

Reducing delays for bladder cancer treatment in Cornwall using simulation modelling



“This project demonstrates how simulation modelling can help to better understand a system, and how a relatively simple and cost-neutral change can lead to a huge impact for patients. By diagnosing patients with muscle-invasive bladder cancer sooner, outcomes can be improved, and patient lives saved.”

Dr Daniel Chalk, Senior Research Fellow, PenCLAHRC

There are around 10,000 new cases of bladder cancer each year in the UK, and around a quarter of these cancers involve the muscle wall of the bladder. Muscle-invasive bladder cancer requires rapid treatment, but the process for diagnosing patients is complex, requiring multiple tests.

Royal Cornwall Hospitals Trust approached PenCHORD, PenCLAHRC's operational research team, to ask if they could develop a simulation model to identify the delays in the diagnostic process, and the best ways to reduce these delays.

A simulation model was developed, which showed two key delays – the wait for a Transurethral Resection of Bladder Tumour (TURBT) after cystoscopy, and the wait for a nurse specialist to discuss the diagnosis and treatment options with the patient. The model also predicted that if patients with suspected muscle-invasion at cystoscopy were fast-tracked to TURBT within two weeks, and the nurse specialist spoke to the patient on the ward on the same day as their TURBT, the time from initial referral to treatment could be reduced by around 5 weeks.

What happened next?

As a result of the evidence generated by the model, the Cancer Lead for Urology at Royal Cornwall Hospitals Trust immediately rewrote their treatment protocols to incorporate the changes suggested by the model. The new protocols took effect within 24 hours.

Analysis of three months of data after the protocol changes took effect has shown that waiting times for people with muscle-invasive bladder cancer have reduced by five weeks, including a three and a half week reduction in the time from referral to TURBT. These patients now find out about their diagnosis and can consider treatment options five weeks earlier than before. There has also been an 11 day reduction in delays across all bladder cancer patients.

For further information visit:

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