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A model of cost-analysis for diagnostic imaging methods in oral health care – An example of using intraoral and panoramic radiography and CBCT for examination of retained maxillary canines

Christell H¹, Birch S², Horner K², Rohlin M¹, Lindh C¹, The SEDENTEXCT Project Consortium³

¹Malmö University, Malmö, Sweden, ²Manchester University, Manchester, UK, ³Listing of partners on www.sedentexct.eu

Introduction

Little attention has been given to economic implications of diagnostic methods used in oral health care in the research literature. Cost-Effectiveness Analysis (CEA) involves considering the incremental costs and effects of a new intervention compared to an existing way of caring for the same patient group.

Objectives

First, to propose a model for cost-analysis of diagnostic methods in oral health care, and secondly, to illustrate the application of our model on the radiographic examination of maxillary canines with eruption disturbances in two countries.

Methods

Data on both direct and indirect costs was collected from departments of Oral and Maxillofacial Radiology (Malmö and Vilnius) in two countries. Fifty patients from each department, who were referred for examination of a maxillary canine with eruption disturbances, participated. The total cost was calculated for a new method *i.e.* Cone Beam Computed Tomography (CBCT) and panoramic radiography as well as for a conventional method *i.e.* intraoral and panoramic radiography. The incremental cost of introducing the new method was calculated as the difference in cost between the new and the conventional method.

Results

Our model, based on Drummond et al (2005), presents information on how to (i) identify the different elements of costs, (ii) categorise the elements of cost into direct costs (the costs of delivering the service) and indirect costs (the costs incurred by patients in using the service), and (iii) value costs. The incremental cost of the new method was 168€ in Malmö, and 66€ in Vilnius. The variation in costs between settings is explained by differences in the quantity of recourses used associated with the configuration of service delivery in the two countries as well as differences in the values of recourses (e.g. provider remuneration).

Conclusions and discussion

Our model demonstrated the feasibility of measuring direct and indirect costs of this common examination and the range of costs. The differences in cost depended partly on different routines performing the examinations. Also the different health systems in the two countries resulted in a significant variation of the cost for the patient. The differences in costs and effects will later be compared to find which method is the most cost-effective. Our model will be applied in the SEDENTEXCT project also on other examinations with CBCT.

Reference: Drummond MF, Sculpher MJ, Torrance GW, O'Brian BJ, Stoddart GL. Methods for the economic evaluation of health care programmes. Oxford: Oxford Medical Publications, 2005, 3rd ed.

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