used to produce a hybrid qualitative and quantitative thematic summary evaluation. This explored the implementation and impact of AI and automation in London's primary care system. Thematic evaluation was chosen to identify and analyse recurring patterns and themes. These themes detail the data related to the experiences and perspectives of both primary care staff and patients across the pilots.

Ethical considerations

Informed consent was obtained from participants before interviews and questionnaires were completed.

Participants

Pilot leads provided the data that was collected from GP staff (including GPs, practice managers, receptionists and nurses) and patients.

Limitations

- The 12 month duration of the pilot is unlikely to be sufficient for a holistic and comprehensive understanding of the impact and opportunities surrounding AI and automation.
- Pilot sites faced challenges in conducting thorough data-driven analyses due to limited resources and expertise.
- Pilot evaluations relied on self-reported impact. This could have introduced limitations, leading to

inaccuracies. Unintended consequences of the pilots may go unacknowledged. Furthermore, contextual influences contributing to or hindering impact may have been overlooked or not reported.

- Quantifying impact is challenging, particularly when establishing causation versus correlation.
- Variation between the method in which each pilot site calculated the impact and cost savings.
- The monetary savings quoted in this report were not often offset against overheads and the cost of the AI and automation solutions. Therefore, these were not net savings. An * has been applied in these cases.
- Wider impact on many of the measures may not be known for some time.

4. Background

National context

GP practices are facing continually rising workloads, compounded by workforce shortages and increased demand for appointments. Clinicians and administrative staff find themselves under pressure to meet primary care contractual obligations, a challenge exacerbated by the backdrop of high deprivation levels and inequalities, where workforce pressures further strain resources.

Traditionally, GP practice processes rely heavily on manual interventions, introducing inefficiencies stemming from the time and effort required, as well as human error. These inefficiencies can be mitigated through AI and automation. Yet, despite the existence of AI and automation solutions at the inception of the NHSE (London) Digital First Primary Care AI and Automation Grants Scheme, widespread adoption and optimisation were lacking.

Recognising this gap, the NHSE (London) Digital First team identified a significant opportunity to automate administrative processes in GP practices. Such solutions hold the promise of easing the administrative burden on GP practice staff, boosting overall efficiency and aligning with critical national strategic priorities in primary care delivery.

Alignment with Fuller Principles

Collaborative neighbourhood working
Bids were assessed on scope, scale, impact, sustainability and opportunities for spread and adoption, with those working across neighbourhood teams scoring highly. The 11 successful pilot areas ranged in size, from a cluster of GP practices within a PCN to larger neighbourhoods and boroughs.

Sector collaboration
There was collaboration with a range of sectors during the grants scheme. These include private sector AI and automation suppliers; clinical software suppliers; BI and demand and capacity specialists; community pharmacy and laboratory teams; acute providers; and digital and transformation NHS programme teams and commissioners.

Maximise skills, experience and support innovative workforce models
The pilots set out to maximise skills and experience of the existing workforce. In doing so, time from longer, repetitive tasks could be repurposed for tasks that required specific skills and experience. In addition, the **workforce rota management: NEL, City and Hackney pilot** focused on the automation of rota management, intending to allow for better utilisation of ARRS roles.

Improve data flow and coordination of care
Agreeing consistent pathways and improving data flows across organisational and geographic boundaries were a focus for each of the AI and automation pilots. RPA robots can access data from a single source through pooled whole system data feeds. This reduces local variation, allowing for an improved and more consistent coordination of care.

Focus on Core20Plus5
Core20Plus5 was at the heart of many of the pilots, particularly those focusing on risk stratification (including deprivation measures), LTCs and cancer pathways. ICBs participated in prioritisation exercises, where bids were prioritised based on the local strategic direction and need.

Holistic, population-based and personalised approach to care
Risk stratification and engagement that factored preferred method and success rates of previous contacts helped provide holistic and population-based care. Population groups that experience poorer than average health access were targeted through personalised tailored approaches, including the use of AI and linguistics analysis to reduce did not attends (DNAs).

Unwarranted variation in access, experience and outcomes
The alignment of processes to be automated across neighbourhoods helped to build consistency in access, experience and outcomes. It also reduced unwarranted variation. Existing non-digital entry points avoided digital exclusion. The hope was that improved processes would help clinicians and administrators to have more time to support these individuals.

Application to the Primary Care Access Recovery Plan (PCARP) priorities

Build capacity
The automation of routine tasks could increase primary care capacity as GP staff would have more time to focus on clinical aspects, allowing for increased appointment availability. Patients may also be steered towards appropriate alternative care settings, such as direct digital booking into community eHubs and extended access hubs. Therefore, automated processes offer the potential for more accessible healthcare options and increased GP practice capacity.

Cut bureaucracy and reduce workloads
AI and automation in primary care can significantly cut bureaucratic processes and reduce the workload associated with the interface between primary, secondary and community care services. Automated systems can streamline administrative tasks, such as medical evidence requests. This allows GP practices to allocate more time to meet the clinical needs of patients.

Empower patients
Patients can be empowered to manage their health more effectively through automated processes at GP practices. This is particularly relevant for people with long-term and chronic conditions. Examples include patients quickly accessing results and health information, scheduling appointments or engaging in self-referral pathways through the NHS App. This empowerment enhances patient experience and relieves pressure on GPs by distributing workload across healthcare services.

Implement modern GP access
Automated appointment booking processes and test result notifications can help to alleviate the 8.00am rush. There is a reduced need for patients to wait or call back another day for appointment booking or to check test results. This efficiency not only enhances patient satisfaction but also optimises the utilisation of available resources in primary care.

NHS Long Term Workforce Plan

Retain: embed the right culture and improve retention
AI and automation can support culture improvement and staff wellbeing by streamlining administrative tasks, reducing workload. This contributes to improved mental health and reduced burnout, as well as creating an increasingly positive, collaborative work environment. By automating routine and repetitive tasks, staff can focus on more meaningful and fulfilling aspects of their work. This means staff can contribute to a healthier organisational culture, enhancing job satisfaction and overall wellbeing.

Reform: working and training differently
AI and automation solutions facilitate innovative working models by handling routine tasks, allowing GP practice staff to spend more time on patient care. This shift can be achieved by utilising digital tools and technologies that streamline processes and enhance efficiency. Access to training and development on new technologies, such as AI, has the potential to ensure that staff are adequately prepared for evolving roles in multidisciplinary teams.

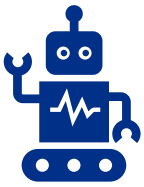
Embracing technological innovations
By embracing AI and automation technologies, GP practice staff can adapt to the changing landscape of primary care delivery. This attitude ensures staff are equipped to utilise tools, such as AI, for improved patient experience outcomes.

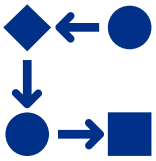
Transforming disease prevention and personalised care
AI and automation can enhance the integration of advanced technologies that support better disease prevention, diagnosis, treatment and management. AI and automation solutions support GP practice staff in utilising these technologies effectively to provide more timely care.

What is automation?

"Design and implementation of technologies to provide services with minimal human involvement."

Automation technology types





Robotic process automation (RPA)	Intelligent automation (IA)	Artificial intelligence (AI)
RPA is a technology that enables the build, deployment and management of software (robots). The robots can be programmed to emulate human actions and interact with digital systems in order to automate basic manual and repetitive tasks.	IA refers to the integration of robotic and intelligent systems from various emerging technologies. It increases the scope of automation beyond simple rule-based tasks.	AI is the simulation of human intelligence or cognitive processes. These include problem solving, visual perception, speech recognition and decision-making by computer systems.

Benefits of automation

RPA excels in removing repetitive, manual work from staff, such as scheduling activities, copying and pasting data and booking timesheets. In addition to operational and cost efficiencies, RPA unlocks the capability of organisations by augmenting their staff. Within the context of the NHS, this means freeing up valuable clinical and non-clinical staff time, so staff can focus on value-adding activities that improve patient care and outcomes.

Speed
RPA undertakes tasks four to 10 times faster than a person, freeing up staff time to focus on patient care.

Reliability
RPA robots only do what they are told and will never mis-key, miscalculate or have a bad day, removing the possibility of human error. Output data will be correct and consequently improve patient safety, providing input data and business rules are correct.

Productivity
Robots are available 100% of the time, 24/7. The robots will never need to sleep or take a break so will complete tasks whenever required, giving back time for clinical and non-clinical activities.

Flexibility
Robots are easy to schedule and assign to automations once they have been created. They can also be updated relatively quickly if the process requirements change, increasing responsiveness for patients.

Decoupling growth from labour
Robots increase the capacity of organisations, allowing staff to do more with less or the same resources. This allows teams to tackle care backlogs faster.

Cost reduction and ROI
Robots are cheaper, faster, available 24/7 and can improve productivity and data quality, resulting in lower operational costs and better value for communities. Most organisations report 20% to 30% cost reduction and 30% to 50% ROI on RPA projects.

Auditability
Robots collect information on everything they do, allowing for full, retroactive inspection on every transaction they have undertaken.

Light touch
Robots work with an organisation's existing applications and systems, which enables fast-tracking to digital transformation.

Employee satisfaction
By giving robots the mundane tasks, employees can focus on the things that people do best, such as thinking, deciding, creating and producing. This improves staff resilience, providing more time to complete transformational tasks and adopt new ways of working.

Reduced attrition
Staff satisfaction results in reduced attrition across organisations. Increasingly, organisations are focusing on this as a main benefit they seek from RPA.

Source: NHSE, RPA in the NHS Guidance for designing, delivering and sustaining RPA within the NHS, May 2022. (RPA Guidance - Final.pptx (england.nhs.uk).

Primary Care AI and Automation Grants Scheme

Overview

- The NHSE (London) Digital First Primary Care AI and Automation Grants Scheme was launched in May 2022 as an initiative to drive and better understand the utilisation of AI and automation solutions in primary care.
- A London-wide automation in primary care prioritisation webinar was held with GP practice staff to agree the processes within primary care that would be the most impactful if automated (high volume, rules based).
- Grants of up to £65,000 were made available with the aim to:
  - deliver measurable cost and time saving efficiency gains in primary care; and
  - better understand the impact of a variety of AI and automation solutions targeting challenges in primary care.
- Applications were invited from primary care providers across London, including individual GP practices, GP practices working together, PCNs, federations and ICBs.
- Applicants were asked to outline the following factors in their application:
  - the problem;
  - the solution (including the proposed automation supplier);
  - project plan;
  - risks and impact assessment;
  - spread and adoption;
  - finances; and
  - project resources and members.

Pilot selection process

Applications

53 applications were received from across London's five ICBs:

Name of ICB	North West London (NWL)	North Central London (NCL)	North East London (NEL)	South West London (SWL)	South East London (SEL)
Number of applications	1	20	12	13	7

NWL received funding from NHSE (London) Digital First in 2021/2022 to support the implementation of their NWL Automation Programme and were therefore not included in the scope of the grants scheme. An overview of the NWL programme of work has been included in this report.

Shortlisting and panels

- 53 applications were shortlisted to 21 by subject matter experts from NHSE and the HIN.
- 21 shortlisted applications were invited to present to three expert panels, who evaluated the applications.
- Panel membership was made up of the NHSE (London) Digital First programme, London Primary Care, NHSE/National Digital, practice managers and patient representatives.

Clarification calls

- Clarification calls took place with providers and suppliers to address queries and concerns raised during the shortlisting and panel processes.

Award and contracting

- The NHSE (London) Digital First team used the scoring from the panels, and additional information gathered during clarification calls, to inform decision-making and select the pilots to support.
- 11 successful applicants were sent contracts and asked to provide a photo and biography of project leads to be used for promotional materials.

Payment structure

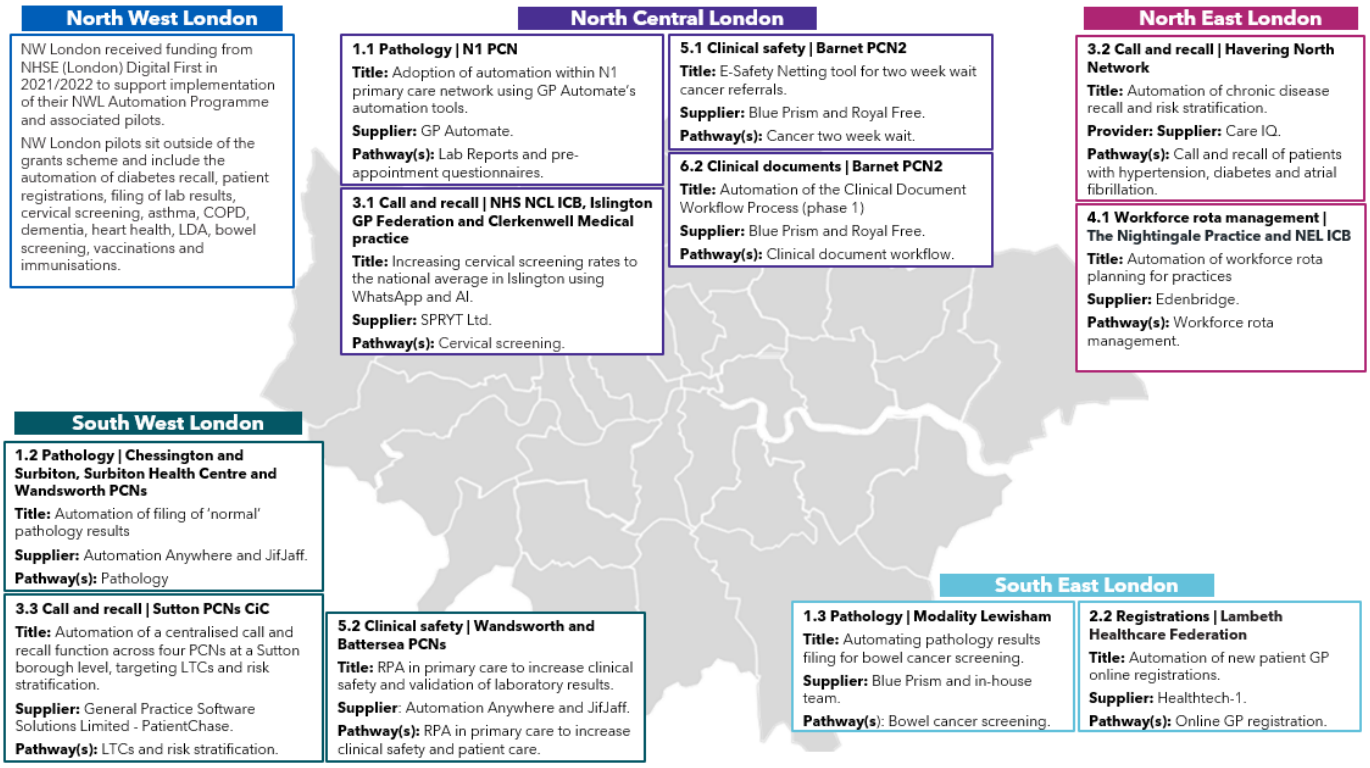
- The payment structure was split into three payments: £30,000 on receipt of a satisfactory Q1 report, £30,000 on receipt of a satisfactory Q2 report and a final payment of £5,000 on receipt of a satisfactory final evaluation at the end of the pilot.

