

# Heating chemotherapy drugs may improve bladder cancer treatment

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Scientists have found that heating the chemotherapy drug mitomycin-C prior to using it for treating bladder cancer may radically improve its efficacy. The findings, published in the International Journal of Hyperthermia, are the result of a four-and-a-half-year study by medics based at Comarcal Hospital, Monforte, Spain.

The 'Recirculant hyperthermic IntraVESical chemotherapy (HIVECä)' treatment devised by the researchers involved heating a solution of mitomycin-C and diluted water to a target temperature of 43 °C prior to delivery into the [bladder](#). The drugs were recirculated at 200 mL per minute at a stable pressure, and the temperature inside the bladder was maintained for 60 minutes.

40 [patients](#) took part in the study, split into two groups – one which received the HIVECä treatment prior to a resection of the bladder, and another which received HIVEC after resection of the bladder.

97% of the patients were able to complete the full course of HIVECä treatments, and the majority of participants responded well to the treatment and show low rates of recurrence. Furthermore, the majority of the side-effects were low grade and had very little effect on the treatment plan.

The majority of bladder cancers can be treated by endoscopic surgical removal or ablation of the tumour tissue. However, some patients require further treatment, which involves circulating drugs around the bladder.

When this fails, few options exist but to remove the bladder – a highly morbid and invasive procedure.

Commonly Bacillus Calmette–Guérin (BCG) is used as the most effective treatment for non-muscle invasive [bladder cancer](#). Mitomycin-C is typically less effective than BCG, but the authors believe that heating the solution increases the efficacy of the drug in part due to the increased solubility at higher temperature, and in part due to the increased permeability of the bladder lining.

The researchers also modelled the cost savings per patient of the HIVEC [treatment](#), and estimate it to be €687 after three years.

Surprisingly, they even treated some patients with HIVEC instead of the standard endoscopic surgery and found that in the majority of patients the tumors completely disappeared and did not come back within their brief follow-up of a few years. This suggests that HIVEC might be a less invasive alternative to surgery in some patients, an exciting finding which if confirmed by others, will be game changing.

**More information:** Alejandro Sousa et al. Recirculant hyperthermic IntraVESical chemotherapy (HIVEC) in intermediate–high-risk non-muscle-invasive bladder cancer, *International Journal of Hyperthermia* (2016). [DOI: 10.3109/02656736.2016.1142618](https://doi.org/10.3109/02656736.2016.1142618)

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