Canterbury
District Health Board
Te Poari Hauora ō Waitaha

ORAL HEALTH STRATEGY

- Part A –Fluoridation position statement

September 2003

Part B of the Oral Health Strategy relates to a separate document on a detailed Oral Health Strategy for the CDHB

PART A – Fluoridation position statement

TABLE OF CONTENTS

1.0 Position statement.

It is recommended that the CDHB Board consider adoption of the following position statement on fluoridation:

> 'The CDHB recognises that water fluoridation is the most cost-effective, practical and safe means for reducing and controlling the occurrence of tooth decay in communities of over 1000 people.
>
> The CDHB considers that, at less than one percent, the coverage of the Canterbury population by fluoridated water supplies is very low.
> As part of its efforts to improve the oral health of Canterbury people, and to reduce health inequalities, the CDHB will work collaboratively with communities, tangata whenua, and local councils to expand the level of water fluoridation in Canterbury.
>
> The CDHB supports research into the risks and benefits of water fluoridation, and into appropriate alternatives to water fluoridation in communities where fluoridation is not feasible.'

Note:
It is recognised that the addition of fluoride to Canterbury water supplies is an issue for debate and decision by the relevant Territorial Local Authorities in conjunction with their communities which includes the Canterbury District Health Board, and that technical and practical considerations may inhibit progression of this form of fluoride treatment in the near future.

1.1 A short history of water fluoridation.

The history of water fluoridation goes back to the early part of last century when dental researchers, and the United States Public Health Service (USPHS) carried out a number of studies investigating brown staining on teeth. The cause was eventually identified as high levels of fluoride in water supplies. A parallel discovery of great public health importance was that the presence of fluoride was also associated with reduced levels of tooth decay. Further research – on US cities with varying natural levels of fluoride in their water supplies – determined that at a fluoride concentration

in drinking water of one part per million, the adverse effect – fluorosis – was minimal, and there were substantial reductions in decay. Community water fluoridation schemes commenced in the USA in the 1940s, and the first New Zealand scheme began in Hastings in 1954. By the beginning of the 21st century, the USPHS was able to include water fluoridation as one of the ten great public health achievements of the 20th Century.[1]

Over 300 million people in 39 countries have artificially fluoridated water. These include Australia, Canada, Ireland, Israel, Singapore, Spain, the United Kingdom, and the United States. Currently, approximately 56 percent of New Zealand's population on reticulated water supplies receive fluoridated water. In Canterbury, less than one percent of the population does so.

1.2 Recent studies of water fluoridation.

A considerable body of research regarding the benefits and risks of water fluoridation has accumulated, and this has been subjected to systematic review – most recently by the UK National Health Service.[2] This review concluded:

> "The evidence of a beneficial reduction in cavities should be considered together with the increased prevalence of dental fluorosis. There was no clear evidence of other potential adverse effects."

The Irish Government has also recently reviewed water fluoridation (75% of Ireland's population drink fluoridated water), and the conclusions of this review were: [3]

- "Water fluoridation has been very effective in improving the oral health of the Irish population, especially of children, but also of adults and the elderly.
- The best available and most reliable scientific evidence indicates, that at the maximum permitted level of fluoride in drinking water at 1 part per million, human health is not adversely affected.
- Dental fluorosis (a form of discolouration of the tooth enamel) is a well-recognised condition and an indicator of overall fluoride absorption, whether from natural sources, fluoridated water or the inappropriate use of fluoride toothpaste at a young age.

A recent comparison of the oral health of children from Canterbury and Wellington (almost all of Wellington receives fluoridated water) showed that decay levels were 30 percent lower in the fluoridated areas. The differences for Maori children were considerable – only 29 percent of Canterbury's Maori five-year-olds, had no tooth decay , compared to 40 percent in Wellington.[4]

---

[1] CDC (1999): Achievements in public health, 1990-1999: fluoridation of drinking water to prevent dental caries. M.M.W.R. 48, 933-940.