Automation pilots by ICB

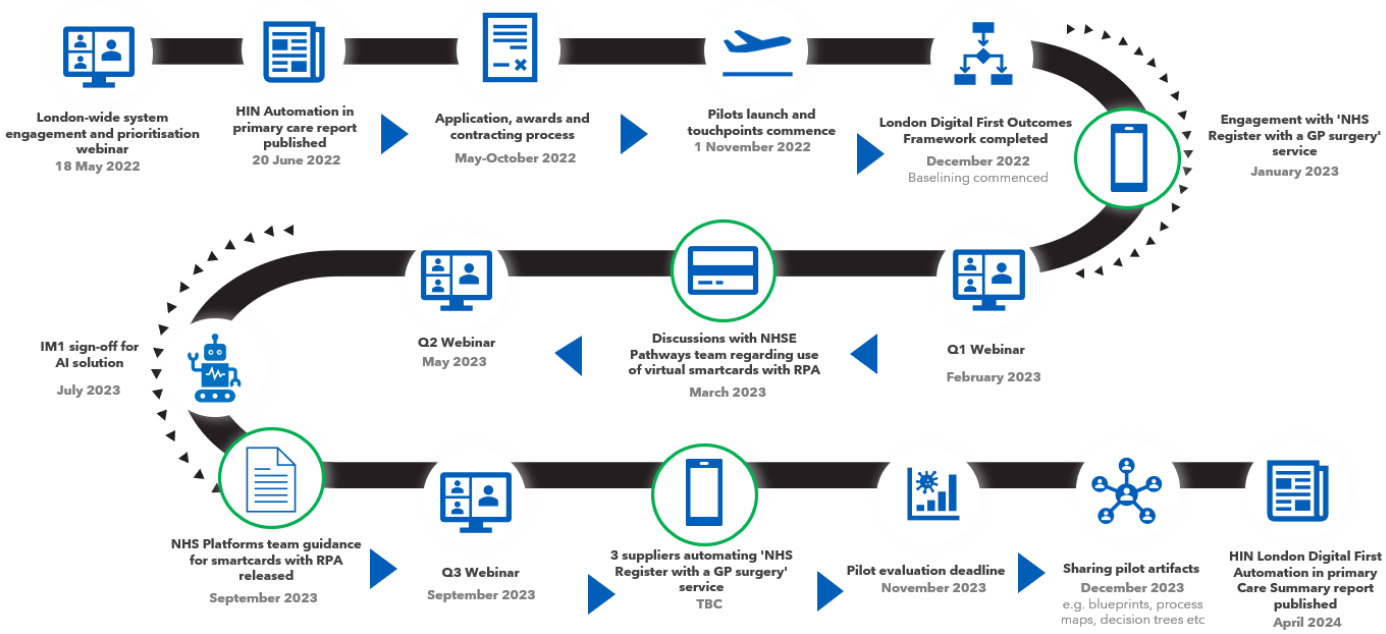
11 applications across London were funded through the grants scheme. These applications were divided into the following automated pathway themes:

Automated pathway themes
Pathology • Processing 'normal' results.
New patient registrations • Validating, processing and uploading new patient registrations to clinical systems.
Call and recall • Long-term condition and chronic disease management. • Cervical screening.
Workforce rota management • Annual leave and rota management. • Demand and capacity management.
Clinical safety • Cancer two week wait safety netting. • Clinical safety validation of lab reports and anti-psychotic medication.
Clinical documentation • Clinical document workflow. • Asthma and blood pressure (BP) questionnaires / floreys, diabetes pre-appointment questionnaires and EPS.

Pilot automated pathways by ICS



Journey so far



5. Pilot summaries

1. Pathology

1.1 Pathology: NCL | N1 PCN

Title: Adoption of automation within N1 PCN using GP Automate's automation tools.
Provider: N1 PCN.
Supplier: GP Automate.
Pathway(s): Lab Reports and diabetes pre-appointment questionnaires.

Overview

The N1 PCN aimed to address local pathway variations and inefficiencies across their GP practices by utilising GP Automate's suite of automation tools.

The GP Automate pilot comprised of five products, focusing on saving time for both clinical and non-clinical staff. The products used for the pilot included:

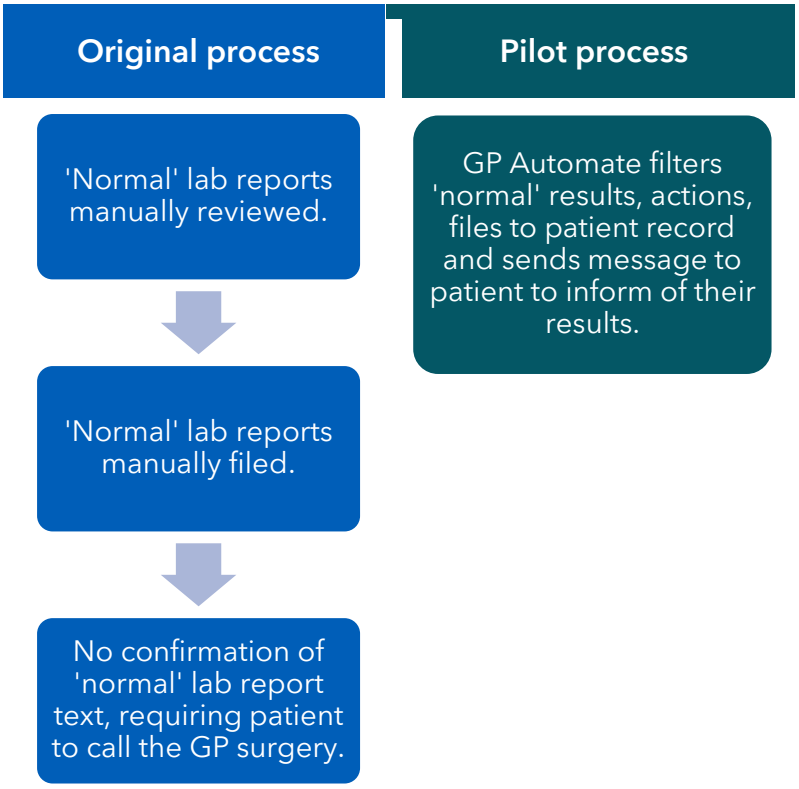
- Lab Reports;
- New Patient Registration;
- Accurx Asthma Questionnaires / Floreys;
- Accurx BP Questionnaires / Floreys; and
- Accurx Diabetes pre-appointment Questionnaire.

Prior to the pilot, N1 GP practices manually reviewed and actioned all pathology results and did not send confirmation of normal lab results to patients. This meant that patients were required to call the GP practice to check their results.

Using the GP Automate Lab Reports tool, between four to five mundane steps for clinicians were saved for 'normal' test results. Furthermore, calls to the GP practice decreased as patients were no longer required to contact the GP practice to check their results. Diabetes prevention pre-appointment questionnaire texts were built into the Lab Reports process.

The GP Automate Lab Reports tool was successfully launched across all five pilot GP practices in the PCN, automatically filing and sending confirmation texts for 15,064 results over the course of the pilot. This saved 251 hours of GP practice time.

Process and findings



	Pilot GP practices					Grand total
	The Goodinge Group Practice	Northern Medical Centre	Partnership Primary Care Centre	St John's Way Medical Centre	The Village Practice	
Start date	9 May 2023	15 June 2023	15 February 2023	23 January 2023	1 February 2023	23 January 2023
Last run	16 October 2023	20 December 2023	29 December 2023	29 December 2023	29 December 2023	29 December 2023
Days live	160	188	317	340	331	267
Total runs	133	111	256	250	202	206
% utilisation	83.1%	59%	80.8%	73.5%	61%	77.1%
List size	12,200	8,200	9,000	12,600	10,800	52,800
Monthly average	177	246	336	357	391	1,255
Total automated	1,061	1,724	3,693	4,289	4,297	15,064
GP hours saved	18	29	62	71	72	251
Total savings	£1,750.65*	£2,844.60*	£6,093.45*	£7,076.85*	£7,090.05*	£24,855.60*

Key achievements and outcomes

- 15,064 lab reports automatically filed and patient text sent.
- 251 hours saved.
- £24,855.60* saving.
- Process live across all five pilot GP practices.
- Robot could be scheduled to fit in with the daily routines of GP practices.
- Nurses reported the highest benefit from the Lab Reports feature in reducing their workload, noting that they were impressed that the correct codes and recalls were being used and that patients were texted accurately.

Key challenges

Management resources

- The PCN had a change in operational lead during the pilot, leaving the role vacant for pivotal periods. This particularly impacted handover quality and query responsiveness from the supplier during the implementation phase.
- When the robot failed, in-house GP practice allocated staff member time was required to support resolution.

Local primary care environment

- Local estate challenges impacted rollout. For example, Northern Medical Centre lost their premises in December 2022 so operated out of two sites for a portion of the pilot.
- Clinical safety pushback from some GP practices despite the completed PCN safety checks and risk assessments.

Primary care variability and scalability

- Local parameters, tolerances and actions for 'normal' results required technical adjustments by GP Automate.

Projections vs outputs

- Projected impact was not met (1.5 to 3 hours saved per month actual instead of 1.5 to 3 hours saved per day, as projected). This was predominantly due to how swiftly each GP practice was able to implement the product and optimise its use, but also the limited results that the robot could file.

Negative outcomes

- Patients expressed confusion with seemingly conflicting lab result messages, receiving 'normal' results followed by abnormal requests for appointments.
- The volume of messages, particularly with multiple blood tests, also caused frustration. Some GP practices mitigated this by notifying patients of the robot process and that individual messages were likely to be received for each blood test.

Supplier relationships

- Communication challenges during the course of the pilot.

Next steps

- PCN are reviewing the market to determine which automation tools would be most impactful and affordable, as solutions would need to be locally funded. Decisions are yet to be made.

1.2 Pathology: SWL | Chessington and Surbiton

Title: Automation of filing 'normal' pathology results.
Provider: Chessington and Surbiton, Surbiton Health Centre and Wandsworth PCNs.
Supplier: Automation Anywhere and JifJaff.
Pathway(s): Pathology.

Overview

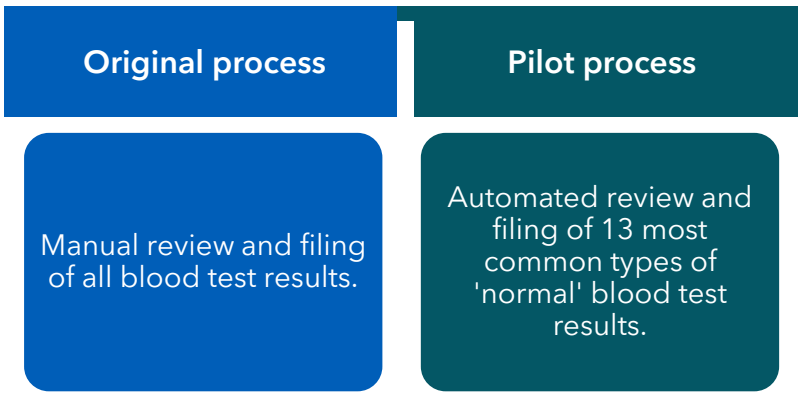
This pilot utilised an Automation Anywhere robot from JifJaff to alleviate the GP burden of filing 'normal' blood test results. The robot was programmed to review and file routine, protocol-based 'normal' results based on locally agreed parameters. Nuanced cases that fell outside of the 'normal' range were passed to a clinician for further assessment. By automating these low-risk processes, clinicians could focus on more complex tasks, such as accelerating result filing for quicker patient access and reducing fatigue-induced errors.

Pilot delivery timelines were impacted heavily by delays in payments being received and failings in project start dates, due to seasonal pressures.

There was an estimated time saving of between 10 to 40 minutes per day across a three-GP practice. This translated to between three and 13 minutes saved daily for each GP, with the potential for further magnification if the scope was widened.

Blood test	Test sublines
Renal function tests	Serum Sodium, Serum Potassium, Serum Urea level, Serum Creatinine, GFR calculated abbreviated MDRD.
Urea and electrolytes	Serum Sodium, Serum Potassium, Serum Urea level, Serum Creatinine, GFR calculated abbreviated MDRD.
Haemoglobin A1c Level	HbA1c level – IFCC standardised.
Full blood count - FBC	Total White Cell count, Haemoglobin estimation, Platelet count.
Liver function test	Serum Albumin, Serum Bilirubin level, Serum Alkaline Phosphatase, Serum ALT level.
Serum Ferritin	Serum Ferritin.
Serum TSH Level	Serum TSH level.
Serum 25-OH Vit D3 Level	Serum 25-OH Vit D3 level.
Erythrocyte Sedimentation Rate	Erythrocyte Sedimentation Rate.
Serum C-reactive protein level	Serum C-reactive protein level.
Serum Lipids	Serum cholesterol, Serum HDL cholesterol level, Serum non-HDL cholesterol level, Serum cholesterol/HDL ratio, Serum Triglycerides.
Serum folate	Serum folate.
Bone Profile	Serum Albumin, Serum Calcium, Serum Alkaline Phosphatase, Serum adjusted Calcium concentration, Serum inorganic Phosphate.

Process



Key achievements and outcomes

- Keystroke document completed.
- 13 most common blood tests programmed into the robot.
- 10 to 40 minutes per day saved across a three-GP practice, saving £7,000*.
- Mid-range would save one GP 1.5 hours per week, saving £150* based on locum GP rates. However, GP practices may delegate these tasks to administrators at a lower hourly rate.
- Quicker patient access to results through the NHS App, reducing calls to the GP practice.
- Solution contributed to a fresher and more efficient mindset for clinicians.
- No errors reported by the robot to date.

Key challenges

Invoicing

- Delays in releasing funds to the pilot impacted delivery timelines and contributed to loss of enthusiasm from stakeholders.

Local primary care environment

- Quality and Outcomes Framework (QOF) and holiday season impacted delivery timelines.

Bespoke vs off-the-shelf

- A bespoke product was designed from scratch, taking longer to build, test, refine and launch than an off-the-shelf product.

Management resources

- It was challenging to secure clinical time to test the solution during peak season.
- No dedicated full time project lead due to funding restraints and GP practice capacity.

Clinical system

- Changes to clinical system and global view not enabled, contributing to further delays.
- Clinical system performance issues impacted the design and implementation of the solution.
- Clinical system updates caused additional delays once the process was up and running, as minor reprogramming of the robot was required. This was technically not difficult, but time was taken to identify this and inform the programmer.

Spread and adoption

- Bespoke solution unlikely to be seamlessly adopted by other GP practices.

Measuring ROI, affordability and pilot length

- It proved challenging to accurately demonstrate ROI. This was due to pilot length and uncertainties around how easily the solution could be scaled.

Hardware

- Robot capacity utilisation was only a few hours per day. This was lower than anticipated.
- Unable to auto-run robot.
- Overspent on unused hardware.

Next steps

- Expand to between 10 and 20 more lab tests.
- Explore amending tolerance thresholds so approximately 80% of lab reports can be automated.
- Robot to send summary email to the GP practice to outline the number of tests processed or passed to a clinician.
- Optimise the usage of the Automation Anywhere robot, allowing it to run multiple times per day as lab results become available.
- Consider implementing automated text messaging to inform patients of 'normal' results.
- Explore managed service with provider.
- Next steps limited by funding constraints.

