Interventions for increasing uptake in screening programmes
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Introduction

Oral health prophylaxis in children follows a systematic approach and is reaching a high uptake in the eligible population in Germany. A similar approach and success cannot be seen in other programmes in primary and secondary prevention (screening). The effectiveness and cost-effectiveness of interventions to increase the uptake of such programmes have not yet been comprehensively assessed for Germany.

Objectives

This report aims to identify effective interventions to increase uptake in primary and secondary prevention programmes. It also aims to identify evidence for the cost-effectiveness of such interventions. The report does not refer to the effectiveness and appropriateness of the respective technologies or methods applied during primary prevention or screening efforts.

Medical evaluation

Methods

Relevant reviews and primary studies published between 1990 and 2005 were identified in a wide systematic literature search strategy through 29 scientific databases. There were no language restrictions (date of search: June 2005). Electronic and manual search produced 2396 documents, and 255 publications were selected following previously defined criteria. Additional references were located through searching the bibliographies of documents. Full text systematic reviews, randomized controlled trials and controlled trials were included. Quality assessment of documents was performed using checklists developed by the German Scientific Working Group on Technology Assessment in Health Care. Selection of references, data extraction and quality assessment were performed independently by two reviewers. Data were analysed qualitatively. The analysis followed a classification into five categories: (1) target population, (2) access, (3) systems management, (4) implementation, and (5) use of electronic databases.

Results

The medical evaluation of this report was based on the evidence of four health technology assessment reports and 22 systematic reviews published between 1996 and 2004. A multitude of interventions were effectively increasing uptake. Targeted, carefully planned, theoretically founded and programmatic interventions were identified as essential key elements for increasing uptake through systems management.

Effective interventions were:

- aiming at patients, individuals or users, as well as physicians and other health care professionals,
- improving access to target populations (e.g. by invitation letters),
- implementing screening in provision of health care (e.g. changes in office management), and
- making use of electronic databases (e.g. registry of residents or of patients in a given physician’s practice).

Invitations (preferably for a fixed appointment) and reminder systems targeting users and health care professionals effectively increase uptake in different areas of prevention. Advice from health professionals was also effective. Reducing financial barriers for users effectively increased uptake, while economic incentives for users showed mixed results. Education interventions were of limited effectiveness.

Invitations and reminder systems targeting users and health care professionals were described in the references most frequently. More data on interventions targeting users was available than on interventions targeting professionals. Only a small number of studies assessed financial incentives and bonuses aiming at health service providers and health care professionals.

Discussion

The complexity of the topic and the numerous diseases represented resulted in a high number of references. Study populations and interventions reviewed were heterogeneous. Screening (i.e. secondary prevention) was overrepresented in comparison with primary prevention. The majority of documents examined mammography-screening and screening for cervical carcinoma, while interventions aimed at increasing uptake among men and children appeared to be understudied. Primary prevention was mostly studied in a medical setting.

The authors propose that the small number of references identified from the field of primary prevention can be explained by the fact that in this field, the effectiveness in reaching target audiences is largely investigated in non-randomized study designs. This leads to a systematic exclusion of primary prevention studies from the scope of more stringent systematic reviews at a higher level of evidence. In addition, uptake is less often used as the outcome in this field. Rather, outcomes are more closely linked to the effects of the preventive effort itself (e.g. number of abstinent smokers, body weight lost).

It is unlikely that relevant publications were missed in the extensive and systematic literature search including the bibliographies. A bias towards positive and significant results cannot be excluded.

Economic evaluation

Methods

Relevant references published between 1990 and 2004 were identified in a wide literature search strategy through 29 scientific databases. There were no language restrictions (date of search June 2005). Studies focusing on interventions to increase uptake in primary and secondary prevention programmes explicitly, and comparing a minimum of two interventions, effectiveness, costs or cost-effectiveness of interventions were included. Contents and results of selected studies were summarized from an economic perspective and quality was assessed using standard criteria (developed by the German Scientific Working Group Technology Assessment for Health Care). Study objectives, design, target populations, outcomes, costs, discounting, results, sensitivity analysis, discussion and
conclusions of authors were summarized. These aspects were then briefly commented and assessed. Determinants of costs were systematically extracted and listed from included references. Direct medical costs included staff costs and material costs. Additional costs to the participant (i.e., travel and time) were summarized as direct non-medical costs. The determinants of costs were listed to demonstrate similarities and differences of the cost presentation and calculation used in the references. Effectiveness and costs of the interventions used to increase uptake (or incremental cost per additional user) were assessed and compared. In order to allow for descriptive comparison, incremental cost-effectiveness was calculated from the data available, where references did not provide this outcome. Costs were adjusted for inflation rates.

