REALISING CLINICAL AND FINANCIAL VALUE THROUGH DIGITALLY ENABLED REFFERAL AND APPOINTMENT MANAGEMENT

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1. Executive Summary

The NHS faces urgent pressures to recover elective care performance, enhance patient engagement, and operate efficiently within stringent financial constraints. Aligned with NHS England's 2025/26 capital funding programme (1), this paper outlines assumptions, evidence-based expected outcomes, and the financial and clinical impacts achievable through digitally transforming referral and appointment management using the NHS App, Patient Engagement Portals (PEPs), and the NHS e-Referral Service (e-RS).

2. Strategic Policy Context

The NHS is undergoing a major transformation to recover elective care performance and deliver a more responsive, patient-centred system. The cornerstone of this transformation is the January 2025 NHS England plan, "Reforming Elective Care for Patients"(2), which sets out new national expectations, timelines, and digital enablers to improve outcomes and restore public confidence. This direction is further reinforced by the NHS 10-Year Plan released in July 2025, which emphasises a long-term commitment to digital-first services, including universal NHS App integration for appointment booking, access to care records, and patient-initiated services (3).

- Key National Commitments are (4,5):
  - Referral-to-Treatment (RTT) Target Reform: by March 2026, the NHS aims for 65% of patients to start treatment within 18 weeks, en route to achieving the 92% national target by 2029. NHS e-Referral Service (e-RS), a digital platform for GP referrals and outpatient bookings, improves referral certainty, reduces paperwork and delays, and enhances governance.
  - Each NHS Trust must deliver at least a 5 percentage point improvement in RTT performance within 2025/26.
- Digital-First Elective Care
  - NHS England is clear that "elective care must be increasingly personalised and digital".
  - Trusts are expected to empower patients with greater choice and control by surfacing their care options, managing appointments, and communicating through digital platforms like the NHS App and PEPs such as Dedalus Patient Aide (6) or Swiftqueue (7), where these are integrated and aligned with NHS App standards.

- NHS App Integration & Digital Booking
  - To enable at least 70% of elective appointments to be booked, amended or cancelled through the NHS App.
  - To use appointment notifications, patient questionnaires, and digital reminders to reduce DNAs and improve productivity.

- To adopt Management Information v2 (MIv2) standards to track outcomes.

These align with digital targets in the NHS Operational Planning Guidance (2025/26).

Diagnostic Reform & Same-Day Triage

- As part of the digital reform, patients presenting with symptoms or findings (e.g. breathlessness, breast lumps) or with suspected conditions (e.g. asthma) will increasingly be able to access direct diagnostic pathways without needing to see a GP or consultant first.
- These new same-day pathways require digitally integrated referrals, scheduling and real-time results sharing (8).

Productivity, Efficiency and Digital Funding

Trusts are expected to deliver:

- A minimum 4% increase in productivity
- A 30% reduction in agency spend
- Increased use of e-Referral Service (e-RS) APIs for automated triage and booking (9)

Funding Opportunity

To support these policy goals, NHS England is offering capital funding of up to £500k per Trust in 2025/26 for:

- Procuring and deploying PEPs
- Connecting to the NHS App
- Integrating e-RS FHIR APIs
- Implementing digital features like notifications, questionnaires, and PIFU pathways

Funding is contingent upon alignment with national digital commitments, delivery of measurable benefits, and reporting through MIv2 and NHS App analytics.

This strategic context underlines the urgency and opportunity for Trusts to adopt digital platforms and submit compelling funding bids that clearly align with national reform goals.

Reducing Did Not Attend (DNA) rates is a key lever for improving elective pathway flow, increasing clinical capacity, and reducing waste in outpatient services.

3. Evidence-Based Clinical & Financial Benefits

3.1 DNA Reduction: Evidence-Based Clinical & Financial Implications

Reducing Did Not Attend (DNA) rates is a key lever for improving elective pathway flow, increasing clinical capacity, and reducing waste in outpatient services. NHS England considers DNAs not just a behavioural challenge, but a complex, system-wide issue rooted in both personal and institutional barriers (10).

