Cost-effectiveness of screening high-risk HIV-positive men who have sex with men (MSM) and HIV-positive women for anal cancer

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Executive summary

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Executive summary

Introduction

Anal cancer is an uncommon cancer. It is a disease in which cancer (malignant) cells are found in the anus. Like most cancers, anal cancer is best treated when it is diagnosed soon after it develops. Primary treatment is generally concomitant radiotherapy (RT) and chemotherapy (if tolerated) to preserve the anal sphincter, but, despite these approaches, local disease failure is considerable and requires salvage radical surgery, which is associated with high morbidity and mortality. Anal cancer is predominantly a disease of the elderly and its occurrence is near to zero in early life. The human papillomavirus (HPV) has been implicated as a causal agent of anal cancer. HPV infection, for the majority of cases, is transmitted sexually. The vulnerability of individuals with human immunodeficiency virus (HIV) to HPV infections has seen an increase the number of cases from this population presenting with anal cancer.

To decide whether the screening of groups of people for a specific condition is suitable, there are well-defined criteria that can be used to aid the decision process. The condition is an important health problem, and the natural history and epidemiology must be understood. The test itself should be safe, simple, accurate and acceptable to the general population.

Aim of the review

The aim of this review is to estimate the cost-effectiveness of screening for anal cancer in men and women who are HIV positive, and, in particular, men who have sex with men (MSM), who have been identified as being at greater risk of the disease, by developing a model that incorporates the national screening guidelines criteria.

Methods

Systematic literature reviews were undertaken of the epidemiology and natural history of anal cancer, screening technologies and screening policies, and cost-effectiveness of candidate technologies/programmes/policies. Two decision-analytical models were developed and populated to analyse the cost-effectiveness of screening in HIV-positive and HIV-negative MSM, and in HIV-positive women.

Results

The reference case cost-effectiveness model for MSM found that screening for anal cancer is very unlikely to be cost-effective. In the reference case, the individually minor, but relatively frequent, negative aspects of screening, including utility decrements associated with false-positive results and with treatment for high-grade anal intraepithelial neoplasia (HG-AIN), outweigh the larger and rarer positive effects of the prevention or early diagnosis of anal cancer.

Sensitivity analyses showed that removing the utility decrements associated with false-positive results and with treatment for HG-AIN improved the cost-effectiveness of screening. However, combined with higher regression rates from low-grade anal intraepithelial neoplasia (LG-AIN), the lowest expected incremental cost-effectiveness ratio remained at over £44,000 per quality-adjusted life-year (QALY) gained. With these assumptions in place, probabilistic sensitivity analysis showed that no screening retained over 50% probability of cost-effectiveness to a QALY value of £50,000.

The screening model for HIV-positive women showed an even lower likelihood of cost-effectiveness, with the most favourable sensitivity analyses reporting an incremental cost per QALY of £88,000.

Conclusions

From the review sections of this report, it is clear that many of the criteria for assessing the need for a population screening programme (UK National Screening Committee 2006) have not been met for anal cancer. There is limited knowledge about the epidemiology and natural history of the disease, along with a paucity of good-quality evidence concerning the effectiveness of screening for

anal cancer. The absence of such data, combined with the possible reluctance of high-risk groups to attend an anal cancer screening programme, makes introduction of population-based screening for anal cancer difficult.

The reported cost-effectiveness analyses of screening for anal cancer emphasise this conclusion. The results show little likelihood that screening any of the identified high-risk groups will generate health improvements at reasonable cost. These results could be further confirmed by updating some key parameters at little additional cost. The most efficient way to proceed would be to audit the accuracy of the cancer registries' identification of cases of anal cancer, as well as to audit the proportion of cancer cases that occur in HIV-positive men and HIV-positive women, and/or MSM. If these data show that the screening model has underestimated the impact of anal cancer in any of the populations evaluated then an evaluative study of the effects of treatment for HG-AIN may be justified.

Publication

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NIHR Health Technology Assessment programme

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The research reported in this issue of the journal was commissioned by the HTA programme as project number 05/11/02. The contractual start date was in December 2005. The draft report began editorial review in November 2009 and was accepted for publication in May 2010. As the funder, by devising a commissioning brief, the HTA programme specified the research question and study design. The authors have been wholly responsible for all data collection, analysis and interpretation, and for writing up their work. The HTA editors and publisher have tried to ensure the accuracy of the authors' report and would like to thank the referees for their constructive comments on the draft document. However, they do not accept liability for damages or losses arising from material published in this report.

The views expressed in this publication are those of the authors and not necessarily those of the HTA programme or the Department of Health.

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