1.3 Pathology: SEL | Modality Lewisham

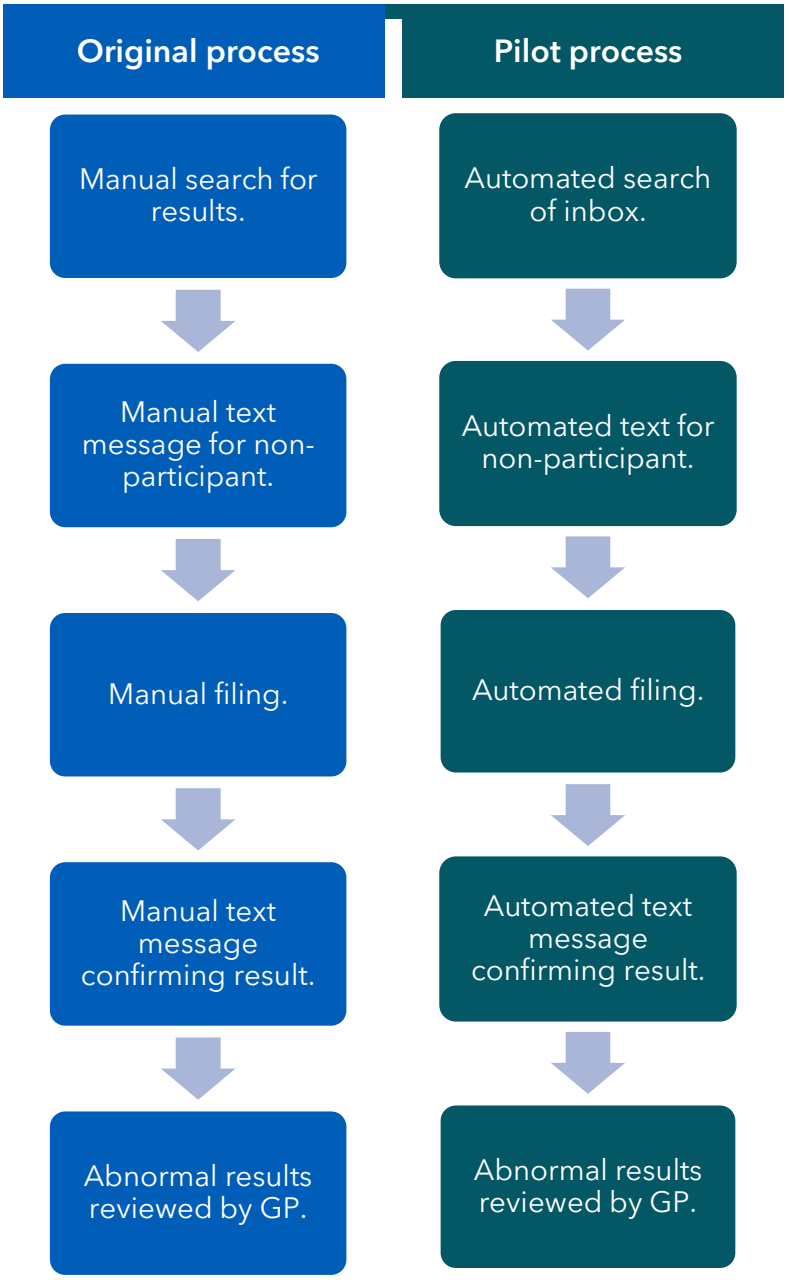
Title: Automating pathology results filing for bowel cancer screening (BCS).
Provider: Modality Lewisham.
Supplier: Blue Prism and in-house team.
Pathway(s): BCS.

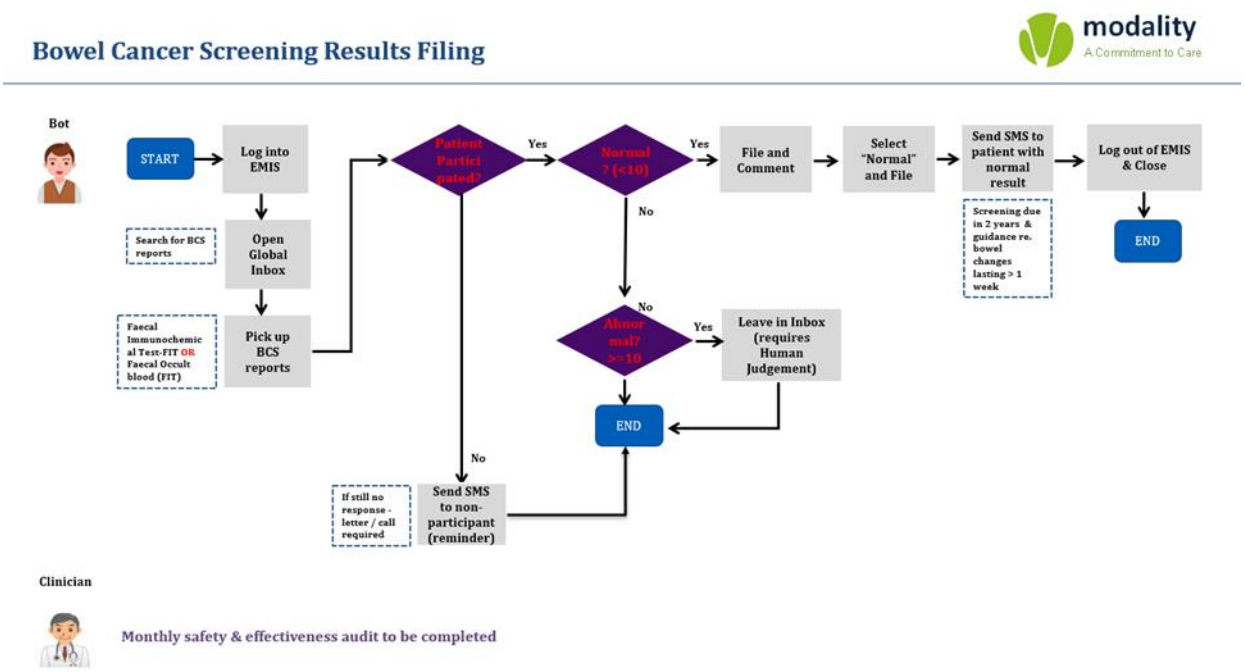
Overview

Modality Lewisham aimed to address GP shortages and system pressures, striving to build workforce resilience, improve the working day and improve patient care. They aimed to do this by utilising RPA to automate the reviewing and filing of 'normal' BCS results. This approach had the potential to free up GP time for abnormal cases and/or to improve continuity of care. For this approach to be successful, it required the standardisation of thresholds, robust clinical governance and collaboration with sites and PCNs to operationalise.

Modality Lewisham utilised in-house RPA developers and maintenance engineers. This led to increased benefits from improved flexibility and autonomy when engaging with colleagues, developing and testing the solution, as well as responding and managing issues.

Process


Original process
Pilot process
Manual search for results.
Automated search of inbox.
Manual text message for non-participant.
Automated text for non-participant.
Manual filing.
Automated filing.
Manual text message confirming result.
Automated text message confirming result.
Abnormal results reviewed by GP.
Abnormal results reviewed by GP.



* The Bowel Cancer Screening Results Filing map details the new process used by Modality Lewisham.

Key achievements and outcomes

- 3,170 BCS pathology results processed.
- 105 hours of GP or administrator time saved, based on an average of two minutes per result file and Short Message Service (SMS).
- £13,440* GP cost saving (£128 per hour). If delegated to admin, the cost saving would be £1,575* (£15 per hour). These savings are non-cash releasing as GP or admin time would be absorbed by other tasks and priorities each day.
- 630 additional appointments were provided over the last 12 months. This equates to approximately 53 additional appointments each month.
- Improved data management of patient phone numbers.
- Improved working day for staff through the delegation of activity to a robot.
- Increased confidence in working with automated solutions from stakeholders and cultural acceptance of RPA in GP practices. As a result, the robot utilisation was maximised, along with the benefits of the solution. This has the potential to allow staff to focus on judgement-involved patient care.
- Increased exposure of automation amongst Modality Lewisham, leading to increased requests to the NHSE (London) Digital First team for automation use cases.
- Robust exception handling developed to ensure the robot could reset and restart when experiencing issues interacting with the clinical application.
- BCS programme results now sent to dedicated inbox/requester for quicker processing.

Staff feedback

"The bots have reduced my time spent on patient admin tasks to free up more time to spend with patients." – GP

"It's great, I love our MoBots – they can save a minimum of an hour per day." – Patient Services Manager (PSA)

"It has helped with managing the staff rota as the staff that would have been allocated to that task can be used more effectively on the phones or wherever we are short on that day." – Senior PSA

Key challenges

Clinical systems

- The clinical system behaved erratically at times and often had issues relating to memory.
- Inconsistent application performance for patients.
- Certain application screens or windows were prone to freezing.

Local primary care environment

- In some circumstances, delivery of SMS messages could not be guaranteed due to invalid contact numbers, even though they were valid mobile numbers.
- Often SMS messages could not be delivered to patients who had not consented to SMS, so data cleansing was required.

Next steps

- Further expansion of RPA across Modality Lewisham and nationally, building on the 35 RPA processes already built and implemented across EMIS and TPP applications.

2. Registrations

2.1 Registrations: NCL | N1 PCN

Title: Adoption of automation within N1 PCN using GP Automate's automation tools.
Provider: N1 PCN.
Supplier: GP Automate.
Pathway(s): Patient registration.

Overview

N1 PCN aimed to address local pathway variations and inefficiencies across their GP practices by utilising GP Automate's suite of automation tools.

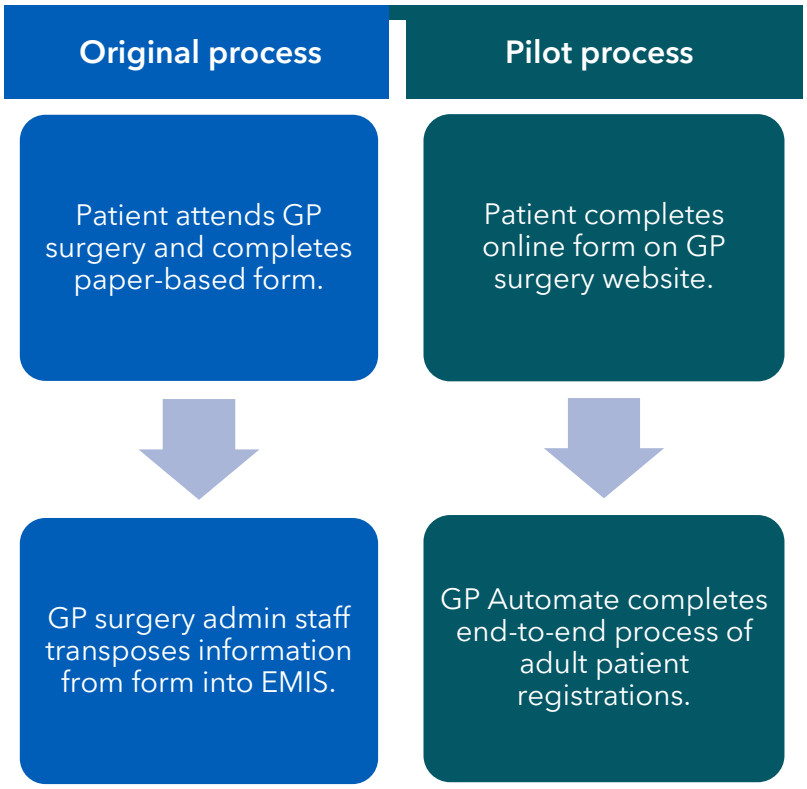
The GP Automate pilot comprised of five products, focusing on saving time for both clinical and non-clinical roles. The products used for the pilot included:

- Lab Reports;
- New Patient Registration;
- Accurx Asthma Questionnaires / Floreys;
- Accurx BP Questionnaires / Floreys; and
- Accurx Diabetes pre-appointment Questionnaire.

N1 PCN aimed to increase uptake in registrations by making the online process more accessible and simpler to use. Prior to the pilot, most N1 GP practice processes involved reception and admin teams handling manual registration forms (either online or paper) and transposing information from the forms into EMIS.

Using GP Automate, patients completed the registration form on the GP practices' websites and the data was automatically migrated into the EMIS registration fields. This saved between seven to eight manual steps for admin or reception staff, and patients were no longer required to attend the practice in-person to register.

Process and findings



	Pilot GP practices			Grand total
	Partnership Primary Care Centre	St John's Way Medical Centre	The Village Practice	
Start date	15 September 2023	12 July 2023	10 August 2023	12 July 2023
Last run	19 December 2023	28 December 2023	28 December 2023	28 December 2023
Days live	83	148	118	116
Total runs	42	67	42	53
% utilisation	50.6%	45.3%	35.6%	45.2%
List size	9,000	12,600	10,800	32,400
Monthly average	55	85	56	168
Total automated	219	509	280	1,008
Admin hours saved	37	85	47	168
Total savings	£547.50*	£1,272.50*	£700.00*	£2,520.00*

Key achievements and outcomes

- GP Automate were the first RPA company in the UK to automate the "Register with a GP Practice Service" form for EMIS.
- 1,008 registrations automated.
- 168 hours saved.
- £2,520* saved.
- Automation process live across three pilot GP practices.
- New automated processes fully embedded and seen as most impactful of the GP Automate suite of tools by GP practice staff.
- Robot could be scheduled to fit in with the daily routines of GP practices.
- Automated registrations have saved reception time. It has also allowed effective and easy registrations for patients.

Key challenges

Management resources

- The PCN had a change in operational lead during the pilot, leaving the role vacant for pivotal periods. This particularly impacted handover quality and query responsiveness from the supplier during the implementation phase.
- Ongoing admin support required and the initial road for implementation was quite complex.
- When the robot failed, GP practice staff time was required to support resolution. This was allocated by the GP practice.

Local primary care environment

- Local estate challenges impacted rollout. For example, Northern Medical Centre lost their premises in December 2022, so operated out of two sites for a portion of the pilot.
- Two GP practices were unable to implement the registrations product due to catchment area issues.

Primary care variability and scalability

- GP practices with the usual registration approach were unable to implement the registrations product, as the solution required a total process and system change.

Supplier relationships

- Communication challenges during the course of the pilot.

Next steps

- PCN are reviewing the market to determine which automation tools would be most impactful and affordable, as solutions would need to be locally funded. Decisions are yet to be made.

2.2 Registrations: SEL | Lambeth Healthcare Federation

Title: Automation of new patient GP online registrations.
Provider: Lambeth Healthcare Federation.
Supplier: Healthtech-1.
Pathway(s): Online GP registration.

Overview

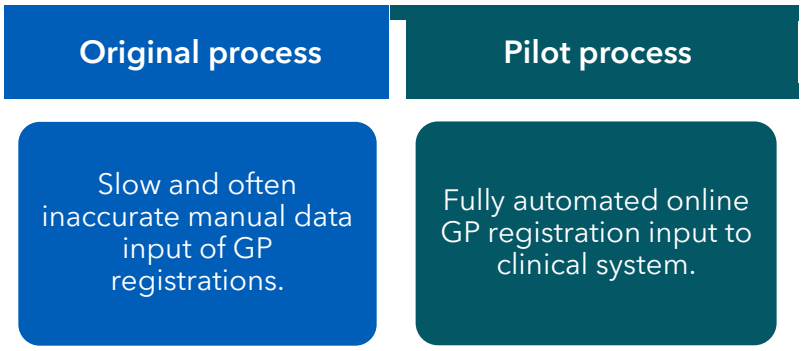
Lambeth Healthcare Federation recognised that manual new patient registrations, involving data entry into clinical systems, were time-consuming, prone to errors and impacted patient access to GP services.

This pilot aimed to utilise Healthtech-1's functionality to establish full automation of online registration into the clinical system at borough scale. The aim was to improve the experience for patients and staff whilst ensuring higher quality data collection.

The solution offered high-quality data input and digital inclusivity for patients. It was scaled across 32 out of 40 GP practices in the borough during the pilot with minimal disruption. This equates to 80% of the GP practices in the borough.

Freeing up resource helped to address immediate challenges. This enabled Lambeth to understand patient needs better, reduce inequality, provide faster access to high-quality primary care and increase the resilience of GP practices by redirecting resources to other priorities.