Scope of the Problem

Across the NHS, DNA rates in outpatient settings typically range from 5% to 10%, but can exceed 15% in some services and regions. Every missed appointment represents a lost clinical opportunity, increases backlogs, and delays treatment for other patients. Additionally, DNA episodes result in:

- Wasted clinician time and room usage
- Unnecessary rebooking workload
- Increased wait times and longer RTT pathways

Impact of Digital Appointment Reminders

A systematic review of over 40 studies (11) found that forgetfulness remains one of the most common reported causes of missed appointments, accounting for 8% to 45% of DNAs, depending on population and context. Other contributing factors include:

- Poor timing or scheduling compatibility (e.g., work conflicts, transport, childcare)
- Poor communication or unclear appointment details
- Anxiety, fear, or previous poor experiences
- Hospital or administrative errors (affecting up to 60% in some reports)

This multifactorial nature of DNAs means that a single solution will not suffice, but appointment reminders stand out as consistently effective across nearly all settings.

According to NHS England, sending reminders via letter, SMS or phone can reduce DNAs by up to 80%, especially when the communication is:

- Timely (within 48–72 hours before the appointment)
- Two-way (patients can respond to confirm or cancel)
- Accessible (clear, concise, and offered in appropriate formats) (10)

Patient Engagement Portals and the NHS App

The implementation of digital platforms such as the NHS App and integrated PEPs takes reminder functionality further by:

- Allowing patients to view, amend, or cancel appointments independently.
- Providing real-time access to upcoming bookings, reducing confusion.
- Sending in-app notifications as supplementary or alternative to SMS.
- Offering self-service booking for diagnostics or follow-ups, reducing the need for administrative contact.

Such systems offer scalability beyond what traditional communication methods can provide. Trusts using digital appointment tools have reported DNA rates as low as 4.1%, alongside 57% reductions in postal costs, with patients across all age groups engaging positively with digital channels (12,13).

Tools such as the Dedalus Swiftqueue (7) system go further by including other family members and carers with reminders for appointments to the patient themselves. This ensures that those with reduced access to, or those who lack familiarity with, digital platforms are not disadvantaged and can be supported with the management of their appointments and documentation during this digital transition.

Financial Value of Reducing DNAs

Reducing DNA rates delivers immediate and measurable financial benefits:

Metric	Value Estimate
Average cost of missed outpatient appointment	£120 - £160 (NHS benchmark)
Reduction from 10% to 5% DNA in a 100,000-appointment Trust	≈ £750,000+ annual cost avoidance
Reclaimed clinical time (e.g., outpatient slots)	Potential for 5 - 10% increase in throughput

These benefits multiply further when digital reminders are coupled with automated rebooking workflows, which allow vacant slots to be offered to waiting patients in real-time, minimising lost capacity.

Imperial College Healthcare NHS Trust provides a compelling example of the impact of self-booking platforms. In 2024, patients using Swiftqueue to schedule X-ray exams had a DNA rate of just 3.1%, compared to 12.1% for appointments scheduled manually by admin staff, a relative reduction of 74%. Cancellations were also significantly lower (11.8% vs 31.0%). These findings underscore how patient empowerment through digital self-booking directly improves attendance and reduces operational waste.

In large, multicultural populations, language and communication challenges are a known driver of DNAs, especially for diagnostic and screening appointments. Digital platforms that support multi-language messaging, simplified appointment summaries, and visual prompts can help reduce these avoidable missed contacts. This capability is especially relevant for systems like Swiftqueue (7), which have explored multi-language capabilities in diverse localities.

Similarly, digital systems offer untapped potential in national screening programmes, where automated invitations and scheduling reminders (via SMS, app notifications, or email) can increase patient uptake, reduce manual administration, and help Trusts meet public health targets more efficiently.

