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IMPROVING URGENT AND EMERGENCY CARE DECISIONS IN THE SOUTH WEST

NAV MUSTAFEE ,
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RACHAEL SHINE

Accident and Emergency (A&E) departments provide urgent and emergency care services for serious and life-threatening conditions, while other services such as Urgent Treatment Centres, Minor Injury Units (MIUs), Walk-in Centres deal with many of the more common minor injuries and minor illnesses for which people may attend A&E.

A “four-hour standard”, set in 2010, states that at least 95% of attendances are admitted, transferred, or discharged within four hours of their arrival at any type of urgent and emergency department. By 2016, after several years of stability, performance against NHS A&E waiting times had been showing a sustained decline. In December 2022, an intermediary

threshold target of 76% was introduced, to be met by March 2024, with further improvements expected in 2024/25. The Keogh Review [1] of Urgent and Emergency Care stated that patients with urgent but non-life-threatening needs should be treated outside of hospitals, with care delivered in or as close to peoples' homes as possible. It was important to spread patient demand amongst regional facilities to reduce waiting times.

High volumes of patients attending A&E can lead to over-crowding, rising pressure on A&E services and poorer experience for patients. The NHSquicker platform was developed in response to these issues, to help patients in need of non-life-threatening urgent care to make an informed decision about suitable alternatives available close by, with shorter wait times than their local A&E.

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ADDRESSING THE PROBLEM

A team of researchers from the University of Exeter Business School collaborated with hospital colleagues at South Devon and Torbay NHS Foundation Trust to model the performance at the A&E department at Torbay Hospital. The modelling also considered MIUs and Urgent Care Centres (UCCs in South Devon. They found that whilst all MIUs/UCCs met the four-hour standard, A&E was underperforming by 20% [2].

The University team investigated how existing data, already captured by the NHS, could be used to relieve pressure

on A&E departments. In 2016, they brought together a group of experts that included databases and business intelligence professionals from the NHS, operational researchers, clinicians and managers from NHS Trusts in the South West of England – and founded the *Health and Care IMPACT Network* to work on a solution.

Together they agreed on a format for waiting time data from A&E departments, MIUs/UCCs and other centres for urgent care. A common data standard was necessary as the objective was to develop a digital platform at a regional level, rather than a Trust-specific solution, ensuring that the platform could receive data feeds from multiple urgent care patient-flow systems.

The research team developed a digital solution to reduce pressure on busy A&E departments by giving patients the ability to make real-time informed choices on the best place to go for urgent care. Using system integration, the team developed a digital platform and the *NHSquicker* [3] app to provide live waiting times for A&E departments and other centres of urgent care. By transforming real-time data into actionable insights and nudges, NHSquicker is designed to encourage patients to choose the most appropriate treatment facility for their condition, alongside the factor of waiting times, so that only those with the most serious conditions present at A&E and those patients can be seen quicker. This reduces demand and waiting times at A&E, and shapes demand across urgent-care facilities by encouraging patients to choose a destination with a lower waiting time. The free app, and the website, has been operational since 2017 and empowers patients to make more informed decisions about suitable alternatives to

A&E for non-life-threatening urgent care needs. This not only reduces the wait experienced by patients but also supports the national NHS four-hour standard agenda.

IMPACT OF NHSQUICKER

Launched in 2017 across Devon and Cornwall, we have since expanded the reach of the real-time platform. Version 3.0 is the latest release of NHSquicker. As of April 2024, NHSquicker receives live data from 37 centres of urgent care, including seven A&E departments across the South West of England. The app is available to 1.9 million people in Cornwall, Devon and Somerset.

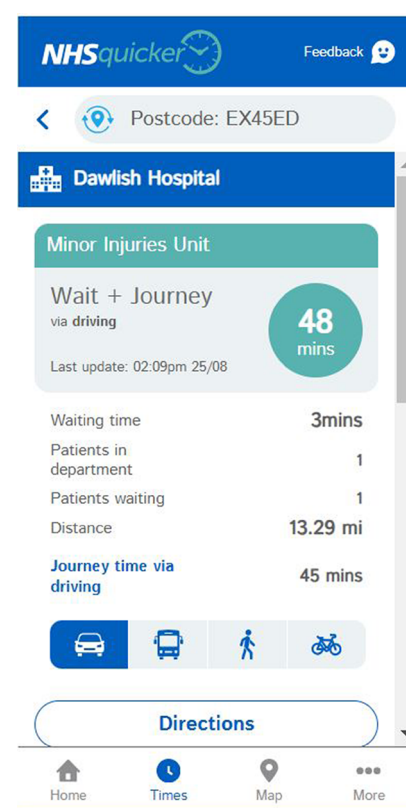


IMAGE 1. NHSQUICKER COMBINES REAL-TIME WAITING TIME AND JOURNEY TIME TO ENABLE PATIENTS TO MAKE INFORMED CHOICES ON THE BEST PLACE FOR URGENT CARE.