Process and findings



	Data	Outcomes
Number of registrations in 12 months	18,700	90% automated = 16,830 registrations.
15 minutes estimated per registration	(15 x 16,830) / 60	4,207.5 hours saved.
£15 per hour registration clerk	£15 x 4,207.5 hours	£63,112.50 cost saved.
Cost of registering with Healthtech-1	£2.40 (including VAT) x 16,830	£40,392 cost incurred.
37.5 hours working week	4,207.5 / 37.5 = 112.2 weeks	Almost two full time administrators regained time.

Key achievements and outcomes

- 18,700 GP registration forms processed across the borough between 1 October 2022 and 1 October 2023.
- 90% automation rate (total 16,830 automated forms).
- Saving of 4,207.5 hours of administrator time, which equates to a saving of £63,112.50. In comparison, the cost of Healthtech-1 registering the patients was £40,392 (including VAT).
- 100% retention rate to the paid model.
- Across 100 registrations sampled, it took GP practice staff 3.25 days to register a patient. When automated through Healthtech-1, this fell to 0.5 days.
- 17.16 coded or recorded data points captured on average during a manual registration. In comparison, 84.62 coded or recorded data points captured during an automated registration, resulting in a 500% increase in coded registration data.
- Automation of the NHS national register with a GP practice service form.
- Automated registrations increased coding of ethnicity, language needs and disabilities to 100%. In comparison, manual GP registrations often recorded this information as free text in notes or it was not reliably recorded at all.
- Set up the Lambeth Automation Working Group.
- Lambeth supported Healthtech-1 refinement of child safeguarding policies.

- Increased online registrations across GP practices, with fewer paper forms requiring manual registration.
- Developed training materials, including additional videos and interactive demos, a training guide and new weekly drop-in sessions.
- iPad installed in GP practice receptions, allowing patients to complete an online registration form with the option of administrative support to mitigate digital exclusion.
- Healthtech-1 worked with the SEL registration authority to permit automation smartcards to be added to GP practice clinical systems with specific role-based access control (RBAC) roles.
- Several GP practices have taken the opportunity to upskill staff to take on other tasks, such as managing referrals and developing into care coordinator roles. One registration clerk has now become the practice's Digital and Transformation Lead in line with the new role within ARRS.

Staff feedback

- Minet Green Health Practice stated that they had used the regained administrator time for "more patient facing service and complex admin."
- Another GP practice said they had utilised the regained time to support frequent attenders. This comment was a response from the anonymous GP practice feedback survey at the end of the pilot.

Patient feedback

4.9 out of 5 patient feedback rating across Lambeth GP practices. A key factor for patients was the speed of completing the registration. Below are some additional comments:

"I have never registered at a GP practice digitally before and I was very wary about the process. [I] was relieved to find the form straightforward and efficient to register."

"This already feels better than my last GP practice. I'm also very appreciative of the options and wording regarding the questions referencing gender, sex and sexuality."

"This online registration is done within a few minutes and the GP's reply is also received very quickly. The previous method used to take weeks. We appreciate you guys a lot for that. Five marks at the end, if there were more than that, I would have given that mark."

"Best registration process I have encountered. Super fast, simple questions, great use of emojis and positive language."

"This is the quickest, easiest and friendliest registration with a doctor I have ever had! Very impressed and to be assigned a doctor by name is also really great. Thanks so much."

"I have had an exceptional experience registering with your practice. The registration form was concise yet comprehensive, covering all the necessary questions pertaining to my health history and concerns. To my surprise, I was registered within a few hours of submitting the form, despite the email indicating it would take up to two working days. I am truly grateful for the promptness and efficiency of the registration process."

Key challenges

Virtual smartcards (VSC)

- Despite some challenges, the Healthtech-1 team worked directly with the National Registration Authority to break ground on the provision of smartcards allocated specifically for automations (not linked to a specific staff member's identity).
- Healthtech-1 subsequently worked with the SEL registration authority to permit automation smartcards to be added to GP practice clinical systems with specific RBAC roles. This increased security and scale and also represents the best existing practice in the UK for smartcards and automation. Work to move towards virtual smartcards is ongoing.

Local primary care environment

- Implementation was paused for several weeks whilst the Data Protection Impact Assessment (DPIA) was refined.
- GP practices experienced winter pressures and staffing issues prior to the festive period in December 2022. This limited staff members' ability to meet and see a demo of the Healthtech-1 software.
- Agreement of consistent processes. This included ID documentation: Healthtech-1, which complies with the NHS requirement for safer practices. Therefore, it does not request ID check or proof of address for registration.
- Two pilot GP practices have not gone live yet, partly due to changes to management and website providers. Another GP practice intended to sign up but had to address HR concerns first. Momentum was almost irrecoverable once lost.
- GP practices were hesitant to switch national registration form on until Healthtech-1 automated it.

Management resources

- Lambeth Federation's Digital Change Manager left their role halfway through the project. There were several months of interim support before a permanent Digital Change Manager was in place.

Scope creep

- The original scope:
    - increase automated GP to GP transfer from around 50% of available to 100%;
    - Healthtech-1 develop an automation to generate a blood test form, such as when a patient requests a HIV screening.
- These implementations were not completed due to Healthtech-1 team's competing priorities, such as working on their automation of the NHS national register with a GP practice service.

Next steps

- ICS-wide funded pilot of Healthtech-1 has commenced for new patient registrations. Lambeth Federation has supported SEL ICB with their knowledge and experience from this NHSE (London) Digital First project.
- Healthtech-1 continues to provide individual GP practices with monthly reports that provide data insights. This includes:
    - who is registering;
    - reason for registration;
    - age distribution;
    - language needs;
    - percentage of forms automated;
    - how many forms have been passed over to the GP practice to register manually; and
    - number of emails sent to signpost patients to smoking cessation services.
- Healthtech-1 is working with several Lambeth GP practices to automate their lab report filing, with a product currently in pilot phase.
- Due to the success of this pilot, Lambeth is looking to develop further automation processes within primary care.

3. Call and recall

3.1 Call and recall: NCL | Islington GP Federation

Title: Increasing cervical screening rates to the national average in Islington using WhatsApp and AI.
Provider: NHS NCL ICB, Islington GP Federation and Clerkenwell Medical Practice.
Supplier: SPRYT Ltd.
Pathway(s): Cervical screening.

Overview

Cervical cancer is a largely preventable disease but faces low screening uptake, particularly amongst diverse population segments in NCL. Here, the current letter-based invitation system for screening results in inequities.

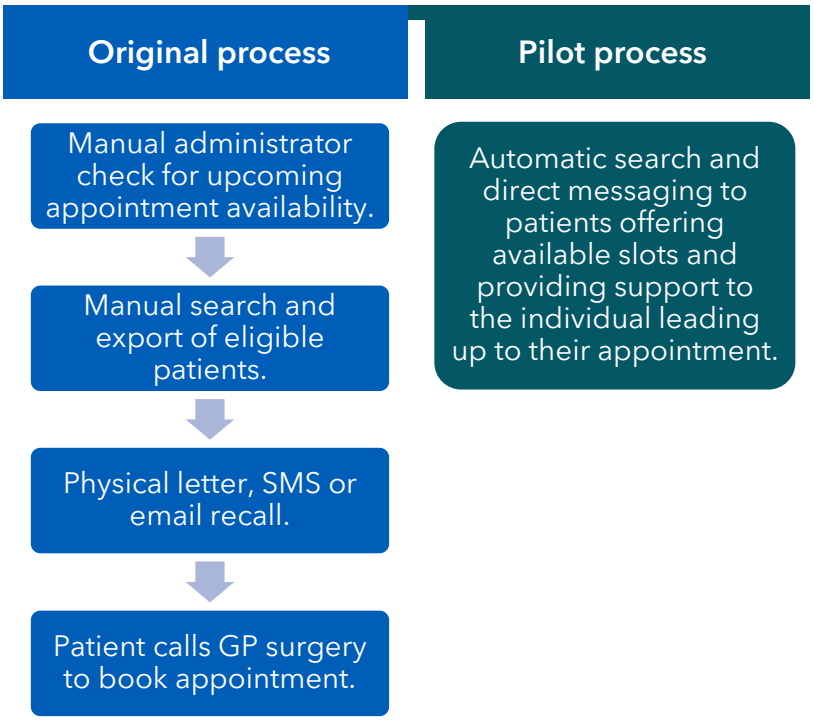
To combat this, the pilot utilised AI chatbots, specifically SPRYT's Asa – a virtual receptionist accessible through patients' existing WhatsApp accounts. This AI solution aimed to tackle three main issues:

1. low uptake of cervical screening appointments;
2. limited engagement in particular patient populations; and
3. the negative impact of non-attendance DNAs on primary care services.

The virtual receptionist facilitated appointment booking, provided reminders and addressed language barriers, aiming to predict non-attendance patterns. The solution aimed to increase cervical screening rates, as well as mitigate the largely avoidable financial cost to the NHS of unused screening slots and the potential health repercussions to patients from treatment delays. Additionally, it offered the benefit of freeing up administrative staff time for other tasks. It also allowed for predictive modelling on patient behaviour to improve attendance.

This pilot was pioneering in its approach and the first to be formally approved for the use of WhatsApp as a method for patient communications in primary care.

Process



Key achievements and outcomes

- First pilot to have WhatsApp formally approved for use by the NHS.
- Interface Mechanism 1 (IM1) clinical and IG approval.
- Governance approval from EMIS for integration to the production environment.
- Witness test with EMIS completed.
- DTAC and Cyber Essentials approval.
- Two patients booked into a cervical screening slot via AI chatbot Asa.

Key challenges

Governance and Meta

- It was the first time WhatsApp had been used in an officially approved NHS context. This resulted in significant challenges when progressing through the governance stages. SPRYT, in effect, advocated for Meta (WhatsApp's parent company) through the governance stages, amidst criticism for Meta's personal data violations.

Patient safety and online duty of care

- New NHS interventions must increase overall patient safety. The outcome of the solution, and whether it will increase patient safety, was initially unclear.
- There was potential for patients to think that Asa, the communication channel, was also a route to emergency assistance.

Patient selection process

- A hand-picked, one-to-one monitored cohort was achieved within the EMIS test environment.

SNOMED codes

- The use of SNOMED codes as a way of recording patient consent preferences, regarding contact through instant messaging, was identified early in the project. This was a requirement to comply with UK GDPR and the Caldicott Principles.
- Despite multiple applications to the SNOMED development team to create provision for this, at time of evaluation, no explicit codes have been created.

EMIS availability to Asa

- Some issues with connectivity between Asa and the test instance of EMIS during Asa tests by pilot participants.

Key performance indicators (KPIs)

- The two KPIs indicative of success at the outset of the pilot were:
    - increased attendance; and
    - decreased DNA.
- Further investigation of the Clerkenwell data suggested that decreased DNA may be a counter indicator of success, at least during the initial stage of the trial (apparent indicators turning out to be counter indicators is not uncommon).

User research outcomes

- Poor or diminished user experience. This was due to Asa appearing confused or a breakdown in natural communication. User research demonstrated that question responses could include:
    - wrong answers;
    - Asa stating it "did not know" the answer; and
    - inappropriate answers.

Technical developments

- User experience issues were technically due to how Asa differentiates between general questions about facts, such as requesting the address of the clinic, and questions that require functional responses, such as creating an appointment.

Integration and workarounds

- Integration with EMIS production environment and Clerkenwell's systems (the Clerkenwell Medical Practice website and Accurx) was not complete. Manual workarounds have been agreed to enable testing of further Asa features.

Next steps

- Expanding the number of patients included in the trial.
- Conducting user research and design iteration focusing on hypotheses, including:
    - User centred language is more effective than clinically correct terminology at increasing uptake of cervical screening appointments.
    - Single function (ie cervical screening) chat does lead to an expectation that chat can be used as an emergency help system.
    - Offering a range of appointment dates is more effective than asking when someone wants an appointment.
- Technical:
    - Asa version 3;
    - live EMIS;
    - live patients;
    - end-to-end automated consent or consent withdrawal; and
    - language and functional refinement.
- ROI calculations once the solution is scaled up.

3.2 Call and recall: NEL | Havering North PCN

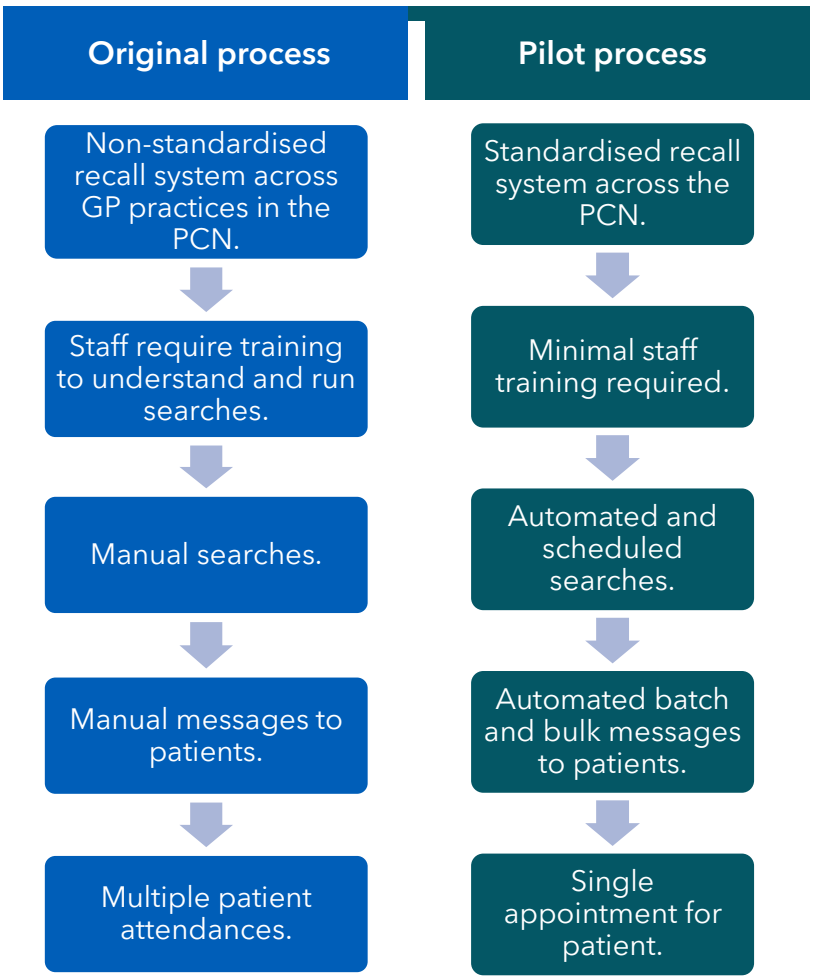
Title: Automation of chronic disease recall and risk stratification.
Provider: Havering North PCN.
Supplier: Care IQ.
Pathway(s): Call and recall of patients with hypertension, diabetes and atrial fibrillation.

Overview

Havering North PCN addressed resource-intensive challenges in chronic disease management by using CareIQ, a proprietary automation cloud-based engine.

In this pilot, the automation was implemented for the recall of patients with hypertension, diabetes and atrial fibrillation.

Process



Key achievements and outcomes

- 87,000 patients onboarded across 14 GP practices.
- 99.95% faster than previous system.
- 30x faster compared to traditional method of recall and review.
- 50% of diabetic and hypertensive patients were recalled in the first month of using CareIQ Radar using automation. This would normally take months and several hours of admin work.
- £530,000-£720,000* estimated cost saving per year for a population of 50,000. This equates to 2.5 years of time saved (internally quantified by pilot site).
- Penetration security tests. NHS IM1 integrations/Supplier Conformance Assessment List (SCAL) approval, DPIA, Cyber Essentials Plus and EMIS interoperability.
- Patients with atrial fibrillation can now book directly with the clinical pharmacist for a quicker and more efficient route to the appropriate Allied Health Professional (AHP).
- Reduced administrative time for clinics.
- Personalised care clinics set up for each GP practice.
- Risk stratification of patient engagement. Highest risk approached first, decreasing the risk of long-term complications and the cost to the NHS.
- Scheduled tasks continued in the background, allowing GP practice staff to target non-responders.
- Outcomes exceeded the initial projections.