3.2 RTT Improvement: Evidence-Based Clinical & Financial Implications

Improving Referral-to-Treatment (RTT) performance is critical to restoring elective care efficiency and patient outcomes. Digital referral management, including e-RS APIs, intelligent triage, and patient engagement, can significantly reduce treatment delays and system-wide costs.

Scope of the Problem

As of April 2025, about 7.4 million pathways were waiting for treatment, with nearly 3 million waiting over 18 weeks, and 190,000 over 52 weeks, median wait was 13.3 weeks, up from 7.2 weeks before COVID-19 (14,15).
The long-term consequences are serious: patients waiting over 18 weeks exhibit increased healthcare utilisation, including 17.9 extra secondary-care contacts and associated prescriptions, incurring hidden demand and costs (16).

Evidence of Impact of Digital Referral & Triage Tools

- e-RS API Integration

  Automates referral flow, reducing administrative steps and pathways delays. Nearly 95% of GP referrals to first outpatient appointments now use e-RS (17).

- Intelligent & Automated Triage
  - The RITA system (referral and intelligent triage) for gastroenterology automatically triaged 40–50% of urgent cancer referrals, reducing the RTT pathway by 1-3 days (~15% of a 2-week wait) (18).
  - e-Referral management systems in surgical settings have consistently reduced pathway time and inappropriate referrals (19).

Financial and System Benefits

Digital referral and triage innovations offer measurable benefits due to faster treatment access, significant patient and system cost savings, reduction in unnecessary secondary-care utilization and direct alignment with national RTT and elective recovery targets.

Metric	Estimated Impact
RTT reduction of 2 - 3 days	~15% faster pathway completion
Reduction in waiting over 18 weeks	Lower failure demand, fewer unplanned contacts
Reduced healthcare utilisation per patient	Extra secondary care contacts avoided (16)
Cost avoidance	Savings on repeat referrals, cancellations, and inpatient escalation due to delays

These systems also align with national RTT recovery targets: a 5 percentage point improvement by March 2026, en route to renegotiated standards of 65% RTT within 18 weeks and elimination of long waits (4,5).

3.3 Admin & Workflow Efficiency: Evidence-Based Operational and Financial Impact

Improving administrative and triage workflows via API-enabled automation is a powerful mechanism for increasing productivity, reducing errors, and reallocating staff time to more valuable tasks.

Scope of the Current Challenge
In many Trusts, referral and triage processes remain manual:

- Staff must log into the e-RS portal, download or scan referral documents, and manually enter data into EPR/PAS systems.
- This process is time-consuming, tedious, and prone to human error.
- As referral volumes rise, especially post-pandemic, Trusts have expanded admin teams or implemented costly temporary robotic solutions to cope, without addressing long-term inefficiency.

Impact of e-RS API Integration
NHS England's Digital Integration page outlines multiple benefits from API usage (20), including:

- Automating document downloads (referral attachments, Advice & Guidance summaries)
- Eliminating manual re-keying of referral data
- Reducing data-entry errors

- Streamlining document processing workflows
- Improving access to real-time data and reducing system-switching

Real-world implementation at Imperial College Healthcare NHS Trust confirms these benefits in practice. Using Swiftqueue to enable self-booking for plain film X-ray exams, the Trust saw significant administrative gains: patients completed 93.4% of referrals into attended appointments, compared to 82.8% under admin-scheduled workflows. This was coupled with a 5-minute per booking time saving and markedly lower DNA (3.1% vs. 12.1%) and cancellation rates (11.8% vs. 31.0%), demonstrating that self-service scheduling can improve throughput while reducing administrative burden.

