## NHS patients targeted to reduce risks as they wait for hospital treatment

**Patients have described the 'brilliant' support they have received to help reduce their risk of deterioration, in a new regional NHS programme that is using technology to start to identify high-risk patients on waiting lists.**

Surgeons say the NHS 'Waiting Well' initiative now has national relevance – the project has already shown improved outcomes, reduced complications and shorter stays for patients taking part, at a time when more than seven million people in England are on waiting lists.

Led by integrated care board NHS Cheshire and Merseyside, with the support of technology partner C2-Ai and health coaching provider Surgery Hero, the programme is helping to locate and provide urgently needed support for some of the most vulnerable patients awaiting surgery. It uses technology to identify high-risk patients and then target them with tailored coaching, to help achieve the best possible outcome.

Researchers have shown the underpinning AI to be highly accurate in a new peer reviewed paper examining a linked NHS England funded surgical prioritisation initiative in the region, and the Royal College of Surgeons of England has now funded a health economic analysis of Waiting Well.

Wilf Dutton, a 65-year-old patient with fatty liver disease, was identified for the programme after waiting nearly three years for his gallbladder operation due to the pandemic and his family circumstances. Targeted prehabilitation coaching led to a successful operation, with rapid discharge and recovery.

He said: "Everything went well, and my pain disappeared immediately after the operation. One specialist told me the gallbladder was full of stones and whatever I had done prior to the operation had reduced liver inflammation, allowing them to take the gallbladder out with keyhole surgery, so my recovery was a lot quicker. Originally, I expected to be in hospital for a week, I was out within a day, freeing up the bed for someone else."

Wilf was contacted by St Helens and Knowsley Teaching Hospitals NHS Trust, a partner within the programme, five weeks before his surgery with an invitation to take part in Waiting Well. "My speedy recovery was definitely due to the health coaching I received," he said. "My coach explained my operation to me and gave me a dietary programme. I did the exercises, the breathing to help with my emphysema, everything I needed to do.

"I was really worried about the operation itself and I was worried about going into hospital where I might catch Covid. I felt really reassured by the coaching, which helped with my wellbeing, and got me in the best state possible for my operation."

Following his procedure, support continued to help minimise the risk of readmission. Wilf said: "After the operation, I continued talking to the health coach for a month to assist with my recovery. It was a great help. It was like having a daughter at my side who I could just talk to. It was fantastic."

More patients like Wilf are now being identified by healthcare professionals, and selected for targeted health coaching, through a smart triage system enabled by health technology provider C2-Ai. The system alerts staff based on thresholds set by NHS clinicians.

Professor Rowan Pritchard-Jones, executive medical director for NHS Cheshire and Merseyside, said: "The work we are doing as a region is asking questions about who we should worry about this

winter. We are getting more sophisticated in the way we deliver our care to improve outcomes for at-risk patients and make best use of our challenged NHS resource.

"We are finding these patients, not by clinicians spending hours going through notes to identify the risks, but because we have such a rich data set and risk stratification tools that allows us to alert inpatient teams, pre-op specialists and other healthcare professionals, so that we can signpost patients most in need of support. This is an entire wrap around for the peri-surgical journey."

Initially the programme has been heavily focussed on patients at risk of post-operative chest infection. Results from the first cohort of patients to take part have shown zero pulmonary complications, reduced length of stay of 2-3 days on average, a 10% risk reduction in chest infections and no post-operative harm events.

Clinicians now say the programme has wide ranging relevance to identifying risks for patients waiting for long periods of time, and for parts of the population suffering significant burden of illness.

Dr Mark Ratnarajah, a practising NHS paediatrician and UK managing director for C2-Ai, said: "A lot of patients have become worse because of difficulty accessing healthcare during the pandemic. Patients' comorbidities, frailty and mobility have worsened - all of which will contribute to increased risk.

"Work in Cheshire and Merseyside is finding previously hidden high-risk patients on waiting lists, and managing that risk by translating insight into action and creating smart triage at the front end. Clinicians agree thresholds for specific post-operative complications. And we flag those patients, who are then enrolled on intensive health coaching programmes specifically targeted to their reducing individual risks.

"Prehabilitation historically has been general – lose a bit of weight, stop smoking, eat better. We are turning this on its head. Doctors can now tell patients if they have a high risk of a chest infection or ending up in ICU. It becomes very powerful if they can see they can do something about this."

The programme is the latest to be spearheaded by NHS organisations in the Cheshire and Merseyside region, designed to help tackle the growing elective backlog.

A linked NHS England funded initiative at St Helens and Knowsley Teaching Hospitals NHS Trust, Liverpool University Hospitals NHS Foundation Trust and Warrington and Halton Teaching Hospitals NHS Foundation Trust has used technology from C2-Ai to save thousands of hours for busy surgeons, and more consistently risk stratify and prioritise patients most in need for surgery.

The surgical prioritisation tool has since been adopted by dozens of NHS trusts across the country. In January 2023, peer reviewed research from the University of Manchester, St Helens and Knowsley Teaching Hospitals and Liverpool University Hospitals showed the AI model to be highly accurate in predicting risks for patients around mortality and complications.

**ENDS**

**Notes to editors**

**For peer reviewed evidence on the effectiveness of the underpinning AI model, please see:**
https://informatics.bmj.com/content/30/1/e100687

**About Waiting Well**
A project led by NHS Cheshire and Merseyside is using risk stratification technology to target support to patients on waiting lists, helping to prevent avoidable harm and mortality as people wait.

By targeting at-risk patients in the community, healthcare teams have been working to prevent deterioration, by inviting patients for individualised prehabilitation. Patients are escalated for NICE approved treatments and are invited to take part in monitored self-care and targeted telephonic and online health coaching to increase activation levels and mitigate specific complication risks. This is having significant positive impact for patients and is also helping to prevent unnecessary A&E attendances.

Rather than relying on chronological appointments, the initiative uses technology to risk stratify and identify patients on waiting lists based on clinical need. The programme is supporting patients as winter pressures build.

Being run by the integrated care system, the programme builds on the success of more than 100,000 smart triages in St Helens and Knowsley through a separate initiative that is allowing surgeons to prioritise patients for surgery more effectively.

**About Surgery Hero**
Surgery Hero is a digital clinic that helps people prepare for and recover from surgery at home. The solution combines human health coaching with an app-based learning platform that is tailored to the individual and their upcoming procedure.

Surgery Hero is available throughout the UK and is aligned with NHS commissioning guidance. Working in collaboration with their NHS partners, they have been able to demonstrate a consistently positive impact on patient experience and surgical.

**About C2-Ai**
C2-Ai is a trusted NHS digital partner. The company has provided national support and its technology is used in a wide number of NHS trusts and across 11 countries.

C2-Ai provides an AI-backed suite of hospital care quality/efficiency improvement tools developed from more than 30 years of research, ten years of development and the world's largest and geographically broadest patient data set (from 46 countries). In the UK these systems have a track record for delivering demonstrable improvements in care.