Results

Two health technology assessment reports, one meta-analysis, eight randomized and seven non-randomized primary studies were included. Eleven references originated from the United States, five from the United Kingdom and two from Australia. None of the studies was conducted in Germany.

All but three of the references described individual cost components. Calculation of costs was mostly limited to direct medical costs. Cost of staff was the major component. Direct non-medical costs were described in one reference from a societal perspective. Interventions to increase uptake were assessed in mammography-screening and targeting women as users in a majority of references. Sequence and combination of interventions, calculation and presentation of costs as well as methods used in analysing cost-effectiveness varied substantially between references.

References compared different invitation systems with each other. Invitations combined with a follow-up reminder were compared with invitations only, invitations with educative interventions. Most documents focused on a comparison between written invitations and invitations by telephone. Two trends were identified: (1) invitations with a (written) follow-up reminder increased uptake at moderate incremental costs, when compared to invitations only, and (2) telephone reminders increased uptake (the size of the effect varied) at moderate to high incremental costs, when compared to written reminders.

Discussion

Direct comparison of results was limited by the substantial heterogeneity of references. Publications differed regarding interventions used to increase uptake, selection of study population (inclusion and exclusion criteria), design, setting, determinants of costs included in calculation and assessment of cost-effectiveness. Methods of health-economic analysis were not uniform. Different methods were used to calculate and present costs and to determine effectiveness and cost-effectiveness. The evidence-base was too small for consistently reliable conclusions.

Ethical / Social aspects

References selected for medical evaluation were also assessed searching the content for ethical and social aspects of interventions to increase uptake. The references looked at targeted interventions to increase uptake in specific populations with little or insufficient participation in prevention programmes.
Particular effort was needed to increase uptake in vulnerable populations. Social influence and marketing and outreach activities effectively increased uptake in mammography-screening programmes. Tailored interventions and complex interventions addressing multiple barriers in access to programmes were particularly effective. Uptake in screening programmes for cervical cancer was found to be determined by the socio-economic status of women. Ethnic minorities were effectively reached by culturally sensitive interventions and uptake was increased. The overall evidence did not support a thorough analysis of ethical and social aspects.

Legal aspects

References selected for medical evaluation were also assessed searching the full text for legal aspects of interventions to increase uptake. Informed consent was discussed in a small number of reviews, only. Uptake appeared to decline with the use of increasingly more detailed risk information provided to users. The evidence did not support a thorough analysis of legal aspects.

Discussion of combined results

Systematic reviews and health technology assessment reports mostly originated from the United States and primary studies from Germany were not identified. The authors referred to limitations in directly applying the results from United States references in Germany. Urgent research needs were identified in this review. Published data on uptake in primary and secondary prevention programmes in Germany point to a need for improving the current situation. The results of this review should be relevant to the national population-based mammography-screening programme (currently being implemented) as an example, where uptake was not sufficient in pilot projects. While there was evidence for increased uptake following interventions involving a number of different health related professions, some of these professions are not established in Germany. Currently the training of migrants as health mediators is being studied.

Conclusions

This systematic review respected the complexity of the topic and the heterogeneity of the material. The authors identified qualitative information that can be applied to interventions to increase uptake. The generalizable results were interpreted to be of particular value. The authors recommended to systematically introduce effective interventions in primary and secondary prevention programmes. Research needs were identified in broadening the evidence base, benefiting the co-operation between decision makers, organizations and patients in setting priorities in quality improvement in prevention. The evidence relating to the involvement of health service providers was insufficient and did not allow for an evaluation. This lack of adequate evidence also precluded the evaluation of programmes making use of bonus payments or penalties. Further research needs were identified in addressing primary prevention, as well as the ethical, social and legal aspects of early disease detection. The differences described between the Anglo-American and the German health care systems called for national studies on the specific challenges and opportunities of interventions to increase uptake in Germany. The authors recommended to also consider developments in quality
improvement in future updates. Compliance and non-compliance has increasingly replaced uptake as the outcome of studies following the establishment of professional standards and guidelines. This development was seen to be reinforced by payment schemes making use of rewards and penalties linked to compliance. An update of this report should therefore aim to more clearly differentiate the two outcomes “uptake” and “compliance” and to reflect the development of quality improvement in the German healthcare system.

The ongoing European and national efforts targeting migrants and the growing interest in interventions for “hard-to-reach” populations will be ready for inclusion in an update of this report by 2009 at the latest. The ongoing development and dissemination of communication media and data processing systems support this timing for an update. More recent developments (SMS, Email) could not be adequately addressed in the references. An update is also needed to review the developments in screening for cervical carcinoma, where a new technology for early disease detection is being introduced.

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