Issues Paper

EDUCATION AND HEALTH STANDING COMMITTEE

Oral health: facts and friction

Presented by
Ms J.M. Freeman MLA

June 2018
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Report No. 4

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Ms J.M. Freeman, MLA

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Oral health: facts and friction

Oral health is a state of being free from mouth and facial pain, oral and throat cancer, oral infection and sores, periodontal disease, tooth decay, tooth loss, and other diseases and disorders that limit an individual’s capacity in biting, chewing, smiling, speaking, and psychosocial wellbeing. — World Health Organisation

Delivering oral health to the State is challenging

After a period of improvement between the 1970s and 1990s, Australia’s oral health has plateaued in the past 20 years. While some parts of the community may have experienced improvement, inequitable access to oral health care means that some population groups fare worse than others. In Western Australia, Aboriginal people, people living in regional and remote areas, people who are socially disadvantaged or on low incomes and people with additional and/or specialised health care have poorer oral health than others in the community. This is a well-recognised challenge for public health policy-makers. In addition, they must grapple with challenges such as increasing sugar consumption, poor diet and increased use of bottled water.

As the State Government tackles these challenges in seeking to improve the oral health of Western Australians, one thing that remains consistent is its position on fluoridated water as a public health initiative. As in all other Australian states and territories except Queensland, the State Government is mandated to add fluoride to the public water supply. Fluoride delivered through the public water supply is believed to be the best way to ensure that as many people as possible have access to what are widely accepted as the protective properties of fluoride, regardless of socioeconomic circumstances.

5 Prior to 2008, the addition of fluoride to water supplies in Queensland was regulated by the Fluoridation of Water Supplies Act 1963. Under this legislation only 5% of drinking water supplies were fluoridated. Water processing is a local government responsibility and the Minister for Local Government, rather than the Minister for Health, was responsible for fluoridation. In 2008 the Queensland Government mandated the addition of fluoride to its water supplies, but this legislation was amended in 2012 following a change of government, returning the authority to fluoridate to local councils.
While the Department of Health (the Department) says that water fluoridation ‘forms part of a suite of caries prevention initiatives’, it also states that water fluoridation is the foundation of all the strategies currently in place to improve oral health. This has seen access to fluoridated water expand to reach 92 per cent of the State’s population since its introduction to the metropolitan area in 1968. However, not everyone in the community supports fluoridation. Some question its oral health benefits, some believe it has harmful health effects, and some resent not having a choice about what is added to their water. Residents in areas where the addition of fluoride has been proposed have also complained about the Department’s consultation process.

This paper considers some of the challenges for the Department in working to improve the oral health of the State’s population, including how it deals with community opposition to fluoridation. The Department may need to consider its approach to reassuring the community about the use of fluoride, and how to address the oral health needs of those who cannot access, or choose not to access, fluoridated water. Also, given that fluoride is but one part of a suite of dental health strategies, and considering the range of factors that determine dental health, is enough being done in other areas?

The Committee has chosen to present this discussion in the form of an issues paper, and not by way of an inquiry. Hence, we did not call for submissions. However, we did conduct a hearing with Department representatives and a hearing with two representatives of the anti-fluoridation group Fluoride Free WA. Several documents were provided in relation to these hearings.

**The dental health of Western Australians is better than average**

The State Oral Health Plan 2016–2020 states that WA has the lowest prevalence of child tooth decay in Australia, affecting 36.4 per cent of six-year-olds and 31.9 per cent of 12-year-olds. However, it should be noted that the 2009 survey from which these figures are taken does not include data for New South Wales or Victoria and the authors advise caution in comparing states and territories. It should also be noted that while WA 12-year-olds had the lowest prevalence, the original source shows that for 6-year-olds the ACT actually had the lowest prevalence (30.6 per cent).

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7 Mr Martin Glick, Director, Dental Health Services, Department of Health, *Electronic Mail*, 23 April 2018.
Another national study, the National Child Oral Health Study 2012–14, shows that the prevalence of untreated decay in WA children (aged 5–10) was 22.4 per cent, lower than the national average of 27.1 per cent. South Australia had the lowest prevalence (16.6 per cent). In terms of overall caries experience, prevalence for WA children – 40.3 per cent – was again lower than the national average (41.7 per cent). The ACT had the lowest prevalence of 31.9 per cent.