Key challenges

Local primary environment

- Maintaining GP practice engagement and capacity during launch.
- Obtaining the data sharing agreements by agreed deadline.
- Organising training sessions due to flexible working patterns of GP practice staff.
- There is a large elderly population in the PCN. Many of these patients had no access to a mobile phone, only a landline.
- Some GP practices did not utilise the system to its full potential due to workforce pressure.

Clinical system

- Delays with EMIS and receiving bulk data extracts.

Next steps

- Explore additional funding to support the sustainability of the project.
- Increase number of medical conditions covered by the solution.
- Further analysis to be conducted to demonstrate longer term impact of the automation for:
    - Improving health outcomes for patients.
    - Improving efficiency in chronic health management.
    - High risk patients being identified early, reducing mortality and morbidity.
    - Reducing health inequalities.
    - Improving patient experience.
    - Improving use of skill mix.
    - More appointments being made available for non-chronic health related reviews.

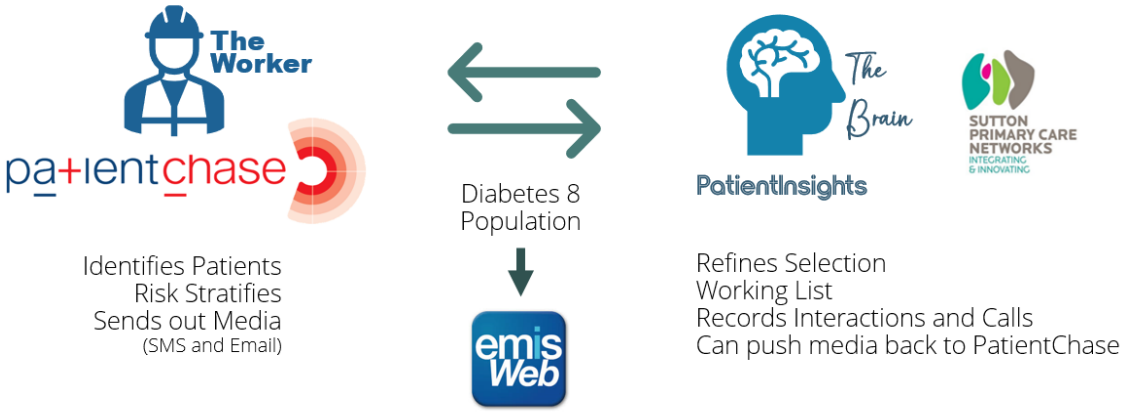
3.3 Call and recall: SWL | Sutton PCNs

Title: Automation of a centralised call and recall function across four PCNs at a Sutton borough level, targeting LTCs and risk stratification.
Provider: Sutton PCNs Community Interest Company (CiC), including Central Sutton, Cheam and South Sutton, Wallington and Carshalton PCNs.
Supplier: General Practice Software Solutions Limited - PatientChase.
Pathway(s): LTCs and risk stratification.

Overview

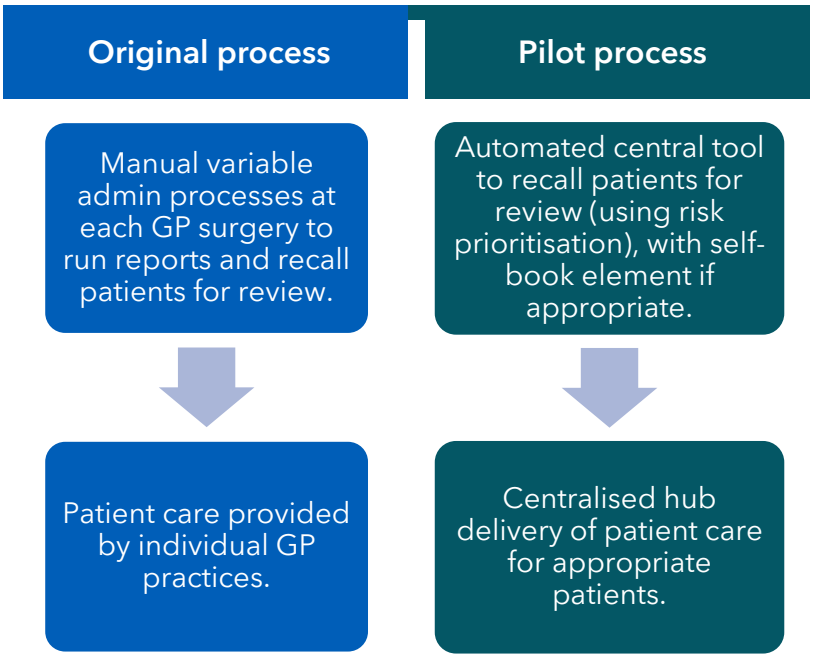
The Sutton PCNs CiC targeted efficiencies by using the PatientChase product, automating the call and recall of patient annual diabetic reviews. The solution moved away from the traditional prioritisation of patients based on their date of birth. Instead, patients were prioritised based on clinical risk and social deprivation, targeting patients that were most in need. The solution also utilised text message self-booking to improve patient access to appointments. Furthermore, it incorporated the PatientInsights system to assist with a personalised recall process, based on patient behaviours and preferences.

Whilst not all the benefits of the pilot were realised, there were many key learnings. Positive patient outcomes highlighted the importance of the approach, particularly the setup of an eHub.



Source: General Practice Software Solutions Limited.

Process and findings



Description/Function	Baseline	Outcome	Time saving
Running risk stratified searches at borough level for 22 GP practices.	14 hours per search at borough level (two working days) every two weeks (26 working days a year) = 364 hours	3.75 hours per search (half a working day) every two weeks (26 working days a year) = 97.5 hours	Estimated yearly saving of 266.5 hours.
Call and recall of patients.	Standard operating model (No PatientInsights). Approximately 10 mins per patient accounting for three calls, checking EMIS notes and updating records with outcome (50% uptake). Assuming 500 patients contacted at 10 mins each = 83 hours for 250 patients.	PatientInsights Call and Recall, including patient preferences on methods of contacting and booking, resulting in circa six minutes per patient and 60% uptake. Assuming 500 patients contacted at six minutes each = 50 hours for 300 patients.	Time saving of approximately 33 hours per year. Other potential benefits with increased uptake.

Key achievements and outcomes

- Diabetes eHub supported by automated processes successfully launched.
- PatientInsights module launched, including geo mapping-developed and implemented self-booking through Hero Health.
- At borough level for 22 GP practices:
    - Risk stratified searches, with an estimated yearly saving of 266.5 hours.
    - PatientInsights is expected to save approximately 33 hours each year and increase uptake from 50% to 60%.
- 9.3 out of 10 patients were happy with the automated appointment booking process and their experience with the nurse.
- Automation of risk stratification successful.
- Searches were effective in identifying patients at the highest risk and living in the most deprived areas. This demonstrated the solution's ability to target health inequalities.
- Risk stratification and geo mapping adopted across several workstreams, including administering flu vaccinations to housebound patients and the Serious Mental Illness (SMI) Health Check Project.

Staff feedback

> *"When we started it took me around two days to run the searches for all four PCNs. It was a long, drawn out process as I had to leave computers running searches overnight… when we encountered a problem with the searches, it was hard to rectify these issues and provide updated data – this slowed us down and caused frustration in the team… once we implemented changes, such as moving from 32-bit to 64-bit and moving onto a SQL server, four days turned into half a day to run the searches for the whole borough… this was a real game changer."*
> *– Digital Transformation Manager, Sutton Primary Care Networks*

Key challenges

Clinical systems

- Text messaging at borough level:
    - Text messaging provider did not work at borough scale. Therefore, text message self-booking could not be fully implemented.
    - Hub version of EMIS only retained patient data for a number of weeks once an appointment was booked.
    - Self-booking was not piloted any further for this project after March 2023 due to traditional call and recall processes being used to replace proposed text processes.
- Data:
    - Some searches did not isolate the most appropriate patients.

Local primary care challenges

- Recruitment challenges.
- Clinical room availability.

- Operational team's capacity.
- The solution had to be adapted into a two-appointment model due to QOF changes (unable to use existing blood tests from 2022/2023). This caused an unexpected technical issue as GP practice teams started following up and completing the diabetes annual review once the blood tests were sent to them. This caused confusion amongst patient who were, in some cases, being contacted by GP practices and the PCN call and recall team.
- Some resistance to change caused by the challenges of implementing new technology and disruption to standard ways of working.

Next steps

- Continue to use the risk stratification approach developed in this pilot.
- Use PatientChase in the CVD Action criteria to help operationalise data.
- PCN and GP practices using PatientInsights to route plan housebound flu vaccination delivery.
- Explore further pathways, including:
    - SMI Health Checks.
    - UCL Partners CVDAction.
    - Proactive care for housebound patients.
    - Pharmacy Pathfinder Project: linking patients to local pharmacists.
    - Mass emailing of focused population within the Integrated Neighbourhood Scheme.
    - Mass emailing to assist and improve screening programmes locally.

4. Workforce rota management

4.1 Workforce rota management: NEL | City and Hackney

Title: Automation of workforce rota planning for GP practices.
Provider: The Nightingale Practice (lead) and NEL ICB.
Supplier: Edenbridge.
Pathway(s): Workforce rota management.

Overview

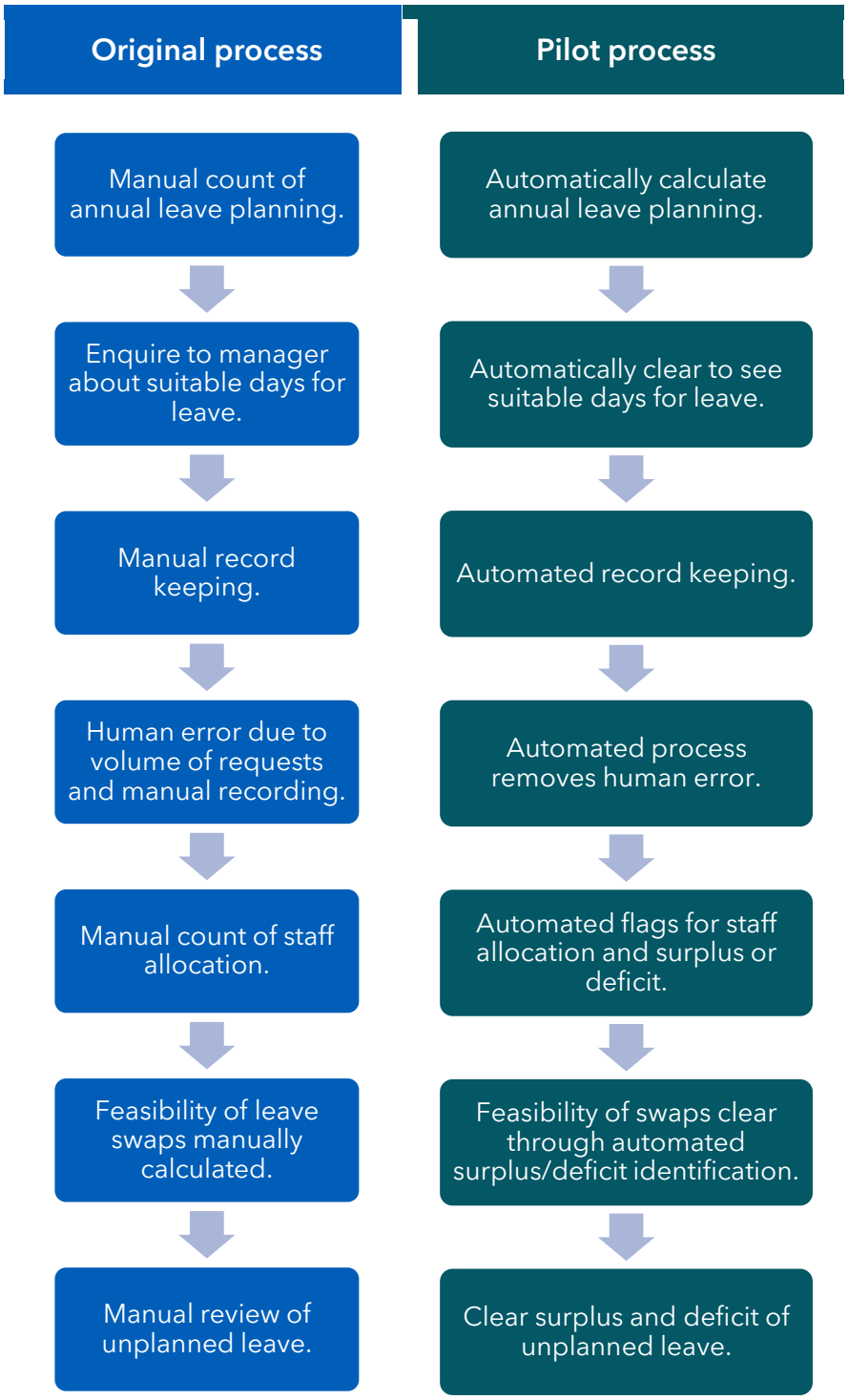
The Nightingale Practice worked with Edenbridge (using APEX) to automate time-consuming, complex areas of rota management. The GP practice also aimed to improve access to primary care and reduce workload burden on management, allowing for a stronger focus on improving service provision. Areas of focus included:

- Workforce planning: the process for appropriate workforce planning. Ensure adequate staffing levels each week through an automated process of allowing leave based on entering a "rule set" for capacity needed. The tool allowed for all members of the primary care team, rather than just GPs.
- Leave requests: improve the efficiency and accuracy of the leave request process for GPs. Implement an electronic solution for viewing remaining personal allowance, the best weeks to request, and once requested, an automated approve or decline process for leave.

A key driver for this automation project was to explore the links between resource, demand and capacity planning. By joining up the data, more robust insights could be used to help with demand smoothing and more proactive capacity planning.

Whilst the automation concept was designed before the project began, it was necessary to design and build a leave management system tailored to the complex needs of GP practices. This leave management system provided the necessary framework to allow for automatic savings and capacity planning knowledge.

Process and findings



	Average admin time spent on rota, calculated from pilot GP practice survey (Average of four pilot GP practices) Hours per week	Predicted time once rota automation tool implemented % of total time saved	Potential time saving hours per week	Actual time saving
Pilot GP practice population (average of all GP practices): 14,000	23	30%	7 hours per week	Too early to evaluate.
Extrapolating data to a GP practice population: 8,000	13	30%	4 hours per week	
Using 8,000 patients per GP practice as an average for all (264) NEL GP practices	3,432	30%	1,030 hours per week	
*Please note, these results are based on a very small sample of data (actual data not measured as too early for evaluation). Percentage will vary depending on starting point of GP practices with rota planning (eg some GP practices will be paper based, others will already be using online platforms).				

Key achievements and outcomes

- Product launched across seven GP practices.
- 30% time saved (projected).
- Seven hours of admin or GP practice manager time saved per week for each GP practice (projected).
- NEL ICB 1,030 hours saved per week (projected).
- Training pathways developed for spread and adoption of solution.

Key challenges

Complexity

- Complexities of developing a fully functional and useful leave management system to run a GP practice. These included:
    - leave allocation types;
    - complex work schedules;
    - developing a Leave Planner view; and
    - design of Automation Configuration.

