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Title **The Cost Effectiveness of Screening for Oral Cancer in Primary Care**

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Aim

To investigate:

1. actual costs of screening for oral cancer and precancer in primary care settings
2. actual costs of managing oral precancerous lesions and oral cancer, including costs of recurrent disease, long-term rehabilitation, and palliation
3. screening programs in primary and if they are cost effective in terms of survival (life-years gained) and overall gains in quality-adjusted-life-years (QALYs)
4. future research priorities, specifically the expected value of perfect information (EVPI) for the decision to adopt a screening program and for each of the model inputs.

Conclusions and results

No screening (Strategy A) was always the cheapest option. Strategies B, C, E, and H were never cost effective and were ruled out by dominance or extended dominance. Of the remaining strategies, the incremental cost-effectiveness ratio (ICER) for the total population (aged 40–79 years) ranged from GBP 15 790 to GBP 25 961 per QALY. Modeling a 20% reduction in disease progression always gave the lowest ICERs. Cost-effectiveness acceptability curves showed considerable uncertainty in the optimal decision identified by the ICER, depending on both the maximum amount the NHS may be prepared to pay and the impact of treatment on the annual malignancy transformation rate. Overall, high-risk opportunistic screening by a general dental practitioner (Strategy G) was the most cost effective.

Recommendations

This study suggests that opportunistic high-risk screening, particularly in general dental practice, may be cost effective, especially if targeted at groups aged 40 to 60 years. However, there is considerable uncertainty in the parameters used in the model, particularly malignant transformation rate, disease progression, patterns of self referral, and costs.

Methods

Cost effectiveness of oral cancer screening programs in several primary care environments was simulated using a decision analysis model. Primary data on actual resource use and costs were collected by case note review in 2 hospitals. Additional data needed to inform the model were obtained from published costs, from systematic reviews, and by expert opinion using the Trial Roulette approach. The value of future research was determined using EVPI for the decision to screen and for each of the model inputs.

Further research/reviews required

There is an urgent need to learn more about the natural history of oral cancer and precancer. Studies are needed to determine: the malignant transformation rates of oral potentially malignant lesions; rates of progression of oral cancer; and the outcome of treating oral, potentially malignant, lesions (evidence suggests that intervention has no greater benefit than 'watch and wait', so a randomized controlled trial may be justified).

A less uncertain estimate of cost effectiveness could be determined if the decision model were run on data obtained from sources with less heterogeneity or uncertainty in the data. For example, accurate estimates may be obtained for populations covered by small, well-controlled cancer registries, or where potentially malignant lesions are also registered and monitored.

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