**Figure 1: Prevalence of untreated decay and overall caries experience in the primary dentition (children 5–10 years)**

For adults, the State Oral Health Plan 2016–2020 quotes the National Survey of Adult Oral Health 2004–06 figures. Although this data is quite old, it is also the data used by the recently published Australian Oral Health Tracker; a 2017–18 survey is underway. The figure for untreated tooth decay is 19.6 per cent, which is lower than the national figure of 25.5 per cent. However, for people living outside Perth, the rate was higher – 29.2 per cent.¹¹

An average of 13.1 teeth per person were decayed, missing or filled at the time of the survey, compared to the national average of 12.8.¹² The prevalence of filled teeth in WA was 82.5 per cent, slightly lower than the national figure of 83.9 per cent. Not surprisingly, people aged 35 or more had around 1.5 times as many filled teeth as those aged 15 to 34, reflecting the accumulation of dental decay. The number of filled teeth

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¹² *ibid.*, p30.
is also a reflection of access to dental care, and the type of care (i.e. restoration rather than extraction).\textsuperscript{13}

The adult survey recorded indicators of socioeconomic status, such as holding a means-tested health care card or pensioner concession card. The number of decayed, missing and filled teeth (DMFT) varied according to cardholder status, with those holding a card having an average of 17.1 DMFT and those without a card 11.9. (Note, however, when age was accounted for, there was little difference in the average.) Insured people were much more likely to have visited a dentist in the preceding 12 months than uninsured (68.7 per cent compared to 50.8 per cent).\textsuperscript{14}

People of lower socioeconomic status were also more likely to have gingivitis (inflammation of the gums caused by plaque accumulation), and complete tooth loss was more prevalent among cardholders and those without dental insurance.\textsuperscript{15}

While the National Survey of Adult Oral Health 2004–06 and the National Child Oral Health Study 2012–14 report dental health according to Indigenous status, they do not report data on Indigenous dental health by state. Nationally, prevalence of dental caries and untreated dental caries in Aboriginal and Torres Strait Islander children is 1.5 and 2.5 times higher than the national average respectively. The adult survey, whilst acknowledging the low number of Aboriginal Australians interviewed, also found evidence of poorer oral health among Aboriginal Australians, particularly in regard to tooth loss, untreated decay and tooth wear.\textsuperscript{16}

**Those with the worst oral health need more attention**

While the oral health of Western Australians overall compares well with the rest of the nation, Western Australia still must tackle the problem of inequitable access to oral health care that results in pockets of the community having poor oral health.

The State Oral Health Plan 2016–2020 (the Plan) outlines a number of strategies designed to improve oral health outcomes, including better access to oral health promotion activities, better access to services and more equitable distribution of the dental health workforce.

There are additional targeted strategies designed to overcome inequities experienced by four ‘Priority Populations’ with the worst oral health: the socially disadvantaged or those on low incomes; Aboriginal people; people living in regional and remote areas of


\textsuperscript{14} ibid., p41.

\textsuperscript{15} ibid., p39.

\textsuperscript{16} ibid., p238.
Western Australia; and people with additional and/or specialised health care needs.\textsuperscript{17} These include improving oral health literacy, increasing the number of Aboriginal people in the oral health workforce, exploring ways to reduce the cost of oral hygiene products in rural and remote areas, more flexible oral health service delivery in regional and remote communities, and building workforce capacity to meet the needs of those with specialised health care requirements.\textsuperscript{18}

People on low incomes, who can least afford dental care, generally have fewer teeth than those on higher incomes, according to the 2013 National Dental Telephone Interview Survey. Those in households earning less than $30,000 a year had an average of 8.6 teeth missing compared to 3.2 for those in households earning $140,000 or more.\textsuperscript{19}

The same survey reported that nearly a third of people aged five or older avoided or delayed visiting a dentist due to cost. For adults aged 25 to 44, the figure was 45 per cent. While half of the population had some level of private health insurance with dental cover, people living in lower income households were less likely to have dental insurance.\textsuperscript{20}

