

# Image directed redesign of bladder cancer treatment pathways: the BladderPath RCT

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## Plain language summary

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## Plain language summary

The BladderPath trial explored how to accelerate diagnosis and avoid unnecessary surgery for patients with bladder cancer which had grown into the muscle wall of the bladder, referred to as muscle-invasive bladder cancer.

Following initial outpatient diagnosis, bladder cancer patients currently undergo inpatient or day-case surgical tumour removal using a telescope (transurethral resection of bladder tumour). This surgery is fundamental to the treatment of early bladder cancer (non-muscle-invasive). However, for muscle-invasive disease, the main role of transurethral resection of bladder tumour is to confirm that the tumour has grown into the bladder muscle, and this is often inaccurate; the actual correct treatment for muscle-invasive bladder cancer patients should include chemotherapy, radiotherapy and/or bladder removal. For these patients, having transurethral resection of bladder tumour may delay this correct treatment and impact survival. Additionally, for patients determined to need palliative care due to advanced disease, the transurethral resection of bladder tumour may represent over-treatment.

A magnetic resonance imaging scan with contrast agent (called multiparametric magnetic resonance imaging) gives a clearer picture of the bladder than normal scans, allowing distinction between invasive and non-invasive tumours. The BladderPath trial investigated adding multiparametric magnetic resonance imaging for patients with suspected muscle-invasive bladder cancer and the effect on treatment times. Subsequent therapy could include transurethral resection of bladder tumour if clinically determined as necessary by the treating team.

Trial participants were randomly allocated either to the standard pathway (Pathway 1: all underwent transurethral resection of bladder tumour) or to a new pathway (Pathway 2). In Pathway 2, urologists conducting the initial outpatient diagnostic bladder inspections used a scale to assess whether tumours appeared to be either probably non-muscle-invasive or possibly muscle-invasive. Participants whose tumours appeared possibly muscle-invasive had initial multiparametric magnetic resonance imaging as their next investigation instead of transurethral resection of bladder tumour. We then compared the duration of time from initial diagnosis to receiving the correct treatment for participants in each pathway.

Of the 143 participants, 75 (52.1%) were diagnosed as possibly muscle invasive. In Pathway 1, the duration for half of the participants in the group to have received their correct treatment for muscle-invasive bladder cancer was 98 days, which reduced to 53 days in Pathway 2. Furthermore, the duration for half of all the participants in the two groups to have received their correct treatment was 37 days for Pathway 1 and 31 days for Pathway 2.

In summary, use of initial multiparametric magnetic resonance imaging in suspected muscle-invasive bladder cancer participants substantially reduced the time to correct treatment (surgery, radiotherapy, chemotherapy or instigation of palliative care) and avoided unnecessary surgery. There was no negative impact on participants with non-invasive disease. Adopting multiparametric magnetic resonance imaging into the pathway ahead of transurethral resection of bladder tumour for patients with suspected muscle-invasive bladder cancer is recommended.

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