Metric	Admin-Scheduled	Swiftqueue-Scheduled
Total Demand	9,933	4,189
Completed Activity	8,225	3,912
DNA Rate	12.1%	3.1%
Cancellation Rate	31.0%	11.8%
Booking Completion Rate	82.8%	93.4%

Imperial Swiftqueue Case Summary. *Source: Imperial College Healthcare NHS Trust (2024)*

Other case studies also show that this could translate into:

- 25 - 40% time savings for administrative teams
- 50%+ reduction in overnight tasks, such as retrieving and reconciling referrals
- Better data accuracy, reducing downstream correction work and clinical risk (21)

Streamlined Triage & Reporting Workflows

Further automation via the e-RS FHIR API allows:

- Automatic processing of routine, guideline-based referrals (e.g., age, demographics, basic clinical criteria) (22)
- Unattended workflows to accept or defer referrals without manual review (using Application-Restricted mode) (22)
- Elimination of weekend or out-of-hours backlogs, ensuring referrals awaiting triage are actioned promptly, improving patient flow and RTT performance

Case in point:

A Trust demonstrates how the e-Referral Service (e-RS) FHIR API, combined with RPA and eForms, streamlines referral management. Processes that once took five minutes per referral for manual data entry are now completed in seconds via

unattended, automatic workflows. This eliminates backlogs, improves patient flow and RTT performance, and frees staff for higher-value tasks, resulting in significant time and resource savings for the Trust (23).

Operational and Financial Benefits
Completing a typical Trust's API integration leads to significant savings:

Benefit Category	Estimate
Admin time saved	25-50% reduction in referral processing time (approx. 2-4 hours daily per admin Full Time Equivalent) (21)
Staff redeployment	Enables reassignment of 1-2 FTEs to core tasks or elimination of agency or bot resources
Error reduction	Fewer transcription mistakes, leading to improved patient safety and less follow-up
Faster patient processing	Shorter triage queues result in improved pathway flow and RTT performance
System usability gains	Single-system access reduces document handling, improving staff satisfaction and efficiency

API-driven automation in referral management delivers substantial administrative efficiencies, cost reductions, and improved patient flow. These improvements support Trusts' need to deliver at least 4% productivity gain and reduce reliance on agency or temporary staffing, exactly as required by NHS England's 2025 elective reform .
Integrating the e-RS FHIR API is thus not just a digital upgrade, it is a strategic lever for operational transformation.

3.3.1 Marginal gains in high volume services

By delivering small improvements in high volume services such as Phlebotomy or Radiology the overall impact can be quite significant. This can be viewed both in terms of administrative efficiencies achieved as well as the ability to maximise resource usage, do more with the same.
Wrightington, Wigan and Leigh were classic examples of this. By taking advantage of clinic management efficiencies in Swiftqueue, reducing administrative burden on Phlebotomists and utilising a digital call in process, WWL reduced Phlebotomy appointment times from 6 minutes to 5 minutes. This resulted in an additional 750 appointments being made available each week reducing the wait times for patients significantly. This extrapolated to an increase in capacity of 20% across the network, essentially adding one extra days additional capacity every week.

3.4 Staff Retention and Sickness

The recruitment and retention of qualified staff such as phlebotomists is a challenge for many organisations as is maintaining a level of staff sickness absence within acceptable norms. Prior to the introduction of Swiftqueue a number of our customers described their Phlebotomy service as chaotic and lacking control. This in turn led to unhappy and often angry patients who were not receiving the service in a managed and timely manner. In one reference site this led to a staff sickness level of 12%, well above the national average.

Post the introduction of Swiftqueue the staff sickness levels went down to 1% significantly below the national average which currently stands at 5.5%. Whilst the cost if finding replacement staff was not calculated it can be assumed to be significant.

It should also be noted that post Swiftqueue implementation at the same Trust patient complaints fell to 0.