Since the free Australian School Dental Scheme, implemented in the 1970s, reverted to state responsibility in 1981, states and territories have made independent decisions on what level of support to provide school or community-based dental services for children. Since the mid-1990s, coverage by the School Dental Scheme has rapidly decreased nationally. However, in WA, the School Dental Service (managed by Dental Health Services, the main provider of public dental services in WA) provides free universal general dental care for children aged 5 to 16 years, with the enrolment rate for five year olds at 80 per cent. The Department says that priority populations are well represented in the program. The School Dental Service also offers children from schools in lower socioeconomic areas (determined using the Index of Community Socio-Educational Advantage) fissure sealing of their permanent molars.\textsuperscript{21}

Dental Health Services also offers subsidised dental care to Health Care and Pensioner Concession cardholders. However, with 85 per cent of the oral health workforce employed in the private sector and limited funding for public patients, it is estimated

\textsuperscript{17} WA Department of Health, \textit{State Oral Health Plan 2016–2020, Office of the Chief Dental Officer, Clinical Services and Research, Department of Health, Perth, 2016, p10.}
\textsuperscript{18} \textit{ibid.}, p19.
\textsuperscript{19} S Chrisopoulos, JE Harford and A Ellershaw, \textit{Oral health and dental care in Australia: key facts and figures, Cat no. DEN 229, AIHW, Canberra, p13.}
\textsuperscript{20} \textit{ibid.}, p51.
\textsuperscript{21} Dr Richard Lugg, Chair, Fluoridation of Public Water Supplies Advisory Committee, Department of Health, \textit{Letter, 5 June 2018.}
that only about 20 per cent of those eligible for free or subsidised services are able to access care.\textsuperscript{22}

The Department says that Aboriginal populations experience higher rates of dental caries due to a combination of social determinants (including past policies that enforced social inequality) and lack of access to quality health services.\textsuperscript{23}

Dental Health Services public dentists/dental teams are located across the State in mainstream services as well as in 11 of the Aboriginal Community Controlled Health Services. The Department says that the number of Aboriginal people accessing public dental care has increased by 59 per cent between 2010–11 and 2017–18. Commonwealth funding has enabled the Department to partner with non-profit health service providers, such as the Kimberley Dental Team, to increase access to free dental care for Aboriginal people. In the Rockingham region, a partnership with Moorditj Koort Aboriginal Health and Wellness Centre will enable free dental care for Aboriginal people living with chronic disease.\textsuperscript{24}

Since many Aboriginal communities do not have access to fluoridated water, the Department has implemented a fluoride varnish program whereby varnish is applied every six months to the teeth of children aged 18 months to five years. Non-oral health workers have been trained to do this, given the inequitable distribution of the dental workforce in WA. Since its inception in 2015, 81 health professionals have been successfully trained, including Aboriginal Health Workers and Aboriginal Health Practitioners.\textsuperscript{25}

Dental Health Services appointed two Aboriginal people (to one position) in the past year under Section 51 of the \textit{Equal Opportunity Act} 1984, and its Aboriginal Dental Clinic Assistant Trainee Program produced six graduates (who are now employed) in 2017. Another four are currently part of the program.\textsuperscript{26}

Still, only 1.9 per cent of unregistered dental staff (i.e. dental assistants) working in the public sector in WA identify as Aboriginal, and only 0.21 per cent of registered dental practitioners (public and private) identify as Aboriginal. The national figure is only slightly higher at 0.3 per cent. This may improve in time, with 7.15 per cent of oral health students at the UWA dental school identifying as Aboriginal.\textsuperscript{27}


\textsuperscript{23} Dr Richard Lugg, Chair, Fluoridation of Public Water Supplies Advisory Committee, Department of Health, \textit{Letter}, 5 June 2018.

\textsuperscript{24} ibid.

\textsuperscript{25} ibid.

\textsuperscript{26} ibid.

\textsuperscript{27} ibid.

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The low number of Aboriginal people working in dental health makes projects such as the qualitative research on Aboriginal perceptions of oral health conducted by Durey et al. (2017) all the more important. The Department acknowledges that Aboriginal Australians are often not consulted on decisions about their health and gives some details of its efforts to consult and engage with Aboriginal health services. The Committee is unable to comment on the quality or effectiveness of this engagement without more information from those involved.

