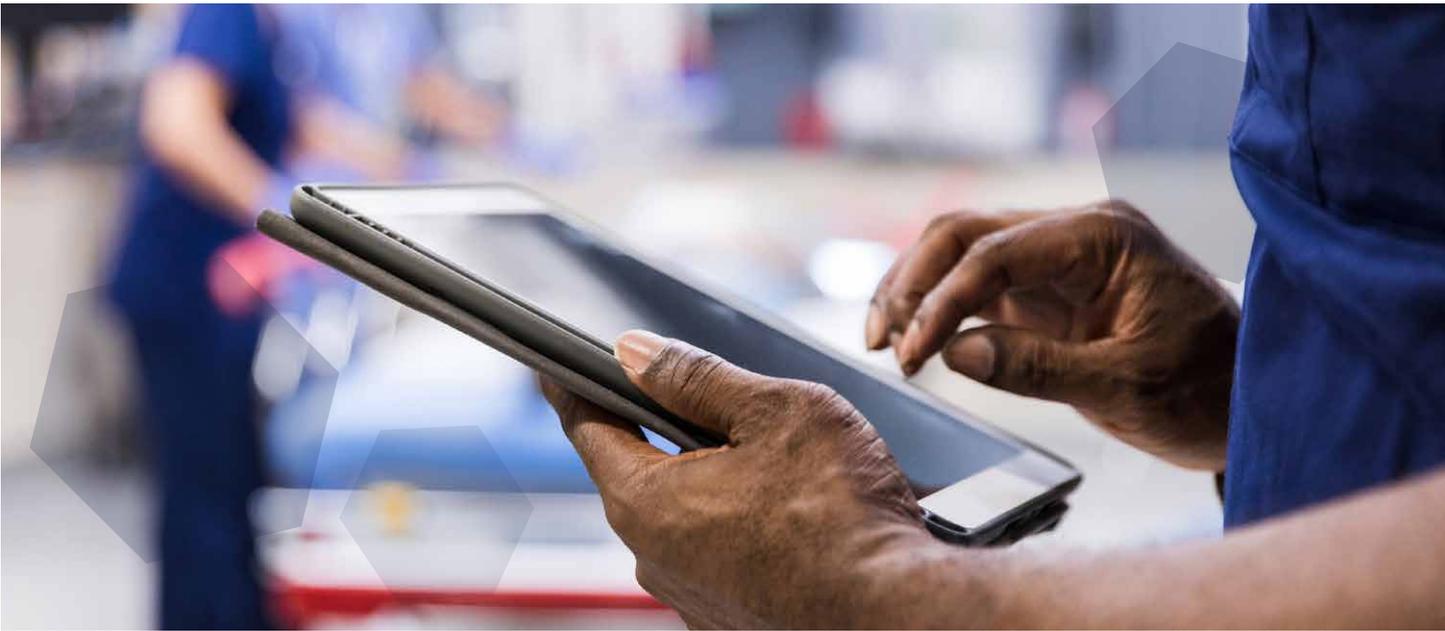


Reverse bed chains transform flow in Nottingham's hospitals



One of the busiest NHS trusts in England is transforming flow through its emergency pathways thanks to a revolutionary new approach to bed management, made possible by Nervecentre software.

Nottingham University Hospitals (NUH), which delivers acute care to millions of people across Nottinghamshire and the East Midlands with only a single Emergency Department, is accelerating the safe transfer of patients through its hospitals following the introduction of a 'Reverse Bed Chain' (RBC) model.

The model – enabled by system-wide visibility of data routinely captured by clinicians via Nervecentre's EPR – allows patients timely access to emergency care by facilitating an earlier-in-the-day transfer of care from ED to an admission ward through a reverse bed chain.

Early data from a six-month pilot programme suggests the approach has reduced the time it takes to transfer patients to an appropriate bed by as much as 75%. It's also making an important contribution to the trust's efforts to reduce crowding and delay-related harm.

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The journey to the reverse bed chain model

NUH has long faced significant challenges with demand and capacity. In recent years, the trust has consistently operated at 98% bed occupancy and above. These challenges have naturally impacted flow through its emergency pathways, sometimes leading to crowding in ED. In December 2022, following two back-to-back critical incidents – the first declared system-wide by the ICB – the trust reviewed its internal processes in search of a new way of transferring patients that could mitigate risk and improve capacity and flow.

As part of that review, NUH leveraged Nervecentre artificial intelligence (AI) functionality that discovers and proposes bed moves in real-time, allowing patients to be admitted from ED who would otherwise be blocked. This can reduce the time for individual patients to be admitted by a number of hours, and has provided a catalyst for an evolution of bed management processes.