[2] McDonagh,MS; Whiting,PF; Wilson,PM; Sutton,AJ; Chestnutt,I; Cooper,J; Misso,K; Bradley,M; Treasure,E; Kleijnen,J (2000): Systematic review of water fluoridation. BMJ 321, 855-859.

[3] Forum on Fluoridation (2002): Report on the Forum on Fluoridation 2002. Government of Ireland, Dublin.

[4] Lee, M, Dennison, PJ (2003) Water fluoridation and dental caries in five and 12 year old children from Canterbury and Wellington. Submitted for publication.

1.3 Health costs of water fluoridation.

In 1994 the Public Health Commission (PHC) published a report on water fluoridation in New Zealand, which, in part, dealt with the evidence of possible adverse effects.[5] The report found that evidence for adverse health effects such as bone fracture and cancer was inconclusive, and recommended that more research be carried out. The Ministry of Health commissioned a further review of studies on the potential adverse effects of fluoridation, and this was published in 2000.[6] The report stated:

> "No persuasive evidence of harmful effects of optimal water fluoridation was revealed, and, generally, the evidence has strengthened that there are no serious health risks associated with the practice. That was particularly the case for bone fracture risk.

A suggestion arising from this report was that dental fluorosis in New Zealand be further investigated, as no studies on this topic had been carried out in New Zealand since the 1980s. There is new evidence on this topic, from a study carried out in Southland in 2002 (Invercargill city is fluoridated), which suggests that the prevalence of fluorosis has not increased.[7]

1.4 Cost benefit analysis.

The PHC's 1994 report mentioned that water fluoridation was a highly cost-effective public health strategy,[5] and this issue was followed up by the Ministry of Health, which commissioned a study on the cost-effectiveness of water fluoridation.[8] This study found that water fluoridation, in New Zealand, was cost-effective for communities of over 1000 people and concluded that:

> "Fluoridation remains very cost-effective, and is particularly so for communities with high proportions of children, Maori, or people of low socio-economic status."

The Christchurch City council reports that the set-up costs for water fluoridation would be around $3 million with an annual cost thereafter of approximately $250,000. Within the New Zealand context, fluoridation of water supplies is seen as a territorial local authority cost – although the Ministry of Health has recently announced a subsidy scheme for the introduction of water fluoridation. The averted dental treatment costs flowing from water fluoridation are significant. In a city the size of Christchurch these costs could reach $1.7 million per year (from data presented in Wright et al [7]). Where the local council is not fluoridating the water supply, these costs fall on the District Health Board, and individuals.

---

[5] Public Health Commission (1994): Water Fluoridation in New Zealand. Public Health Commission, Wellington.

[6] Bates,M (2000): Fluoridation of water supplies – an evaluation of the recent epidemiological evidence. ESR, Porirua.

[7] Mackay,TD (2003), Enamel defects among Southland 9-year-olds. Thesis submitted for the degree of Master of Community Dentistry, University of Otago, Dunedin.

[8] Wright,JC; Bates,NM; Cutress,T; Lee,M (2001): The cost-effectiveness of fluoridating water supplies in New Zealand. Australian and New Zealand Journal of Public Health 25, 170-178.

2.0 ISSUES

2.1 Public Perception

Overall, the evidence for fluoridation as a safe and effective public health intervention is very strong. Despite this, water fluoridation continues to be debated vigorously between vocal lobby groups. The element of controversy is an important issue, however, because, as the PHC said:[5]

> "Aspects of the controversy over water fluoridation have probably led to some loss of public trust in public health authorities and dental professionals. This could have possible adverse effects on public trust and participation in other health related programs that require complex risk/benefit analysis."

A further consideration is that water fluoridation does impinge, to some extent, on individual freedom. This does not appear to extend as far as a denial of human rights, and the 1994 PHC report [5] cites a 1980 New Zealand Human Rights Commission report which stated:

> "…it is considered that the question of fluoridation of water supplies by public authorities does not constitute a denial of human rights."

The PHC felt that: [5]

> "The proportion of the population concerned with the inconvenience and cost of avoided fluoridated tapwater is unknown but is probably very small."