A number of studies have been conducted in the past decade which seek to understand the experiences of migrants and refugees in accessing oral health services. The Plan recognises the difficulties for these groups within its discussion of socially and economically disadvantaged populations. Transport difficulties, communication and access to interpreters are among the problems identified, with public dental services unable to meet demand and funds for credentialed interpreting services regarded as insufficient. Sharing the resources of existing primary health care services was seen as a possible way to address this. Oral health literacy is also poorer in refugee communities and targeted culturally appropriate oral health information is needed. The Plan offers very few initiatives for addressing access issues for culturally and linguistically diverse communities.

According to the Plan, demand for oral health services is expected to increase due to the growth and ageing of the population, increased tooth retention, consumer expectations and changing dental service provision. It is estimated that one-quarter of the population will be aged over 65 by 2056 and that most will retain at least some of their natural teeth. Given that older people have higher rates of decay and gum disease, the Plan expects a higher level of support to maintain oral hygiene will be required.

Those on low incomes and in residential care are particularly vulnerable to oral health problems, according to the Plan, and the existence of other diseases associated with

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31 Ibid., p36.
32 Ibid., p60.
old age (including dementia) adds another level of complexity to the treatment. Older people also find it more physically difficult to access dental care, either due to frailty or to a lack of suitable transport.

According to the Plan, Western Australia needs more data about the ageing population to address its needs properly. It also identified a need to build the capacity of health workers, care workers and dental practitioners to assist and treat older people with specialised needs. According to the Department, WA’s first special needs dental specialist commenced at Fiona Stanley Hospital earlier this year and the University of Western Australia’s dental school is recruiting a full-time special needs dental specialist in preparation for its Doctor of Clinical Dentistry (Special Needs Dentistry) program.

While workforce projections indicate that the supply of oral health workers will exceed demand through to 2025, inequitable distribution of the workforce remains a challenge. The Department says that in regional and remote areas, where recruitment can be difficult, a mentoring program had been implemented to provide support for dental practitioners. Fly in-fly out teams had been deployed in some locations.

One way of increasing access to oral health care is to allow oral hygienists to perform services such as a scale and clean and check-up without the client necessarily having to visit a dental surgery. In a recent Estimates hearing the Minister for Health said details of how this would operate still needed to be refined but he was keen to see this type of service implemented. The Committee believes it is important to increase availability of these services and supports the Minister in pursuing delivery in such a manner.

Some elements of the State Oral Health Plan are very similar to recommendations made in the Oral Health Atlas, an international publication of the FDI World Dental Federation. Its recommendations for providing oral health care and improving access include: improving the availability of oral healthcare services targeting disadvantaged population groups; public health action on the broader determinants of health; working in partnership across relevant sectors, agencies and professions; and dentist-led oral healthcare teams that include a flexible mix of mid-level providers and others in the context of primary health care.

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34 Dr Richard Lugg, Chair, Fluoridation of Public Water Supplies Advisory Committee, Department of Health, Letter, 5 June 2018.
35 ibid.
36 Hon Roger Cook, Minister for Health, Western Australia, Legislative Assembly, Estimates Committee A (Hansard), 23 May 2018, p18b–24a.
The State’s policies for improving oral care, as outlined in the Plan, line up well against international thinking – it is just a matter of implementing them. As noted in WA’s Estimates 2018-19, funding for dental health is complex and the State is largely dependent on Commonwealth funds, which it has to fight for.38

Tackling sugar intake should be central to the oral health strategy

One aspect of oral health that is not addressed particularly well in the Plan is sugar consumption – yet it is at the top of the list of risk factors and determinants of oral health in the 2018 Oral Health Tracker:

Consumption of free sugars is the main contributor to dental caries in children, young people, and adults.39

Similarly, the Oral Health Atlas states that:

Tooth decay is a complex multifactorial disease, but the main reason for its high prevalence is high sugar consumption, coupled with the lack of effective preventive strategies and limited access to appropriate oral healthcare.40

The Oral Health Tracker quotes a 2011–12 Australian Health Survey which puts the average daily amount of free sugars41 consumed by Australians at 60g each (75g for Aboriginal and Torres Strait Islander Australians).42 However, according to the Oral Health Atlas, Australia is among the 65 countries that consume more than 100g per person per day. Either way, it is well above the World Health Organisation’s ‘strong recommendation’ of a daily sugar intake of no more than 50g (or 10 teaspoons).43

Almost three-quarters of children and young people and almost half of adults consume too much free sugar. The Oral Health Tracker, which sets a series of targets for improving oral health by 2025, recommends a reduction of 30 per cent in the number of people exceeding the recommended intake. It sees this as ‘one of the most cost-
effective, efficient, and equitable ways to improve population oral health’.