Old models versus new

Historically, patients awaiting a transfer from ED to admissions were the last to move in a sequence of moves. They were held in ED whilst patients leaving base wards were moved to the discharge lounge, and then patients on admission wards were transferred to the base wards. At that point, the patients held in ED would finally be transferred to admissions. This protracted process often took around four hours, even when an empty bed was available at the end of the chain, contributing to a crowded ED and associated risks. Long waits to be seen by a clinician, and delayed flow in and out of ED, carry an increased risk of patient harm, including nationally reported higher mortality rates for admitted patients.

The realisation that bed chains could be easily identified via Nervecentre led to NUH establishing a new model of bed management that flipped the script on the transfer of

patients. In the new model, where a bed chain exists, patients are no longer held in ED (or assessment areas) until a bed is empty on an admission ward. Instead, they're the first move in the chain. Porters/transfer teams transfer them to an admissions ward, then immediately move the next patient in the chain to their destination, which may be a base ward or the discharge lounge. The model temporarily leads to wards going 'one over' as the chain of transfers advances. However, the RBC process is supported by dedicated resources who ensure transfers are actioned quickly so that bed stock returns to normal levels.

"It's an incredibly simple process," says Charlie Hunter, Lead Nurse, RBC. "Nervecentre identifies the chains – highlighting linked patients in colour-coded groups. My role is to validate that a chain is appropriate, then liaise with wards, cleaning and patient movement services to set the train in motion. Crucially, the entire team is connected by Nervecentre, which means everyone, including porters and cleaners, is instantly alerted to tasks via their mobile device. This accelerates the process, ensuring every part of the chain is ready to move."

The RBC team currently includes a clinical lead, estates & facilities, and the porters and cleaners who action each chain. Longer-term, NUH anticipates that RBC responsibility will pass to the divisions, who will manage it in-house with the capacity and flow team.

The RBC model was rolled out as a pilot at the beginning of 2023, first at the trust's QMC site, followed quickly by deployment at City Hospital. Evidence indicates that it's enabling the rapid transfer of patients from ED. In the first three months, NUH completed 899 reverse bed chains at QMC, with 97% starting in ED and assessment wards. In 871 (94%) of those cases, the first move in the chain was to assessment wards, suggesting patients are being transferred to the correct clinical specialty; first move, right time, right place.

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Outcomes to date

At City Hospital, which has more speciality wards than QMC, the process is slightly different. “Chains at City don’t always start in the emergency department – they start in the assessment areas, to create that capacity for ED,” says Charlie. “Patients in assessment areas need to have been clerked by a junior doctor and senior reviewed by a registrar/consultant before they can move. And patients ready to leave speciality wards must have their TTOs in process before we can move them to the discharge lounge. These aspects need readying before we can action a chain. But having early visibility of where those chains exist, through Nervecentre, really helps us get things moving.”

Reverse bed chain demand at both campuses has increased since roll-out, with the model increasingly being embedded in practice through collaborative working with clinical and non-clinical teams. NUH believes the approach has reduced the risk of delay-related harm by reducing crowding in ED, while qualitative feedback from staff suggests that patient safety risk has not just been moved elsewhere. Significantly, the time it takes to carry out a three-part sequence of transfers has reduced from around four hours to one hour – releasing an estimated three hours of ED staff time to focus on care. The first move in that chain is essentially a zero-minute process, that prevents emergency patients waiting hours in ED.



The bigger picture: operational visibility

Mark Simmonds, Deputy Medical Director, Consultant Critical Care Medicine, NUH, says the operational gains of the RBC model wouldn’t be achievable without the visibility teams are getting through Nervecentre.

“QMC runs at 98-99% bed occupancy pretty much all the time. You can’t run a hospital at 99% occupancy if you don’t have real-time visibility of what’s going on. If you can’t see where the empty beds are, and you can’t see where the challenges and opportunities are, you’ll never truly be able to make things more efficient. Nervecentre gives us that visibility. We can see what’s going on from bed-to-bed, and we can share that visibility with our community partners to optimise discharge pathways, where appropriate. What’s more, the building blocks are in place for visibility of community beds and ICS-wide oversight in the future.

“But Nervecentre is much more than a bed management system; it’s our EPR. When you attach all your safety data, and all your operational data, to a bed map – and you make it in the best interests of your clinicians to ensure their electronics are all up to date – you’ve got everything you might possibly need to track a patient’s journey through a hospital and deliver safe, timely care. Alternative approaches to bed management cannot give you that depth of information.”

Mark says Nervecentre has been pivotal to improving operations at NUH. “It’s helping us expand our use of data to inform every aspect of care from admissions through to discharge, as well as supporting patients at home in our virtual wards. The visibility it provides gives us the opportunity to use our resources to the best of our ability. That’s vital in a highly constrained NHS that’s under pressure in both elective and emergency care.”

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