The platform supports easy integration of new real-time data feeds from Trusts that capture patient flow data using systems like *EPIC* and *Symphony*. As well as the user-facing app and website/desktop-based application (accessed using a browser), it includes a business intelligence dashboard designed for use in urgent-care centres. These analytics provide evidence of how the public choose to interact with the app, for example by navigating to travel

directions for an MIU/UCC, what time of the day the public are looking for urgent care services, and more. We are initiating analysis on two questionnaires integrated into the app, which have been collecting responses since the launch of Version 2.0. This feedback will help us to understand how we might improve the platform for supporting patient choice and improving the waiting times in urgent care facilities across the region.

In 2022, the team was awarded the Lyn Thomas Impact Medal [4] by the Operational Research (OR) Society. The medal is awarded in recognition of academic OR research which best demonstrates both novelty and real-world impact backed up by evidence. The work towards NHSQuicker was also developed as a REF2021 [5] Impact Case Study for the Business and Management assessment panel (UOA17). The REF impact study “*Designing and implementing a digital platform to reduce A&E peak time demand across the South West through the provision of real time information to empower patient decision-making*” used impact-related data from early adopter Trusts to evidence the efficacy of the solution. The project highlights how OR can be used for solving complex health and care issues today, that can support both patients and the NHS.



IMAGE 2. NHSQUICKER HELPS PATIENTS WITH URGENT CARE PROBLEMS TO DECIDE WHETHER TO GO, WHERE TO GO AND WHEN TO GO? NHSQUICKER DISSEMINATION LEAFLET FOR DEVON.

by March 2024 also remained unattained); not far off the worst A&E performance in over a decade¹. Despite declining A&E performance, the figures show that MIUs typically continue to meet the standard [7].

NHS England principles and standards for urgent care emphasise the need to provide a consistent urgent treatment offering to the public to reduce attendance at A&E departments and improve patient experience and access to local services. This includes the requirement for all Urgent Treatment Centres to have an up-to-date NHS Directory of Service (DoS) profile to enable effective referrals from NHS 111 and 999 services [8]. This means there is a robust list of services and symptom groups that are available to referring services to help navigators understand the services available at different urgent care facilities. It clearly outlines provision of services and highlights exceptions to provisions to maintain DoS accuracy and maintain clear provision and care pathways. The DoS is also nationally and locally updated with current open and closed facilities making it a real time hub of currently available services.

NHSquicker provides users with real-time, up to date information about wait times, number of patients waiting to be seen, number of patients in departments as well as if their local centre is experiencing an unplanned closure

Version 3.0 of NHSquicker was launched in March 2024 in collaboration with Rachael Shine, *Head of Urgent Care Transformation*

Programmes NHS Devon Integrated Care Board (ICB), and Tom Monks, *Associate Professor of Health Data Science* from the University of Exeter Medical School. The key in this version is that, in addition to wait time and travel time information, it uses the DoS Urgent and Emergency Care API to report non-routine closure of urgent care facilities. This is a huge improvement as there are often unplanned closures of local care provision due to workforce shortages and increased demand. Therefore, now, the population is able to have real-time, up to date information about wait times, number of patients in department as well as if their local centre is experiencing an unplanned closure and their next most suitable alternative for care. The integration also provides users with on-demand information for services such as dentists, opticians, pharmacies, and sexual health clinics.

CURRENT BENEFITS OF NHSQUICKER

The benefits have been three-fold. Firstly, NHS Trusts in the South West have interfaced their IT systems with NHSquicker. This app is a way for Trusts to use existing data in an innovative way to improve the patient experience of their urgent care services.

Secondly, patients are finding the app useful. An in-app survey in 2020 found that 78% of users agreed that NHSquicker helped them decide where to go. The new version has advanced analytics features that will further help with evidence.