The tracker does not offer any advice on how to achieve this, other than to suggest that ‘health promotion should focus on the intake amount and frequency of free sugars’.

The Oral Health Atlas goes further, promoting the WHO ‘additional recommendation’ of no more than 25g (or five teaspoons) per day. Only 19 countries (none of them western countries) consume less than 25g per person per day. The atlas notes that worldwide consumption has tripled over the past 50 years. It says that reducing sugar consumption, increasing appropriate fluoride use and maintaining good oral hygiene would largely prevent tooth decay.

The State Oral Health Plan 2016–2020 acknowledges that ‘consumption of food and drinks high in sugar increases the risk of tooth decay’ (a somewhat conservative statement compared with the publications which describe sugar as the main cause of decay), but there is no strategy which directly targets sugar consumption. It subscribes to the 11 oral health promotion messages agreed to at a national conference, which include limiting sugary foods and drinks and ensuring sugary fluids are not placed in infant feeding bottles, but there do not seem to be specific strategies for how to achieve this. However, the Plan notes that these oral health messages are similar to general health messages that are promoted elsewhere by the Department (for example, the ‘Rethink sugary drink’ and ‘Livelighter’ campaigns, which are primarily aimed at weight reduction). The Department says that it ‘embeds’ oral health messages into health promotion delivered by other workers such as child health nurses, school nurses, teachers, GPs and Aboriginal health workers.

This is part of the Plan’s goal to include oral health components in all relevant models of care and health pathways in the general health sector. This is an approach recognised and promoted globally; the Oral Health Atlas notes that the close association between oral and general health makes collaboration between professionals in both areas important for lifelong, holistic care.

The State’s goal to better align and integrate the social, health and education systems to support oral health also reflects the understanding internationally that health is largely determined by social factors. As the Oral Health Atlas notes, ‘the circumstances

45 ibid., p7.
48 Mr Martin Glick, Director, Dental Health Services, Department of Health, Electronic Mail, 23 April 2018.
into which people are born, grow, live, work and age ... largely determine the behaviours people adopt and the choices they make. These are shaped by factors such as economics, social policies, education and politics.

*Policies and approaches aimed at reducing poverty, increasing social inclusion and improving the general levels of education and employment, combined with reducing barriers to healthcare, promoting affordable housing, safe water and sanitation, and protecting minority and vulnerable groups have the greatest potential to deliver sustainable improved health and oral health status.*

Social factors also interact with a set of common risk factors impacting on oral health, of which sugar is but one. The other key risk factors are tobacco, alcohol and poor diet. These are also risk factors for most other non-communicable diseases. However, experts warn that tackling these factors by trying to modify people’s behaviour will only have limited success if the social factors which influence these behaviours are not also addressed. Some of these goals, such as reducing poverty, are obviously harder to achieve than others, but it is widely acknowledged that improvement in any of these areas will have a positive impact on oral health.

**Fluoridated water is the foundation of the oral health strategy**

Fluoridation of the water is a key part of the Department’s oral health strategy, and most Western Australians (92%) now have access to fluoridated drinking water. The Department is aligned with the Federal Government’s stance on fluoridation, and follows the recommendations of the National Health and Medical Research Council (NHMRC).

In 2014, to address community concerns about potential health problems from drinking fluoridated water, the NHMRC commenced a new evidence evaluation to update its 2007 systematic review. The 2007 review formed the basis of its public statement supporting the practice of community water fluoridation, and of maintaining water fluoride levels between 0.6 ppm and 1.1 ppm.

