Cost-effectiveness of oral cancer screening: results from a cluster randomized controlled trial in India

Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

CRD summary
This study examined the cost-effectiveness of a visual inspection for oral cancer prevention in individuals aged 35 years or older, in India. The authors concluded that oral cancer screening by visual inspection was cost-effective, particularly for a high-risk population. Insufficient information was reported on the calculation of costs and benefits to determine if the authors’ conclusions were appropriate.

Type of economic evaluation
Cost-effectiveness analysis

Study objective
This study examined the cost-effectiveness of a visual inspection for oral cancer prevention in people aged 35 years or older.

Interventions
The intervention was an oral visual inspection, which was compared with standard care plus educational messages (control). The visual inspection was performed by trained health care workers.

Location/setting
India/community and primary care.

Methods
Analytical approach:
This economic evaluation was based on data from one clinical trial and an analysis of subgroups of trial participants who were high or low risk was conducted. High risk was defined as using alcohol, tobacco, or both. The time horizon was same as the duration of the clinical trial, which was nine years. The authors stated that a societal perspective was adopted.

Effectiveness data:
The clinical data were from a randomised controlled trial (RCT), conducted in southern India between 1996 and 2004. In total 87,829 (91%) of 96,517 eligible individuals received the intervention and 80,086 (84%) of 95,356 eligible individuals received standard care with educational messages. Details of the RCT were published elsewhere (Sankaranarayanan, et al. 2005, see ‘Other Publications of Related Interest’ below for bibliographic details). The clinical outcomes included the number of cancers detected.

Monetary benefit and utility valuations:
Not included.

Measure of benefit:
Life-years were the summary benefit measure. The number of cancer cases detected and the number of cancer deaths were reported.

Cost data:
The economic analysis considered the cost of the programme, including recruitment or invitation of screening...
participants, screening, data collection, research, management, and administration, as well as biopsies and treatment for oral cancer. The productivity costs of the patients’ time in attending for diagnosis and treatment were included. The data on resource use and programme costs came from the RCT. The costs of diagnosis and treatment were from hospital records. All costs were in 2004 US dollars ($).

Analysis of uncertainty:
A bootstrapping analysis was carried out to assess the uncertainty in the model results.

Results
For 100,000 people, the total cost was $556,328 with visual inspection and $331,364 with standard care. The number of cancer cases detected was 212.39 with visual inspection and 165.69 with standard care. The number of cancer deaths was 79.78 with visual inspection and 91.24 with standard care. The life-years saved with visual inspection versus standard care were 269.31.

In high-risk individuals, the cancer cases were 420.65 with visual inspection and 396.70 with standard care and the deaths were 154.98 with visual inspection and 216.15 with standard care. The life-years saved with visual inspection were 1,437.64.

The incremental cost-effectiveness ratio was $4,817 per additional cancer detected for all individuals and $9,394 per additional cancer detected for high-risk individuals. It was $835 per life-year saved for all individuals and $156 per life-year saved for high-risk individuals.

The bootstrapping analysis showed that the model outputs were not sensitive to changes in the cost inputs.

Authors' conclusions
The authors concluded that oral cancer screening by visual inspection was cost-effective, particularly for a high-risk population.

CRD commentary
Interventions:
The rationale for the selection of the comparators was clear. The evidence from a RCT had shown the superior clinical profile of visual inspection for oral cancer prevention, compared with standard care plus educational messages. The selection of the comparators was appropriate.

Effectiveness/benefits:
The results of the clinical trial were well reported. The use of a RCT to derive the clinical data was appropriate, given the strengths of this design, but the methods, such as randomisation procedures, power calculation, and whether the study was based on intention-to-treat, were not reported, which makes it difficult to assess the quality of the data. Life-years saved were calculated, but it was not clear whether they used mortality over nine years or at specific time points. QALYs would have been an appropriate measure, because they synthesise quality and quantity of life and they allow cross-disease comparisons. The authors stated that they did not discount the benefits because they did not analyse them over a lifetime, but they calculated life-years saved, which assumes a specified life expectancy.

Costs:
The analysis of costs was consistent with the stated perspective, and all the relevant cost categories were included. The costs were presented as category totals, which reduces the transparency of the analysis. The resources were based on actual consumption by the trial participants, but there was little detail on the treatment given, and it was not clear why this cost was not discounted, as it was likely to have been incurred over a few years. Other details of the analysis, such as the price year and the sources of costs, were reported.

Analysis and results:
An appropriate incremental analysis was performed and non-parametric bootstrapping was satisfactorily used to address sampling variation. The criteria for assessing the cost-effectiveness of the health intervention were appropriately based on the Indian gross domestic product (GDP) per capita, which is a widely used approach for low- and middle-income
countries.

Concluding remarks:
Insufficient information was reported on the calculation of costs and benefits to determine if the authors' conclusions were appropriate.

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Other publications of related interest

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