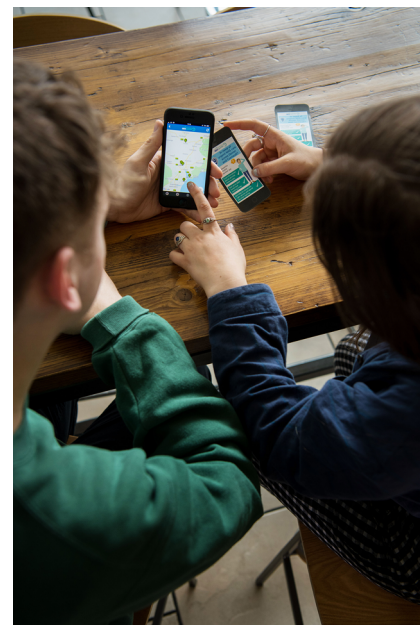
Finally, data analysis from early adopting Trusts found a significant shift in the pattern of attendance, with a reduction in A&E attendance and an increase in MIU/UCC visits [9]. The

Trusts had a well-planned publicity campaign that increased awareness of the solution. We intend the launch of Version 3.0 will boost awareness to both patients and NHS Trusts to support ICBs to take account of the wider provision of emergency and urgent care services for their populations.

FUTURE RESEARCH USING NHSQUICKER

Alongside the launch of Version 3.0, a number of initiatives are underway by the Exeter research team to maximise the potential value that can be gained from NHSquicker's real-time data feeds.

One ongoing stream of research is investigating the potential for real-time decision-support across urgent care networks through innovative digital twin technology. This work is investigating integration of partial real-time data feeds into a discrete-event simulation model to increase the accuracy of short simulation runs and support short-term system recovery in overcrowding situations. Future work,



in collaboration with Somerset ICB, will pilot additional live data feeds to initialise the simulation model, with a view to expanding the back-end platform of NHSQuicker for Trust-level decision making support.

TO CONCLUDE

The researchers behind NHSQuicker have shown that local-level digital initiatives using OR can be scaled up regionally, and there is significant potential to scale from regional to national scale. By unlocking data from multiple sources, NHSQuicker empowers patient decision-making and transforms their experience of urgent care services, giving them control over the services they use and the choice of lower wait times.

Simultaneously, the platform is helping NHS Trusts to manage their day-to-day operations. By being responsive to NHS principles and standards, and improving communication and coordination between urgent care services, NHSQuicker can improve patient flow

and resource utilisation across the system as a whole.

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Future research into novel methods such as digital twin technology has the potential to offer enhanced decision support to both hospital and urgent care networks. Real-time simulation can offer live decision-support to reduce or prevent overcrowding in overburdened A&E departments.

ACKNOWLEDGEMENT

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We could not have achieved this without you all.

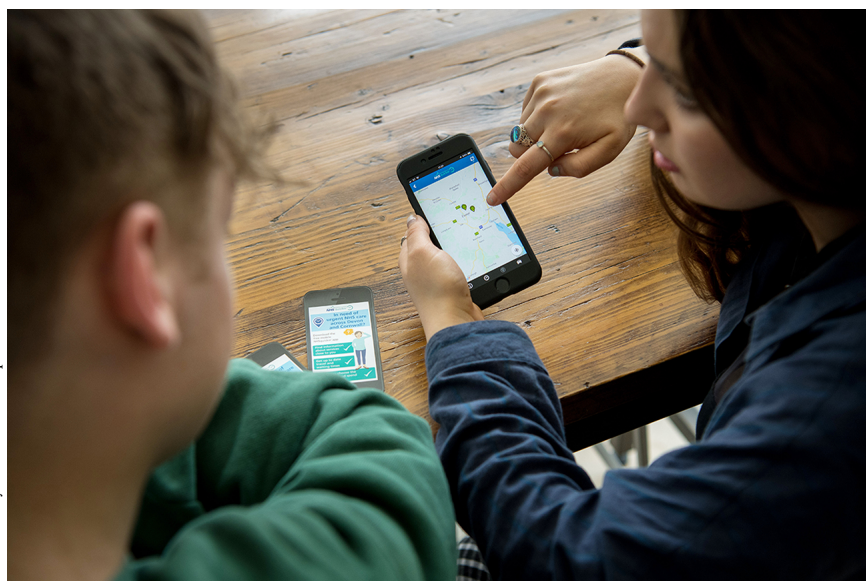
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Tom Monks is an Associate Professor of Health Data Science at University of Exeter Medical School. His research interests include open science for computer simulation, urgent and emergency care, and real-time discrete-event simulation.

Rachael Shine is the Head of Urgent Care Transformation for NHS Devon. Her portfolio of programmes includes attendance and admissions avoidance in A&E, reducing ambulance dispatch and conveyance where there are suitable alternatives,

FOR FURTHER READING

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IMAGE 3. SCREENSHOT FROM NHSQUICKER WEBSITE ([HTTPS://NHSQUICKER.CO.UK/](https://nhsquicker.co.uk/))