4. Measuring Success: A Suggested Framework for Continuous Improvement

To ensure that digital transformation efforts deliver sustained value, NHS Trusts must adopt a structured and data-driven approach to evaluation. Effective measurement should capture not only clinical and operational improvements, but also user experience, gathered through patient user forums, and financial return.
Trusts implementing referral and appointment management enhancements via the NHS App, PEPs, and e-RS APIs should benchmark and continuously monitor the following metrics:

- Did Not Attend (DNA) Rates: Monitor pre- and post-implementation DNA trends, particularly across high-volume specialties. A consistent reduction in DNAs—especially when combined with two-way SMS, app notifications, and digital self-management—is a key indicator of improved patient engagement and pathway utilisation.
- Time to Appointment or Triage: Assess the speed and efficiency of API-enabled referral pathways, including time from referral to triage, and from triage to first appointment. Improvements in this area directly correlate with reduced RTT delays and better patient outcomes.
- Administrative Time Saved: Quantify reductions in manual data handling, printing, and call handling. Capturing time savings for booking teams, referral management staff, and clinical admin can help build a robust case for workforce reallocation or cost savings.
- Patient Experience and Digital Satisfaction: Use post-visit surveys, Friends and Family Test responses, and app analytics to track patient satisfaction.

Key indicators include ease of use, clarity of information, perceived control, and responsiveness of digital channels.

- Financial Savings: Calculate cost avoidance through reduced postage and paper use, lower administrative overhead, and increased clinic efficiency. Additionally, track opportunity costs avoided, such as filling appointment slots that would otherwise go unused due to DNAs or untriaged referrals.

Together, these metrics form a powerful performance and benefits framework. They also align with NHS England's expectations for MIv2 reporting, monthly highlight reports, and value-for-money accountability linked to capital funding. By embedding these measures into operational dashboards, Trusts can demonstrate real-world impact, course-correct when needed, and support scale-up of successful models.

5. Conclusion & Call to Action

Digitally transforming appointments and referrals delivers clinically meaningful and financially compelling outcomes—faster triage, fewer DNAs, empowered patients, and cost savings. Backed by official NHS benefits, societal pilots, and academic evidence, Trusts now have a strong case to bid for capital funding. Trusts should use this evidence to shape a capital funding bid, leveraging existing PEPs and integrating e-RS APIs to meet March 2026 targets and unlock elective capacity gains.

Glossary

PEP, Patient Engagement Portal: A secure digital platform that allows patients to interact with their healthcare provider. Functions include viewing, amending, and cancelling appointments, receiving reminders, completing questionnaires, and accessing clinical information. PEPs are often integrated with the NHS App and Electronic Patient Records (EPRs).

NHS App: A national digital application provided by NHS England that enables patients to access a range of healthcare services, including booking appointments, viewing test results, and managing prescriptions. Trusts can surface PEP features within the NHS App to support digital referral and appointment management.

e-RS – NHS e-Referral Service: A national platform that allows GPs and other referrers to send referrals electronically to secondary care. It improves referral certainty, reduces paperwork, and allows appointment booking. The e-RS FHIR API enables integration with local systems and supports workflow automation.

FHIR API – Fast Healthcare Interoperability Resources Application Programming Interface: An international standard for exchanging healthcare data electronically. The e-RS FHIR API allows Trusts to automate referral data

exchange between the NHS e-Referral Service and their internal systems, improving speed and reducing manual data entry.
RTT, Referral to Treatment Time: A key NHS performance measure that tracks the time from a patient's referral to the start of their treatment. The NHS standard is 18 weeks. RTT is a central metric in NHS elective recovery programmes.
DNA – Did Not Attend: A term used to describe when a patient misses a scheduled appointment without prior notice. High DNA rates negatively affect clinic efficiency, waiting times, and resource utilisation.
MIv2, Management Information Version 2: An NHS reporting standard used to capture digital adoption metrics and clinical outcomes. Trusts receiving capital funding must commit to submitting MIv2-compliant data to NHS England.
PIFU – Patient-Initiated Follow-Up: A model of care where follow-up appointments are only scheduled if the patient feels they need one, rather than routine reviews. It empowers patients and reduces unnecessary outpatient activity. PIFU can now be supported digitally via the NHS App and PEPs.

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