

Cost-effectiveness of Barrett's surveillance: modelling remains useful

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Dear Editor,

Our cost-effectiveness model on endoscopic surveillance for non-dysplastic Barrett's esophagus involved over 50 model inputs for the estimation of costs and effects. The estimates chosen are a compilation of those in the scientific literature combined with extensive clinical knowledge and input by co-authors DWa, GM & TB who have run a very large Barrett's surveillance program with follow-up across a decade. Professor Ganz has argued that our choice of one of the model inputs, 'progression of non-dysplasia to cancer' (0.33%/year) in the no-surveillance arm, is underestimated for the reasons he presents. We justified the use of this estimate in terms of using data from a meta-analysis by Desai *et al.* (2011) on a subset of higher-quality studies with greater than five years follow-up¹, confirmed by similar rates observed in large observational studies^{2,3,4}, and our own outcome data. We acknowledge that the true rate remains to some extent uncertain, but consider the estimate to be representative of a consensus from the published literature.

While it is clear that models are only as good as the data on which they are based, and we encourage critique on any issue of our economic model, we remind Professor Ganz that we have not just used '*the 0.33%/year value alone*'. Indeed, due to the complexity and uncertainty inherent in the 'progression to cancer' estimate, we re-ran the model using a wide range of progression estimates (i.e., 0.09%/year to 0.5%/year). We are confident that this range is sufficiently wide to capture the range of circumstances, cohorts, assumptions and biases reported in the literature. We are not aware of any high-quality prospective data that suggests this progression rate falls outside the range of values we have tested in our model.

More importantly, the key conclusion drawn from our analyses is surveillance may not be cost-effective with different cancer progression rates from non-dysplastic Barrett's esophagus. Our conclusions remain robust even when we fit models with progression rates beyond the currently accepted credible limit for non-dysplastic Barrett's (>1%), although we concede that the results are more volatile at these rates. Our model provides a useful validation to the growing body of work that appropriately seeks to identify high-risk individuals to prioritize for surveillance. As statistician George Box famously said 'Essentially, all models are wrong, some are useful'.

Yours sincerely,

Dr Louisa Gordon, Dr George Mayne, Dr Tim Bright, Prof David Whiteman & Prof David Watson

References:

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