The new review was published in July 2017. The NHMRC’s 2017 public statement on water fluoridation and human health was consistent with its 2007 statement. It concluded that community water fluoridation is a safe, effective and ethical way to help reduce tooth decay across the population, and supported Australian states and territories maintaining current levels of fluoridation. The NHMRC undertook the second

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51 ibid., p94.
52 ibid., p39.
53 Parts per million
review partly to assess evidence from a review undertaken by the Cochrane Collaboration\textsuperscript{54} in 2015. The review, \textit{Water fluoridation for the prevention of dental caries}, commonly referred to as the Cochrane Review, did not offer outright support for water fluoridation. The review of 20 studies which examined tooth decay found that while water fluoridation was effective at reducing caries levels in children’s teeth, there was not enough contemporary evidence (meeting the review’s inclusion criteria) to determine the effectiveness of water fluoridation for preventing caries in adults. More studies were needed.\textsuperscript{55}

It noted that while there were low to very low levels of caries in areas where a large percentage of the population received fluoridated water (either natural or artificial), there were also many other parts of the world where fluoridated water was not widespread that also had low caries levels. Equally, there were areas with a relatively high distribution of water fluoridation, such as Brazil, that had moderate caries levels.\textsuperscript{56}

The review also noted that the decision to implement a water fluoridation program relied upon ‘an understanding of the population’s oral health behaviours (e.g. use of fluoride toothpaste), the availability and uptake of other caries-prevention strategies, diet and consumption of tap water, and the movement/migration of the population’.\textsuperscript{57}

Although the Cochrane Review was one of the key documents the NHMRC reviewed, the NHMRC formed the view that because its parameters excluded many Australian studies of fluoridation and decay, it was not particularly relevant to Australia. It stated that fluoride levels in the studies on dental fluorosis\textsuperscript{58} that were included in the Cochrane Review exceeded current Australian levels – hence, the results were less applicable. The Cochrane Review suggested that about 12 to 15 per cent of people would have fluorosis ‘of aesthetic concern’ with water fluoridation at current Australian levels. However, the NHMRC noted that the three studies in the review did not consider other sources of fluoride (such as in toothpaste), and also concluded that ‘the cut-off point used to define the level of fluorosis “of aesthetic concern” in these

\textsuperscript{54} The Cochrane Collaboration is an international network of authors/editors responsible for preparing Cochrane Reviews. Its work is internationally recognised as the benchmark for high quality information about the effectiveness of health care. Australia has more than 2900 authors and 100 editors that contribute.


\textsuperscript{56} \textit{ibid.}, p28.

\textsuperscript{57} \textit{ibid.}, p32.

\textsuperscript{58} Fluorosis is the marking of permanent teeth caused by swallowing excessive amounts of fluoride when permanent teeth are developing. It can range from mild white patches on the teeth to severe mottling with brown staining.
Fluoridation of Western Australia’s water

Fluoridation was introduced to Perth water supplies in 1968. The authority to fluoridate Western Australia’s water comes from the *Fluoridation of Public Water Supplies Act 1966*. According to the Act, drinking water supplies can only be fluoridated by direction from the Minister for Health after receiving advice from the Fluoridation of Public Water Supplies Advisory Committee.

The optimum fluoride level ranges from 0.7 to 1.0 milligrams per litre (or parts per million) for the Perth metropolitan area, and 0.6 to 0.9 milligrams per litre elsewhere. This is within the National Health and Medical Research Council guideline of 0.6 to 1.1 milligrams per litre.

The fluoride is added to the water in a continuous stream. The Water Corporation monitors fluoridated water supplies continuously and samples at least weekly. Fluoridation performance is reported quarterly to the Advisory Committee for Purity of Water. Overall drinking water quality is regulated by the Department of Health in accordance with the Australian Drinking Water Guidelines to ensure it is safe to drink. Microbiological, chemical and radiological analyses conducted by independent laboratories confirmed in 2016–17 that all metropolitan and country localities serviced by the Water Corporation met the Department of Health standards.

Fluoride is added as either fluorosilicic acid or sodium fluoride. Fluorosilicic acid, which is added at the treatment plant as a liquid, is made from phosphate rock and sulphuric acid. It is a by-product of superphosphate (fertiliser) production and is sourced mostly from CSBP Kwinana. Sodium fluoride is added as a powder to some smaller drinking water supplies. It is produced by neutralising hydrofluoric acid with soda ash or reacting sodium fluorosilicate with caustic soda or soda ash. It is sourced from the water treatment company Ixom.