Accurately measuring ROI and benefits

- Benefits may only be evident in the long term.
- Benefits may not be realised if the rule set isn't using adequate demand data.
- Difficult to measure accurately as numerous confounding access factors, including:
    - staffing changes;
    - changes to appointment systems; and
    - changes to phone systems.

Next steps

- Explore scaling the new solution across NEL ICB in Q1 2024 through blended implementation model to support the onboarding of new GP practices.
- Produce learning guides and support material.
- Deliver webinar sessions and one-to-one site sessions.
- Scale up further across the APEX customer base.
- Send further surveys three months after deployment to provide baseline set of data to compare against early findings.
- Continue to evolve the functionality within APEX Workforce Manager by integrating and mobilising real life demand data, which drives capacity planning. This includes full rota management capabilities and a new version of Capacity Planning.

5. Clinical safety

5.1 Clinical safety: NCL | Barnet PCN2

Title: E-Safety Netting tool for two week wait (2WW) cancer referrals.
Provider: Barnet PCN2.
Supplier: Blue Prism and Royal Free.
Pathway(s): Cancer 2WW.

Overview

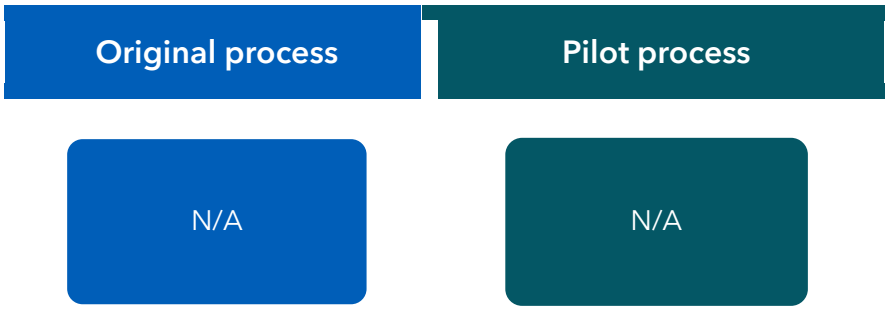
Barnet PCN2 aimed to enhance patient safety and GP practice efficiency by automating repetitive administrative processes across seven GP practices.

The pilot, in collaboration with e18 Innovation and Royal Free London, focused on using Blue Prism's intelligent automation software to streamline the 2WW E-Safety Netting process for cancer referrals, a critical but labour-intensive process.

The automation was expected to accelerate cancer diagnosis outcomes, reduce patient anxiety and enable staff to dedicate more time to patient care.

Due to time and resource constraints, the proposal underwent amendments in March 2023 to focus on the most time-consuming part of cancer tracking: hospital letter searches across multiple platforms. Due to numerous unforeseen challenges, the project wasn't viable during the pilot timeframe and funding envelope, despite the scaling down of scope.

Process



Key achievements and outcomes

- Development of Process Definition Document (PDD) V2.
- Change in policy, championed at national level, for the use of VSC within primary care for the use of RPA.
- The first PCN within the ICB to pilot digital automation using this cloud-based automation platform.

Key challenges

VSC

- Considerable amount of budget dedicated to non-refundable VSC, which were purchased at the beginning of the pilot.
- Regulatory authority challenged the use of RPA. This was escalated rapidly to NHSE who were able to influence the development of national policy to enable the use of VSC for non-human (robot) profiles.
- Extension request for the unused VSC was declined.

Primary care variability and scalability

- Variability with the use of the 2WW E-safety Netting template and tracker within the PCN.

Management resources

- Delays caused as extensive additional work was required from local GP practice IT teams. This was not identified prior to project build phase.
- Additional 50 hours of training for the individual clinical interoperator required. This was not factored into the original budget.

Tech interoperability and integration

- The compatibility of Intune did not integrate with the automation platform.
- Challenges establishing a virtual desktop and installing correct software.
- Procured platform provision was not compatible with primary care resource. Therefore, there was no platform to build the automation solution within and the project ceased to move further into the build phase.
- Application to extend the use of the unused BluePrism platform was declined.

Local primary care challenges

- ICB firewall security issues.
- Delays in signing off a DPIA for use of VSC for a robot.
- Additional concerns raised around security and liability.
- Clinician time was not budgeted within the proposal, but there was a significant utilisation of clinician time.

Stakeholder relationship management

- Challenging to organise regular meetings that all stakeholders attended.

Supplier relationships

- Internal reorganisation of the team, with multiple early project managers.

Next steps

- Champion this automation project.
- Active discussions underway with other grant organisations, such as NCL Cancer Alliance.
- Share learnings with the HIN and NHSE beyond the scope of this pilot.

5.2 Clinical safety: SWL | Wandsworth and Battersea PCNs

Title: RPA in primary care to increase clinical safety and validation of laboratory results.
Provider: Wandsworth and Battersea PCNs.
Supplier: Automation Anywhere and JifJaff.
Pathway(s): RPA in primary care to increase clinical safety and patient care.

Overview

Wandsworth and Battersea PCNs set out to develop four bespoke RPA processes, utilising an Automation Anywhere robot via JifJaff. The aim was to implement the solution in nine GP practices across two PCNs to improve patient safety and reduce administration burden.

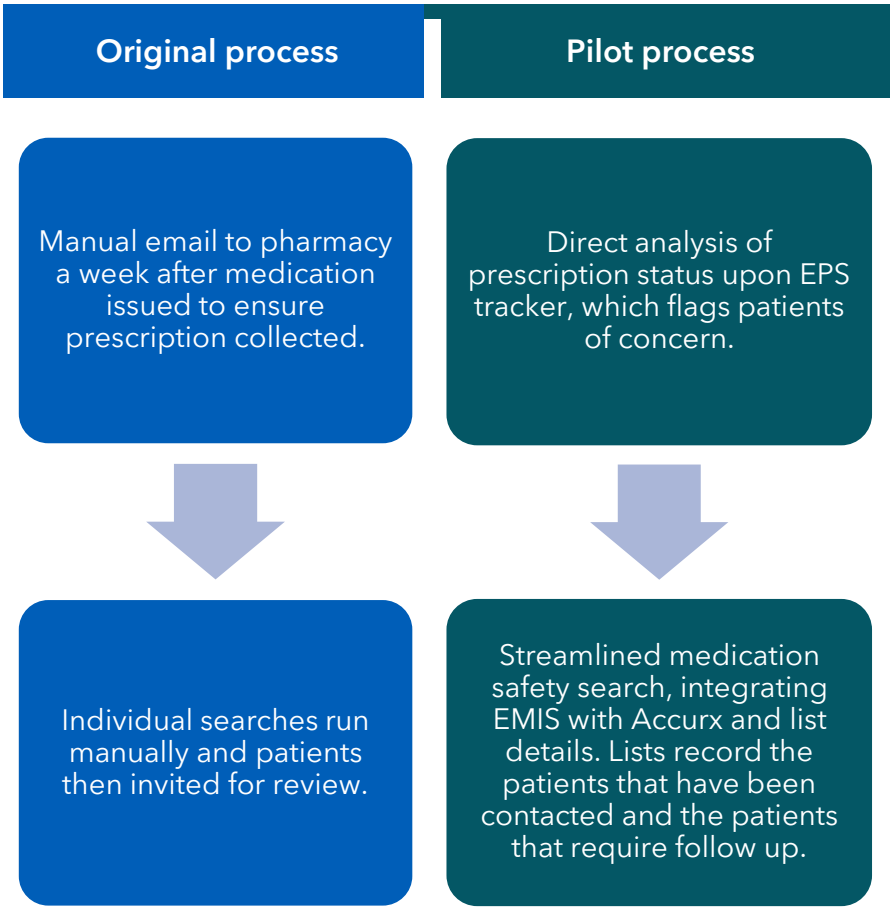
Four processes were initially selected to automate:

1. Monitor antipsychotic medications: validate the collection of prescribed medications by patient from pharmacy.
2. Assist pharmacy technicians and monitor medicine safety: streamline medication safety searches, integrate EMIS with Accurx and list details to determine patients that have been contacted and those that require further follow up.
3. Allocate laboratory reports, medication requests and documents to assigned staff: Docman workflow to allocate document to the most recent telephone/face-to-face consultation GP.
4. Validate that blood tests ordered by a clinician have all been processed by laboratory: cross comparison between TQuest and EMIS Laboratory test to instigate alert once all results are available.

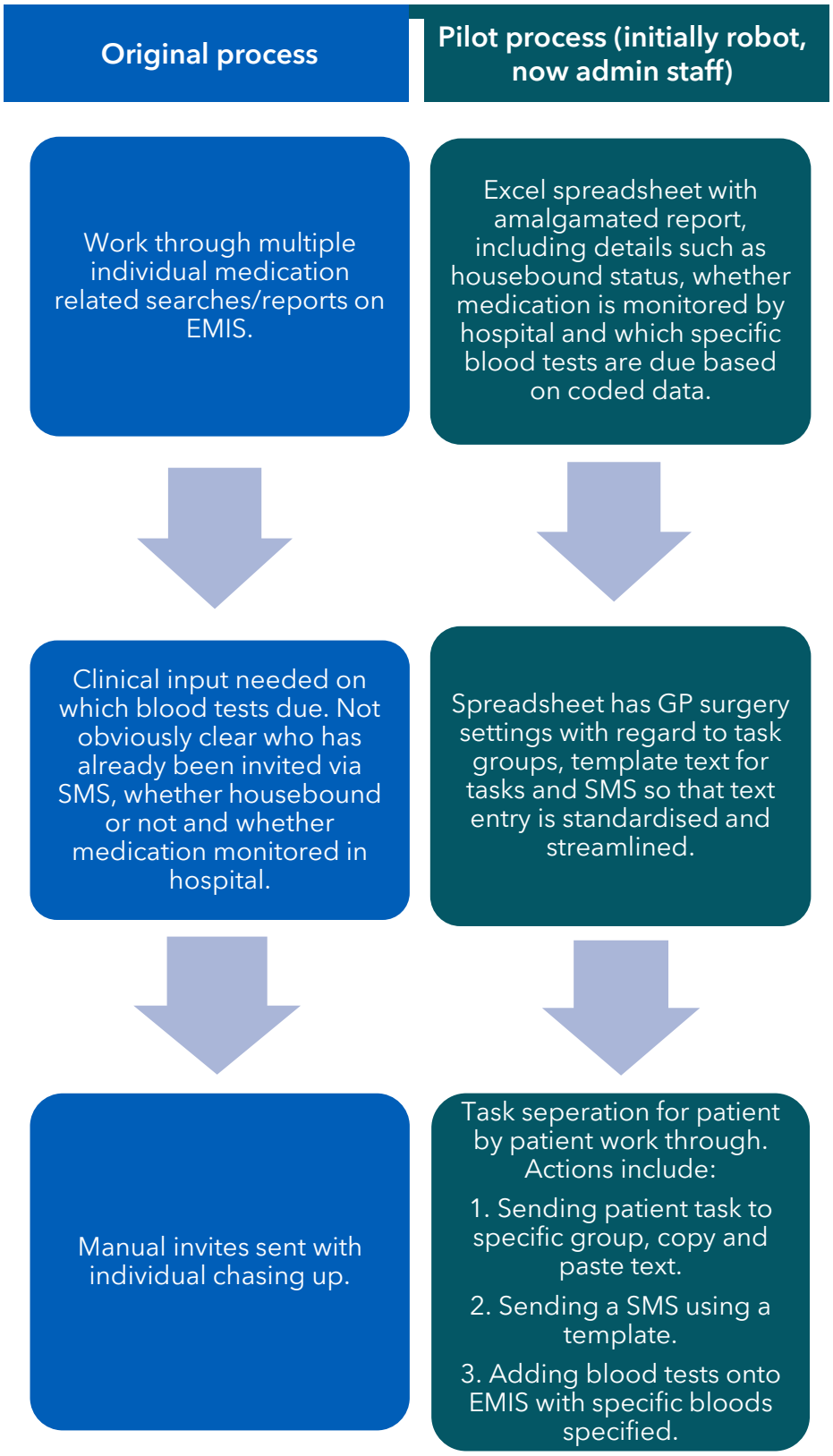
Processes one and two were built during the pilot, however, processes three and four were not launched due to significant issues with development and testing.

Process one did not deliver significant time reductions due to unforeseen technical issues. Process two was automated in one GP practice, with success in improving accuracy and reducing time spent in monitoring of certain high risk medications. Most of the benefit seen, however, was due to improvements with in-house processes before the addition of RPA.

Process one


Original process
Pilot process
Manual email to pharmacy a week after medication issued to ensure prescription collected.
Direct analysis of prescription status upon EPS tracker, which flags patients of concern.
Individual searches run manually and patients then invited for review.
Streamlined medication safety search, integrating EMIS with Accurx and list details. Lists record the patients that have been contacted and the patients that require follow up.

Process two


Original process
Pilot process (initially robot, now admin staff)
Work through multiple individual medication related searches/reports on EMIS.
Excel spreadsheet with amalgamated report, including details such as housebound status, whether medication is monitored by hospital and which specific blood tests are due based on coded data.
Clinical input needed on which blood tests due. Not obviously clear who has already been invited via SMS, whether housebound or not and whether medication monitored in hospital.
Spreadsheet has GP surgery settings with regard to task groups, template text for tasks and SMS so that text entry is standardised and streamlined.
Manual invites sent with individual chasing up.
Task seperation for patient by patient work through. Actions include:
1. Sending patient task to specific group, copy and paste text.
2. Sending a SMS using a template.
3. Adding blood tests onto EMIS with specific bloods specified.

Key achievements and outcomes

- Processes one, two and three: process mapped and keystroke documents completed.
- Processes one and two launched.
- Process two:
    - Four full runs in one GP practice over 17 weeks.
    - 829 patients screened, of which 178 required an invitation or bloods coding.
    - 126 tasks sent in EMIS to code bloods or invite manually (if no consent or not responded to previous SMS), 56 Accurx Self-Book invitations sent with booking links, 79 bloods actioned via TQuest.
    - 51 hours of pharmacist time saved (156 hours annually). £1,830* estimated cost saving (£5,600* annually).
    - 17 hours of pharmacy technician time saved (52 hours annually). £420* estimated cost saving (£1,280* annually).
    - 17 hours of administration time required (52 hours annually). Estimated cost of £270* (£835* annually).
    - 29% of patients overdue or requiring blood tests in July 2023. This decreased to 11.6% in November 2023.
    - These outcomes would all be achieved with in-house process optimisation alone. The robot delivers the new process reliably but in the same manner as member of staff.

Key challenges

Local primary care environment

- IG and data protection processes took longer than expected.
- Revisions to the DPIA were required as changes to processes were made.

Smartcards

- Process one testing timelines were impacted as a physical smartcard was required for the process build. This required significantly more clinician and supplier time and oversight than planned for.
- Physical smartcards made process one a challenge to roll out and adopt as a regular rolling process.

Timelines

- Processes one and two took longer to build and test than originally expected. This impacted the delivery of process three and four, which were not built.
- Testing took longer than expected, partly due to more clinician time needed than originally expected. Also, there were multiple teething issues in the robot. These were only present in the local machine and were not present on the build machine.
- Time commitment and more nuanced risk impacts were only fully understood during building out the process, despite extensive discussions with the provider and identification of projects that were amenable to RPA prior to the pilot.

Hardware

- Local machines behaved differently to build machines.
- Unable to use virtual machines within pilot timeframe due to delayed SWL response times to request.

- Local machines made it more challenging for supplier to view issues remotely and make the required changes. A VPN would have helped them see this more easily.

