

Cost-effectiveness of screening and treating anal pre-cancerous lesions among gay, bisexual and other men who have sex with men living with HIV

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Background: Gay, bisexual and other men who have sex with men (GBM) with HIV have a substantially elevated risk of anal cancer. The precursor to anal cancer is high-grade squamous intraepithelial lesion (HSIL). Findings regarding the cost-effectiveness of HSIL screening and treatment in GBM are conflicting. Using recent data on HSIL natural history and treatment effectiveness, we aimed to improve upon earlier models.

Methods: A Markov model with an annual cycle length was developed to compare the costs and health outcomes associated with implementing various screening and treatment options for HSIL in GBM with HIV aged ≥ 35 years in Australia. We assumed a healthcare system perspective over a lifelong time horizon. Costs and quality-adjusted life-years (QALYs) were discounted at 5% per year. Sensitivity analyses were conducted by varying the values of key model inputs within plausible ranges. Cost-effectiveness was defined as having an incremental cost-effectiveness ratio (ICER) less than AUD50,000/QALY gained.

Results: Anal cancer incidence was estimated to drop by 44-70% (a decline of 1.2-1.9 cases/1,000 person-years) following implementation of HSIL screening and treatment, with higher sensitivity HSIL screening methods leading to greater reductions in incidence. However, even with the highest sensitivity HSIL screening test evaluated (high-risk human papillomavirus genotyping), screening and treating HSIL was not estimated to be cost-effective (ICER of AUD77,000/QALY gained). In probabilistic sensitivity analyses, HSIL screening and treatment had an 28% probability of being cost-effective. When we modelled an inexpensive (AUD50/test) hypothetical screening test with 99% sensitivity and 99% specificity, the ICER was \$28,600/QALY gained, indicating cost-effectiveness.

Conclusion: Current methods of HSIL screening and treatment are not likely to cost-effectively reduce anal cancer incidence in Australia among GBM with HIV aged ≥ 35 years. Improved screening methods that identify HSIL at highest risk of progressing to anal cancer remain a research priority.

Disclosure of Interest Statement: None