2.2 Other options.

Focussing on water fluoridation can have the effect of loosing sight of the goal – improving oral health, and reducing health inequalities, and while water fluoridation is currently the best-proved method of accomplishing this goal, it is not the only potential solution. Other solutions include:

- Fluoridated Milk. The annual cost of supplying fluoridated milk to a child at school is estimated at $73 per child which would equate to about $4,000,000 for the 55,000 school-aged children treated by the School & Community Dental Service in Canterbury. This compares with $1 per child to provide fluoridated water.
- Toothpaste. Fluoride toothpaste and toothbrushes could be distributed to low-income children, however behaviour changes from children and parents are required to see the toothpaste used. The UK Health Education Authority reviewed the effectiveness of oral health promotion and found that neither school-based toothbrushing campaigns or mass-media campaigns are effective in changing behaviour.[9]

[9] Kay,E; Locker,D (1997): Effectiveness of oral health promotion: a review. Health Education Authority, London

CDHB staff are actively involved in research into problems associated with tooth decay in the community, and this currently includes both children and the elderly, and looks also at specific issues for Maori and Pacific people in the district. This research has been and continues to be supported by the CDHB, the Healthy Christchurch Project (which incorporates some 200 organisations including the Christchurch City Council), the Health Research Council, and the NZ Dental Association.

3.0 Summary.

The weight of scientific evidence supports water fluoridation as a safe and cost-effective method of improving oral health. It benefits individuals throughout their lifespan, and has been shown to reduce health inequalities. There are currently no other options which can compete with fluoridation in terms of population coverage, clinical effectiveness, or cost-effectiveness.

The initial stages of implementing a process of collaboration and the development of alternatives will be able to be met from existing resources. In those areas of Canterbury which are unlikely to have fluoridated water for some years, it is important that the CDHB work with the relevant Territorial Local Authorities on alternatives and the funding thereof. The costs of doing nothing are that many Canterbury people continue to suffer from a preventable disease, which the CDHB and those individuals must pay to treat, and consequent health inequalities persist. Failure to improve oral health also prevents the CDHB from reallocating resources from reduced treatment costs for children, into increased services for other groups. – Ultimately, the responsibility for water fluoridation rests with the local authorities. It is important therefore that the CDHB works with the Christchurch City Council and other Canterbury local authorities on this critical health issue.

4.0 Recommendation.

We recommend that the Canterbury District Health Board adopts this position statement as outlined in Section 1.

Prepared by:

School and Community Dental Service
Planning & Funding
Community & Public Health

Report from Chief Adviser, Oral Health, Ministry of Health (e-mail format)

Hi Megan,

Thank you for forwarding Part A - Fluoridation position statement. The review is particularly succinct and well done. It addresses an important part of public health policy in New Zealand and if anything understates the importance of water fluoridation as a population based health gain strategy.
Water fluoridation was identified by the US Surgeon General as one of the 12 most influential public health measures of the 20th Century. Further there is increasing concern in New Zealand that the changing dietary habits of adolescents, rising poverty in certain areas of New Zealand and disparities in dental diseases between ethnic groups in New Zealand is contributing to a rise in health inequality. Water fluoridation is unaffected by race or income and provides a degree of levelling of these inequalities. There is no real alternative although the paper canvassed both fluoridated milk and fluoride toothpaste.

The paper possibly understates a small but very vociferous minority who are opposed to water fluoridation. There is little doubt that water fluoridation is a "cause" which captures certain people and groups. The evidence on the safety, effectiveness and benefit of water fluoridation is well established in the scientific and public health community but it does mean health institutions must be prepared to withstand opponents for the overall benefit of the population and community at large.

I am most supportive of the paper and its recommended position statement.

Clive Wright
Chief Advisor, Oral Health
Health Services
Clinical Services Directorate
Ministry of Health
DDI: 04 496 2020
Mobile: 021 414 672
Fax: 04 496 2493

http://www.moh.govt.nz/oralhealth
mailto:clive_wright@moh.govt.nz