Clinical systems

- The robot frequently required adjustments due to minor changes to Accurx and EMIS.
- Slow software and system issues (EMIS/TQuest) contributed to processes not operating as expected. This significantly increased build and test time.
- EMIS and Accurx updated more often than expected, requiring frequent robot updates to ensure that processes continued to work smoothly.

Contracting

- Ongoing issues with contract agreement expectations.

Management resources

- Collaboration across PCNs was more difficult than expected. This was largely due to increased time commitment, compared to original expectations, and also personal reasons, which resulted in less availability.
- Having one clinical lead to design and build a process does not allow sufficient flexibility to build well. This is mostly because it is difficult to predict when input is needed from the commissioning team and delays in availability can lead to significant delays in build.

Viability of solutions

- Process one has not been adopted or rolled out further due to insufficient time savings made by the process.

Next steps

- Collated impact data to inform plans for other processes that could positively impact patient care and staff time.
- Skilled administrator to run process two rather than a member of the pharmacy team.
- Implement new version of process two in all PCN GP practices in Battersea PCN. This will also be discussed with Wandsworth PCN.
- Explore all avenues of automation, including ongoing conversations with various automation suppliers.

6. Clinical documents

6.1 Clinical documents: NCL | N1 PCN

Title: Adoption of automation within N1 PCN using GP Automate's automation tools.
Provider: N1 PCN.
Supplier: GP Automate.
Pathway(s): Asthma and BP Floreys and EPS.

Overview

N1 PCN aimed to address local pathway variations and inefficiencies across their GP practices by utilising GP Automate's suite of automation tools.

GP Automate pilot comprised of five products, focusing on saving time for both clinical and non-clinical roles. The products used for the pilot included:

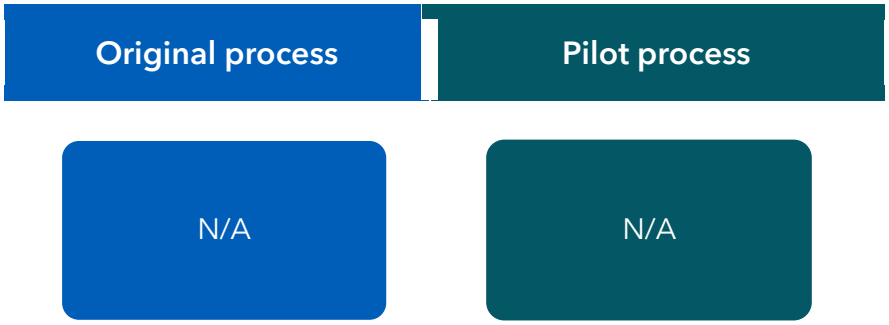
- Lab Reports;
- New Patient Registration;
- Accurx Asthma Questionnaires / Floreys;
- Accurx BP Questionnaires / Floreys; and
- Accurx Diabetes pre-appointment Questionnaire.

Prior to the pilot, LTC management, recall, review, action and communication with patients was a completely manual process. Both administrative and clinical teams would spend hours processing tasks that could be automated through algorithms.

It was proposed that the automation of Accurx Asthma and Blood Pressure Floreys would be launched as part of this pilot. Unfortunately, this was not possible due to local changes to the North Central London Long Term Condition Locally Commissioned Services (NCL LTC LCS) contract, making the product unusable.

Electronic Prescription Service (EPS) functionality was provided for free to the PCN, outside the grants scheme. This was also not able to be widely adopted due to the requirement for the prescriber's smartcard to be inserted for the product to be effective. This proved challenging due to flexible working patterns of prescribers, as well as local push back on whether the robot could prescribe accurately and the potential impact that incorrect prescribing could have on a patient.

Process



Key achievements and outcomes

- EPS functionality temporarily launched at one GP practice.
- Robot could be scheduled to fit in with the daily routine of the GP practice.

Key challenges

Management resources

- The PCN had a change in operational lead during the pilot, leaving the role vacant for pivotal periods. This particularly impacted handover quality and query responsiveness from the supplier during the implementation phase.

Local primary care environment

- Local estate challenges impacted rollout. For example, Northern Medical Centre lost their premises in December 2022, so operated out of two sites for a portion of the pilot.

Primary care variability and scalability

- Local changes to the NCL LTC LCS resulted in the PCN being unable to use the Questionnaires / Floreys product. Implementing the EPS functionality would have required significant resource to reach the required standard for EMIS. Staff would also need to be trained to follow the process of utilising the "Await Signing" feature on EMIS, which GP practices do not currently use. Therefore, the process was not rolled out.

Supplier relationships

- Communication challenges during the pilot.

VSC

- Use of VSC was explored to overcome challenges with EPS process, though a solution was not able to be reached within the pilot timeline.

Projections vs outputs

- Projected impact was not met as the solution was not able to be adopted.

Next steps

- PCN are reviewing the market to determine which automation tools would be most impactful and affordable, as solutions would need to be locally funded. Decisions are yet to be made.

6.2 Clinical documents: NCL | Barnet PCN2

Title: Automation of the Clinical Document Workflow Process (phase one).
Provider: Barnet PCN2.
Supplier: Blue Prism and Royal Free.
Pathway(s): Clinical document workflow.

Overview

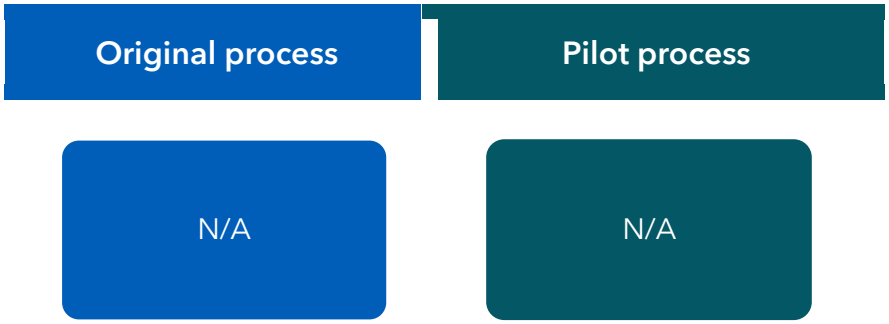
Barnet PCN2 aimed to enhance patient safety and GP practice efficiency by automating repetitive administrative processes across seven GP practices.

The pilot, in collaboration with e18 Innovation and Royal Free London, focused on using Blue Prism's intelligent automation software to streamline the clinical document workflow process. This process was chosen as it involved highly replicable, templated documents that could be filtered into standard pathways for follow-on actions, such as coding only and filing; coding and sending for an admin task; and coding and sending for a clinical action.

The original process required the workforce to have prior familiarity or experience in recognition and interpretation of medical terminology. It also involved mundane, repetitive tasks prone to human error, lack of motivation and low skill level. GP practices have experienced staff capacity and retention issues, with a lack of desirability to fulfil these roles and a lack of staff satisfaction in these roles. This has led to delays, backlogs and outsourcing to external providers at significant GP practice cost.

Unfortunately, due to numerous unforeseen challenges, the project wasn't viable within the pilot timeframe and funding envelope.

Process



Key achievements and outcomes

- Development of PDD.
- Initial scoping phase carried out by Blue Prism by reviewing Docman process at the GP practice. This resulted in an understanding of the workflow process in its current state and scoping of documents that would be eligible for the automation.
- Change in policy, championed at national level, for the use of VSC within primary care for the use of RPA.
- The first PCN within the ICB to pilot digital automation using this cloud-based automation platform.

Key challenges

VSC

- Considerable amount of budget dedicated to non-refundable VSC, which were purchased at the beginning of the pilot.
- RA challenged the use RPA. This was escalated rapidly to NHSE who were able to influence the development of national policy to enable the use of VSC for non-human (robot) profiles.
- Extension request for the unused VSC was declined.

Primary care variability and scalability

- Due to the variation of document type, style and format, a small cohort of documentation types were selected as the focus for automation, with the aim to prove concept.
- Difficulties collating enough document variations of the required templates to allow coverage for the robot.
- Search for ophthalmology letters as not always coded correctly. Therefore, the robot would have to open each letter individually.
- Lack of consistency in document naming so challenging for the robot to target certain cohort of correspondence.
- DNA letters could not be automated as wording for patient DNA would vary from hospital trust and wording of letters.
- Robots ability to 'read' impacted by the quality of documents and volume of duplication of correspondence coming into GP practices, such as emails and scanned letters.

Management resources

- Delays caused as extensive additional work was required from local GP practice IT teams. This was not identified prior to project build phase.
- Additional 50 hours of training for the individual clinical interoperator required. This was not factored into the original budget.
- The initial design of the project was scaled back as the capabilities and barriers faced by the resources available were realised.

Tech interoperability and integration

- The compatibility of Intune did not integrate with the automation platform.
- Challenges establishing a virtual desktop and installing correct software.

- Procured platform provision was not compatible with primary care resource. Therefore, there was no platform to build the automation solution within and the project ceased to move further into the build phase.
- Application to extend the use of the unused BluePrism platform was declined.
- Viability of the automation as handwritten letters difficult to automate.
- The RPA approach may not be appropriate for the process of document reading, coding and forwarding. A higher level technology, such as AI, would be more appropriate for the task of document management.

Local primary care environment

- ICB firewall security issues.
- Delays in signing off a DPIA for use of VSCs for a robot.
- Additional concerns raised around security and liability.
- Clinician time was not budgeted within the proposal, but there was a significant utilisation of clinician time.

Stakeholder relationship management

- Challenging to organise regular meetings that all stakeholders attended.

Tech developer challenges

- Internal reorganisation of the team, with multiple early project managers.

Next steps

- Champion this automation project.
- Active discussions underway with other grant organisations, such as NCL Cancer Alliance.
- Share learnings with the HIN and NHSE beyond the scope of this pilot.
- Complete PDD V2 and this automation cycle, based on further funding.

6. Key findings and learnings

Successes

Pilot artefacts

A key success of the NHSE (London) Digital First Primary Care AI and Automation Grants Scheme lies in the materials that have been produced by each pilot. These materials include process maps, process definition documents, search routines, decision trees, blueprints and learning resources. These materials collectively serve as a resource for primary care organisations to utilise when exploring their own automation journey.

These resources enable primary care GP practices and systems to glean insights from the experiences and challenges encountered during the AI and automation pilots, sharing the final processes that overcame challenges. This knowledge allows stakeholders to learn from potential pitfalls in delivery and make informed decisions around the best course of action when automating local processes to avoid unnecessary duplication of effort.

Pilot artefacts can be accessed here: Blueprints - Digital Primary Care, FutureNHS Collaboration Platform.

WhatsApp integration and use of AI chatbot

The NHSE (London) Digital First Primary Care AI and Automation Grants Scheme included the first pilot to be formally approved by the NHS IM1 team for the utilisation of an AI chatbot through WhatsApp. This groundbreaking initiative showcases the innovative integration of AI into primary care communication channels. This was a notable achievement within the grants scheme and marked a significant milestone in wider primary care.

By securing NHS approval through the IM1 team, the **call and recall: NCL, Islington GP Federation pilot** demonstrated a pioneering approach to enhance patient engagement. By embracing technological innovations, specifically an AI chatbot, patient cohorts that have not responded well to existing modes of communication could be targeted. The use of WhatsApp as a platform for the AI chatbot will expand accessibility and ease of communication, aligning with modern patient communication preferences.

The ability to navigate stringent regulatory processes and obtain approval during the pilot demonstrates its role as a trailblazer in embracing technological innovations to improve patient interactions and care. This achievement is likely to inspire further explorations and adoptions of AI-driven tools in primary care delivery and communications.

Authentication guidance for the use of robots and RPA as digital workers and profiles

Many of the pilots experienced local challenges with the existing regional authority guidance around the use of RPA for processes that required a smartcard. To support pilots with these challenges, the NHSE (London) Digital First team worked with the NHSE Platforms team to shape the development of the Secure Authentication for Robotic Process Automation guidance. The development of this guidance supported GP practices to obtain local RA clearance for deploying non-human (robot) profiles on the NHS Spine. Up until this point, these profiles were actively discouraged.

The guidance also provides an overview of considerations that are needed prior to the utilisation of RPA processes and robot profiles. It also outlines the necessary configurations for the effective deployment of virtual machines.

Due to time constraints, none of the pilots were able to implement the new CIS2 authentication solutions. However, four RPA suppliers have now expressed interest in piloting this new functionality and have begun launching pilots with the NHSE Pathways team, supported by the NHSE (London) Digital First team.

Invigorating the market

The grants scheme has proven successful in seed funding new automation solutions and scaling existing solutions across wider primary care footprints, acting as a catalyst for stimulating creativity and advancement within the market.

By funding emerging technologies and innovative solutions, the grants scheme has effectively invigorated the market. This has enabled the development of groundbreaking automated processes that may have otherwise not been launched or taken longer to do so.

The grants scheme has also encouraged a heightened sense of competition amongst suppliers, leading to an expanded array of automation solutions available to GP practices. This competitive market encourages suppliers to continuously refine and enhance their offerings, benefitting GP practices as they gain access to a wider range of innovative tools to choose from.

Use of RPA outside of the pilots

Whilst there are many challenges with delivering AI and automation at scale, there are examples of how it can be done. Modality Partnership, a GP Super-Partnership serving 470,000 patients across 10 regions, now have 35 live EMIS and TPP RPA processes in GP practices and community outpatient settings. This has resulted in over 100,000 items being processed to date, saving both clinical and administrative time.

Elsewhere, Lancashire and South Cumbria ICB have also been successful in launching five RPA processes in GP practices, with two further processes in development. This has saved thousands of GP practice staff hours since the launch in 2022, demonstrating that RPA processes can be delivered at scale across a whole ICB footprint.

Findings, challenges and learnings

Bespoke vs off-the-shelf

Pilot sites that opted for off-the-shelf automation products experienced quicker launch times compared to those developing bespoke solutions from scratch. By selecting pre-built automation tools, these pilot sites benefited from ready-made solutions that required less customisation and integration efforts.

Off-the-shelf products are designed to be plug-and-play, allowing for rapid implementation without the time-consuming process of designing, building and testing a solution. This approach enabled the pilot sites to reduce development timelines and accelerate the deployment of their chosen solutions.

In contrast, sites creating bespoke solutions faced the challenges of conceptualising, designing, redesigning and testing unique and new systems. This resulted in longer lead times before implementation.

Whilst bespoke RPA solutions can be impactful in GP practices, it is advised that off-the-shelf products should be explored alongside bespoke solutions when making a contracting decision. It is crucial that in-house process improvements and optimisation should have been carried out before exploring either option.

North West London (NWL) early learning
Through the Digital first programme NWL ICB received funding to explore automation in primary care before the NHSE (London) Digital First Primary Care AI and Automation Grants Scheme was launched.

NWL ICB were early explorers of automation in primary care and carried out engagement workshops to connect with users and prioritise areas of automation to explore. One key workstream was around the development of a bespoke diabetes recall and review automation at population level. This has not been rolled out at scale, which can be attributed to:

- Early exploration of automation meant experiences of less maturity in automation products/providers.
- Underestimating the complexity of the scope of the chosen automation process.
- Underestimating the difficulties associated with rolling out the solutions across different organisations due to variabilities in processes.
- Information Governance (IG) challenges with a lack of established usage elsewhere to assist with comparison.

Towards the end of the exploration of automation, NWL ICB evolved their approach and started to explore more off-the-shelf products from automation providers, including online patient registration and processing pathology/radiology results.

In addition, NWL ICB has a large number of SystmOne practices compared to the rest of London, which is mainly using EMIS. The ICB was also able to explore pilot SystmOne functionality around pathology automation, but still faced challenges around a lack of resources to design, implement and engage stakeholders to effect change.

