

review

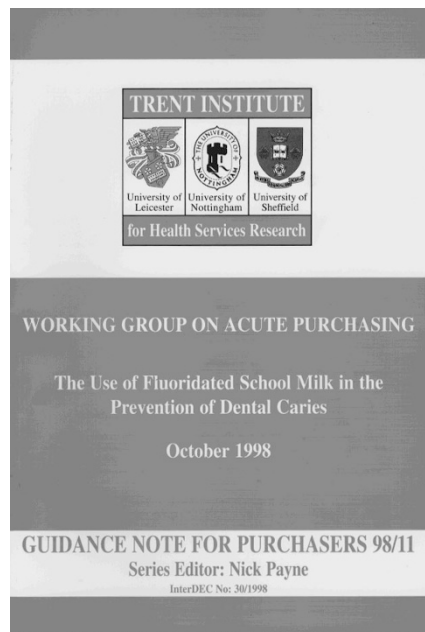
The use of fluoridated school milk in the prevention of dental caries

Calvert N, Thomas N. Trent Institute for Health Services Research, Universities of Leicester, Nottingham and Sheffield 1998.

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This 36-page report on the use of fluoridated school milk to prevent dental caries was produced for the Trent Development and Evaluation Committee (DEC). The purpose of the Trent Development and Evaluation Committee is to help health authorities and other purchasers within the Trent Region by commenting on expert reports which evaluate changes in health service provision.

The Committee recommends, on the basis of evidence provided, priorities for the direct development of innovative services on a pilot basis as well as service developments. Previous reports (which are listed in an appendix) deal with a wide range of important medical conditions and their treatment but this is the first oral health area to be covered.

Each report is produced by a public health consultant from a purchasing authority who leads on the topic. He

or she is assisted by a support team from School of Health and Related Research (SHARR) [<http://www.shef.ac.uk/~scharr/>] from the University of Sheffield, which provides help including literature searching, health economics and modelling. A seminar is led by the public health consultant on the particular intervention where purchasers and provider clinicians consider research evidence and agree provisional recommendations on purchasing policy.

A wider UK collaboration, InterDEC [<http://web.bham.ac.uk/stewaray/InterTASC%20home.htm>] has been formed in order to share this work on reviewing the effectiveness and cost-effectiveness of clinical interventions. The Trent Institute's Working Group on Acute Purchasing has therefore joined with The Wessex Institute for Health Research and Development, The Scottish Health Purchasing Information Centre (SHPIC) and The University of Birmingham Department of Public Health and Epidemiology.

The introduction of water fluoridation in England depends on a complex process requiring detailed consultation. The changes in the water supply systems and the complex and changing structures of health authorities, local councils and water companies has meant that many areas that would clearly benefit from water fluoridation still do not have it. In addition some areas could be difficult to fluoridate because it would not be cost-effective.

The delay in implementing fluoridation means in real terms that large numbers of children particularly those in poorer communities suffer from the effects of dental caries, which could be prevented. The hard-pressed treatment

services have to provide care, which inevitably diverts resources away from other age groups. Restorative care is difficult to provide in young children. There are also risks from general anaesthetics if these have to be used where prevention or conservative treatment has failed.

This report begins by describing the current caries prevalence, highlighting the inequalities in levels of disease and also the high levels of untreated disease. One of the districts (Doncaster) is then described in detail. This district would be technically more difficult to fluoridate, and virtually all the present population drink water with negligible amounts of fluoride. There is a high average level of caries.

The report then summarises the evidence for the effectiveness of fluoridated milk. The method of searching, and the evidence found are summarised and also presented in table form. Current UK trials are also described. The authors conclude from the evidence that milk fluoridation could produce a significant reduction in dmft/DMFT. They also note that its effectiveness is not as great as that of water fluoridation and should not be promoted as a preferred alternative to it.

The report moves onto the cost and benefit implications. There are no known papers published in English formally reporting the cost-effectiveness, nor indeed the costs, of milk fluoridation schemes. The WHO (which has classified milk as a highly cost-efficient vehicle for fluoridation¹⁹) is co-ordinating a number of clinical trials of milk fluoridation throughout Europe and Africa. One of these is the trial in the Wirral in the UK but no economic analysis is expected from this trial before the end of 2000.

Because of the lack of published research evidence on the cost-effectiveness of milk fluoridation, the report

interestingly attempts to estimate the costs and benefits of milk fluoridation using a spreadsheet modelling approach. The modelling assumptions are made using evidence of benefits from the literature and local knowledge for consent and costing information, where necessary. The modelling makes a number of central assumptions as well as the modelled benefits to the individual. It is anticipated that the school milk would be administered for a minimum of 4 years from age four to eight for 200 school days. This is the pessimistic scenario. An optimistic and a central scenario are also modelled against high and low caries groups of children. This is a very interesting and thought-provoking section of the report.

The economic analysis continues with the estimation of costs. The cost of a school milk fluoridation scheme raises interesting issues. Health economists normally like to include all the societal costs of health care interventions when undertaking economic analyses. That is, all the direct and indirect opportunity costs irrespective of who pays, whether it be Government, tax payers, the NHS, Trusts, health authorities, GPs, patients or their families, friends, carers or employers. The report tabulates the societal costs per treated child as well as the discounted cost to the NHS. It also suggests that because of the EC school milk subsidy scheme could radically reduce the total costs of the scheme. The authors wryly note that the savings will be made by the NHS centrally and not redistributed to the local health budget. The report focuses on oral health gain but the potential gain in better nutrition of children from poorer areas should not be overlooked.

A central scenario shows a range of costs per decayed missing and filled deciduous teeth (dmft)/DMFT year saved from £0.47 to £26. The range is dependent upon the initial caries level

in the community and, significantly, on how much of the non-subsidised cost the health authority is required to take from the Local Authority. Benefits after fluoridated milk has ceased to be administered, though not insignificant, are shown to be relatively small. The authors conclude from the detailed modelling that milk fluoridation is likely to be as cost-effective if not more so than water fluoridation although the total benefits are not so great.

The report presents a number of options for the Trent Region in relation to water and school milk fluoridation. It concludes with practical recommendations on what could be achieved. Clearly, fluoride as a community measure is the only reliable method available to health authorities and commissioning bodies to achieve the UK Government's target to reduce caries levels in children. Water is likely to remain the first choice method of fluoridation where it is technically possible, economic, and politically acceptable to fluoridate water supplies.

The economic analysis presented in this paper demonstrates that milk provides a relatively cost-effective vehicle for fluoride in the prevention of dental caries especially in light of the subsidies available. It could be speedily introduced with a simpler consultation mechanism. As such, milk fluoridation would appear to have a role in the reduction of dental caries.

This report is very useful not only because of its results and conclusions but also because of the demonstration of the methods of modelling potential cost benefit and oral health gain. The authors are committed to producing a ready-reckoner spreadsheet to enable health authorities to model cost and benefit implications for their own circumstances.