Primary care variability and scalability

London's diverse primary care landscape contains a multitude of providers, each operating with its own set of processes, resulting in a lack of standardisation. This variability hinders the integration of automated processes and poses a challenge to the widespread adoption of automated solutions. This is because automated systems often require a uniform and standardised environment to function optimally.

This was further confounded by varying levels of technological readiness amongst pilot GP practices to adopt new ways of working. Addressing this variability by promoting standardised processes and fostering a collaborative approach to technology adoption is crucial for unlocking the full potential of automated processes in primary care across London.

Governance, accreditations and clinical system interoperability

Integrated Care Board (ICB) governance
ICB governance processes are rigorous and risk averse for new technologies. Sign off can often take considerably longer than initially anticipated, with some pilots noting this process taking several weeks to complete, which adversely impacted implementation timelines. Further sign off with local GP practice IT teams to agree and grant relevant access rights were also required. These should be factored into project plans and planned stakeholder engagement activities from the offset.

Data protection impact assessment (DPIA)
Obtaining approval for DPIA from ICBs can be a lengthy process. It is advisable to contact ICB IG leads as early as possible to avoid potential delays.

National toolkits and accreditations are in place to ensure GP practices and suppliers meet necessary data security requirements. It is important that these are understood by GP practices that intend to implement AI and automation solutions, as well as the time it takes to complete them so they can be factored into project plans. Examples of these include, but are not limited to:

DCB 0129 and DCB 0160

- NHS Digital recommends that DCB 0129 and DCB 0160 are adopted in all circumstances where digital products are developed or deployed to support health or social care services.
- The standards represent best practice and provide a framework for clinical risk management. The application of risk will reduce the likelihood of harm outcomes. Read more about NHS Digital Recommendations here.
- Find out more: Applicability of DCB 0129 and DCB 0160, NHS Digital.

Cyber essentials certification

- Cyber essentials is a government-backed, industry-supported scheme to help organisations protect themselves against common online threats.
- Find out more: Cyber Essentials scheme overview, GOV.UK.

Data security and protection toolkit (DSPT)

- DSPT is an online self-assessment tool that allows organisations to measure their performance against the National Data Guardian's 10 data security standards.
- All organisations that have access to NHS patient data and systems must use this toolkit to provide assurance that they are practising good data security and that personal information is handled correctly.
- Find out more: Data Security and Protection Toolkit, NHS.

The Medicines and Healthcare Products Regulatory Agency (MHRA)

- Find out more: MHRA Software flowchart, Medicines & Healthcare Products Regulatory Agency.

Penetration (Pen) security testing

- Find out more: Penetration testing, NHS Digital.

IM1 pairing integration

- Find out more: IM1 pairing integration, NHS Digital.

Supplier Conformance Assessment List (SCAL) approval

- Find out more: Supplier Conformance Assessment List (SCAL), NHS Digital.

Award Digital Technology Assessment Criteria (DTAC)

- Find out more: Digital Technology Assessment Criteria (DTAC), NHS Transformation Directorate.

Clinical system interoperability and witness testing

- Process will be dependent on what the system is being integrated with.

Management resources

The success of AI and automation pilots was significantly influenced by the availability of clinical staff for process design and product testing, as well as the availability of dedicated change management resources to support delivery.

In instances where clinical staff were able to allocate time effectively to actively participate in the design and testing phases, the AI and automation pilots tended to progress more smoothly.

The availability of dedicated change management resources played a crucial role in facilitating the adoption of automated processes. Adequate support in managing the transition, training staff and addressing concerns benefited the overall delivery of AI and automation pilots.

Conversely, limited or sporadic availability of clinical staff and insufficient change management resources often led to delays. This was because the solutions faced challenges in gaining momentum and appropriate sign off.

The absence of clear regional guidance on how to implement RPA in primary care and agreed frameworks for preferred suppliers placed an additional burden on ICB teams. These teams were often

not factored into project plans and planned resources for the pilots.
Teams impacted included:

- Registration Authorities (RA);
- Information Governance (IG); and
- Information Technology (IT) departments.

These teams were required to follow varying ICB protocols and assurance processes to assess each product locally, factoring interdependencies with existing systems and processes that could be impacted. In some cases, this led to bottlenecks in implementation and frustration from suppliers, GP practices and ICB teams.

Measuring success, ROI, affordability and pilot lengths

A 12 month pilot may not provide a sufficiently robust timeframe to accurately determine the ROI and assess the long-term affordability of automated processes. The relatively short duration of the pilots is unlikely to fully capture costs, benefits and operational impacts that can emerge over an extended period.

To achieve optimum ROI from RPA solutions, robots would need to operate on a 24/7 basis across multiple pathways to maximise their benefits. As the pilots were not scaled to this level, the true ROI is yet to be achieved.

Therefore, the insights and initial findings from these pilots, whilst valuable, may be insufficient for making comprehensive judgments about the enduring financial viability and benefits of automated processes in the long term. Extended monitoring and assessments are required to determine accurate and comprehensive conclusions regarding the investment and sustainability of AI and automation initiatives.

Projections vs outputs

The projected impact of the automated processes in many of the pilots fell short of expectations, with several key factors contributing to this disparity. Initially, some pilots experienced delays in receiving funds, halting progress and pilot initiation activities. There was also a tendency for pilots to overestimate the speed at which the automated systems could be fully integrated into existing workflows. The complexity of the implementation process, coupled with unforeseen technical challenges, resulted in delays and hindered the timely realisation of expected benefits.

Another contributing factor was the availability of staff to be trained to optimally utilise the new systems. In some cases, there was also resistance amongst staff to adopt new ways of working, resulting in a gap between the intended and actual utilisation of the technology.

Additionally, the initial projections were unable to fully account for the ever-changing landscape of primary care in London. Discovering additional regulation requirements that needed to be adhered to, shifts in organisational priorities and setup and evolving clinical practices (eg North Central London Locally Enhanced Services (LES)) disrupted the delivery of initial plans. In some cases, these factors caused pilots to draw to a standstill whilst they were addressed. Moreover, the scalability of the

automated solutions became challenging whilst working across borough boundaries, such as automated text solutions not being processable at borough level.

In retrospect, most of these challenges were unavoidable and to be expected with the delivery of exploratory and innovative pilots.

Guidance and frameworks

The absence of national and regional NHS guidance and frameworks relating to RPA in primary care impeded the delivery of the AI and automation pilots in some instances. This created a challenging environment where governance checks were required to be conducted locally for each ICB. The lack of standardised guidelines contributed to a fragmented approach, with each pilot navigating its own path through the complexities of implementing automation with their ICB. This decentralised approach consumed valuable time and resources, creating bottlenecks, delaying delivery timelines and impacting ICB staff capacity.

During the course of the pilots, the NHSE (London) Digital First team inputted into the development of the Secure authentication for Robotic Process Automation guidance. This guidance helped pilot GP practices gain local RA clearance for the use of non-human (robot) profiles on the NHS Spine.

A regional/national primary care framework of preferred automation suppliers would support GP practices and ICBs to negotiate contracts, offering a standardised set of guidelines that could be uniformly applied. This would save time across the primary care system.

Core system enhancements

Whilst automated processes can be initially impactful, they can become redundant or require adjustments as enhancements to core systems are made over time, such as SystmOne lab reports filing and updates to EMIS. As core systems undergo upgrades or incorporate advanced features, the need for standalone automation can diminish. Therefore, GP practices should assess the longevity and adaptability of their automated solutions, ensuring that potential ongoing enhancements to core systems are considered in-depth before decision-making.

Smartcards

The uncertainty surrounding the appropriate use of RPA with physical smartcards, VSC and virtual machines has presented a particular challenge for pilots targeting processes that require access to the NHS Spine.

A further barrier has been the high cost of implementing and maintaining virtual smartcard licences, often making their use in primary care unaffordable.

Since the pilot launch, the NHS Pathways team have published Secure authentication for Robotic Process Automation guidance whereby alternative Care Identity Service (CIS2) authentication services are explored. This could break down some of the existing barriers around utilising RPA for processes that require access to the NHS Spine by providing more affordable alternatives to VSC, such as Windows

Hello for Business. Four RPA suppliers have expressed interest in piloting this new functionality and have begun launching pilots with the NHSE Pathways team, supported by the NHSE (London) Digital First team.

Local pilot and primary care challenges

An overarching theme of the local primary care challenges revolves around operational disruptions and cultural challenges within PCNs. The challenges span across different domains:

- Estates: loss or change of premises during the pilot, for example.
- Operational: difficulties with catchment areas, website providers and Human Resource concerns.
- Staffing: changes in project team personnel, recruiting to vacated project roles and notice periods.
- Resistance to change: persisting clinical safety queries despite completed safety checks and risk assessments. Some GP practices experienced resistance to adopting new technologies and disruptions to existing working procedures. Adjusting to process, changes varied amongst individual GP practices.
- GP practice engagement: challenges in GP practice engagement and capacity during the launch, impacting the momentum of implementation.
- Variability in processes: a multitude of processes and protocols exist, even within PCN boundaries.

Negative outcomes

Whilst the AI and automation pilot evaluations have few reported negative outcomes, it is important to acknowledge that they may only become apparent over an extended duration. As the pilots continue to run, unforeseen challenges or unintended consequences may surface. Therefore, continued assessment and mitigation to address emerging negative outcomes is necessary. Safety netting processes are required in the short and long term to continue to mitigate risks, including failsafe audits, spot checks and clinical oversight. These tasks are often more intensive to begin with to ensure safety and then reduced over time.

Pilot relationships with NHSE (London) Digital First team

- Feedback on the NHSE (London) Digital First team has been consistently positive across the pilot evaluations. The team was described as extremely supportive throughout the grants programme, providing structured feedback and facilitating constructive discussions.
- The team was noted as approachable, creating a positive environment during catch-up sessions and quarterly webinars, as well as encouraging shared learning.
- The team was commended for its patience, understanding, commitment, coaching and active support with various issues, including project management, VSCs and regulatory guidance. There were few identified areas for improvement, however, it was mentioned that there were delays with initial invoice payments being released, which caused project start delays.
- Overall, the NHSE (London) Digital First team was praised for its role in supporting and guiding the pilots through their automation journey.

Pilot relationships with automation suppliers

- The feedback on automation suppliers varies but is generally positive. Multiple pilots highlighted the level of support, dedication, responsiveness, adaptability, prompt issue resolution, commitment to project success and ability to continuously make improvements based on GP practice feedback.
- However, deteriorating relationships over time are referenced in some instances, with concerns around communication and responsiveness, resource allocation, delays in releasing products and perceived unwillingness to address issues effectively or fulfil contractual agreements.
- Other challenges raised were around the suppliers' lack of familiarity with clinical systems and not setting realistic expectations in light of existing GP practice admin and clinical commitments.

7. Recommendations

Understanding the problem and whether automation is appropriate

Develop a strong common view of the problem across all stakeholders and determine whether automation is the most appropriate solution to the problem. Processes are best fixed at source or through APIs. A process should be fully optimised and consistent before trying to automate it.

Co-designing with the GP practice staff during the grants scheme was essential. The staff are operational experts regarding issues in their local systems and processes and understand when and where automation would be appropriate. Clinical input is key to ensuring safety.

Networking with individuals already involved in similar projects is another great way to learn from their experiences.

Start small and scale

A phased approach is often most effective when developing new automations, starting with a simple use case that can be easily expanded.

Thoroughly scope available products

When considering a product, thoroughly examine what the solution can and cannot do in relation to existing and proposed pathways and within what timescales. Weigh up the risks and benefits of off-the-shelf vs bespoke. Consider the level of autonomy of the product and the availability of support during the pilot and after supplier involvement concludes.

Supplier familiarity with primary care systems

The ease of setting realistic expectations for the project and its delivery times is increased if the supplier is familiar with the primary care landscape, infrastructure, clinical systems and its challenges.

Contracting

Supplier contractual agreements are important. It is recommended that the negotiation of product licenses should start after technical integration has been established. Due diligence is crucial when choosing stakeholder partners. AI and automation is a rapidly evolving space, therefore GP practices may wish to avoid long-term contracts that do not allow for ease to exit or varying contracts.

Roles, responsibility and accountability

Ensure project team and stakeholder roles, responsibilities and accountabilities are clear. Also ensure that the allocated change management resource is appropriate throughout the pilot, particularly during intensive phases. Clinical roles are essential in initial scoping, co-designing and testing. Building in clinical quality and safety from the offset is essential.

Ownership of GP practice teams is also important and can be monitored through continued feedback (PDSA) to ensure staff remain engaged and assured that they are building the solutions. Costing for project support from stakeholders should be included in the business plan.

Realistic timeframes

Set realistic timeframes from the outset and think through project details early on – challenges and learning experiences are to be expected. Build flexibility into the timeline to accommodate setbacks and pauses that may arise. Resilience is key to overcoming obstacles.

Governance and regulatory compliance

Understand the end-to-end governance and clinical safety processes within your ICB to launch an automation solution. Automated solutions should be assessed. If solutions are identified to be considered a medical device, they will be subject to further regulatory compliance challenges that may impact delivery timelines.

Co-production

Co-produce and maintain continuous engagement with GP practices and stakeholders throughout the project. This will ensure momentum and that the solution is maintained, particularly through perceived lulls in activity. Explore the potential impact that new processes may have on existing workflows and downstream services.

Ongoing training and optimisation

Provide ongoing support through accessible training documentation and videos that are available 24/7. This will ensure that staff understand how to optimally use the automated systems and can access the material at a time that is convenient to them.

Ongoing evaluation and review of data and risk

Continuing to review and evaluate new information helps to mitigate emerging risks and issues through the building of audits and safeguards.

8. Next steps and closing summary

Next steps

Guidance and frameworks

- Develop clear AI, automation and RPA guidance and frameworks at a national and regional level to facilitate smoother and more efficient adoption of AI and automation in primary care.
- Develop a London-wide matrix of governance and assurance processes for new suppliers and processes.

Funding streams

- Explore future funding streams to scale and develop new automated solutions.

Market development

- Support maturing of AI and automation marketplace to help increase benefits and reduce costs, making products more viable.

ICB automation programmes

- ICB Automation programme development and support.

Communications and engagement

- Host automation and digital tools event to promote opportunities.
- Continue to showcase AI and automation use cases at national events.
- Share pilot artefacts, including process maps, blueprints and decision trees.
- Develop AI and automation communications, engagement infographics and case studies of successful use of AI and automation tools.
- Engage patients and public through communications and engagement relating to the use of AI and automation in primary care.

Maximise bot use

- Maximise the utilisation of robots in line with their full capacity to ensure optimum ROI. Continue to build more operational and clinical pathways that can be supported by AI and automation to maximise the use of the 24/7 resource and realise the full benefits.
- Explore the potential of robots operating across wider footprints eg ICB or London level.

CIS2 authentication pilots

- Launch CIS2 authentication pilots in general practice, providing a proof of concept for non-smartcard authentication when using the NHS Spine.

Closing summary

The AI and automation pilots have illuminated the vast potential within primary care, showcasing how the solutions can liberate valuable time and resources. This empowers primary care providers to concentrate on delivering more personalised and timely care, thereby enhancing patient experience and outcomes.

Additionally, these pilots have brought attention to the challenges around supporting and adapting to the rapidly evolving digital landscape within primary care. However, each challenge presents an opportunity for innovation, collaboration and co-production.

AI and automation solutions will be the ultimate tools for enhancing primary care capabilities, driving innovation and solving some of the most pressing challenges. By leveraging the insights gained from these pilots and the use of AI and automation initiatives elsewhere, we can seek to navigate these obstacles and contribute to the development of primary care services that are not only relevant for the present but also resilient for the future.