According to the Water Corporation, the approximate average cost of fluoridation is $1 per person per year.


reviews was set too low’.59 The NHMRC reported the Cochrane Review’s findings that fluoridation had resulted in a 35 per cent decrease in decayed, missing and filled deciduous teeth and a 26 per cent reduction in decayed, missing and filled permanent teeth.60 It also reported that the Cochrane Review had been unable to draw any conclusions on the effect of water fluoridation on inequality in oral health between socioeconomic groups.61

The NHMRC report does not comment on some other aspects of the report, such as the difficulty in assessing fluoride intake:

59 National Health and Medical Research Council (NHMRC), *Information paper – Water fluoridation: dental and other human health outcomes*, report prepared by the Clinical Trials Centre, University of Sydney, NHMRC, Canberra, 2017, p40.
60 *ibid.*, p26.
61 *ibid.*, p32.
in many parts of the world more industrially processed foods are consumed, with less food being prepared and cooked in the home using locally sourced water. Variation in fluoride concentrations in water across regions and countries, and the increase in processed foods and beverages and their transportation, make it difficult to assess dietary fluoride intake. Such changes may mean that, although the tap water is fluoridated in a particular area, some members of the population do not consume a sufficient volume, either through beverages or foods prepared with tap water, to provide a benefit to their oral health.62

Groups such as Fluoride Action Network Australia have criticised the NHMRC report’s treatment of the Cochrane Review, saying it neglected to report matters that did not fit the NHMRC’s pro-fluoridation agenda.63 Fluoride Free WA, which is closely aligned to the Fluoride Action Network here and in the US, also said that the NHMRC had ignored evidence and that it was ‘stacked towards pro-fluoridation’.64

The effects of fluoridated water are furiously debated

There are a number of different positions on the merits of fluoridation of drinking water, which fit somewhere on a spectrum from complete support and belief in the practice as a no-risk public health initiative, to complete opposition to fluoride applied in any form because it provides no dental benefit and has severe health impacts.

The Committee is of the view that there is no convincing published evidence that adding fluoride to the water has serious negative health effects. The most recent NHMRC evidence evaluation found no reliable evidence of an association between water fluoridation at current Australian levels and other human health outcomes, such as cognitive dysfunction, lowered IQ, cancer, hip fracture and Down syndrome. One of the issues here is ‘reliable evidence’. In exactly the same way as it is difficult to find reliable studies showing the benefits of fluoridation, studies of ill effects may be low quality, have a high risk of bias or not be applicable to Australia. For example, the NHMRC considered 11 studies investigating the relationship between water fluoride levels and IQ, eight of which found that average IQ was lower in the areas that had higher levels of fluoride. However, the levels of fluoride were higher than in Australia

63 Merilyn Haines, A damning critique and analysis of the NHMRC’s 2017 “Sham” review of water fluoridation and appeal for Royal Commission Inquiry: 23 Reasons why Australia needs a Royal Commission into the NHMRC’s fraudulent fluoride review, 3 August 2017.
64 Mr Andrew Parry, President, Fluoride Free WA, Transcript of Evidence, 9 May 2018, p6; Mr John Watt, Vice President, Fluoride Free WA, Transcript of Evidence, 9 May 2018, p7.
so these were dismissed. The NHMRC found only one study which it regarded as high quality, and this showed no association between IQ and fluoridation.65

The only negative effect that the NHMRC accepts is fluorosis – patchy white or brown marks on the teeth which can occur if too much fluoride is used. The NHMRC acknowledges that fluorosis is more common in children who live in areas with fluoridated water, but says that only 0.1 per cent of children have moderate to severe dental fluorosis. About 17 per cent had mild fluorosis (down from 40 per cent in the 1990s).66 One report suggests that in children, the margin between the beneficial effects of fluoride and causing dental fluorosis is very narrow.67

In some cases, where fluoride levels are very high or where there is prolonged ingestion, cases of skeletal fluorosis have been reported. Skeletal fluorosis is a chronic metabolic bone disease caused by ingestion or inhalation of large amounts of fluoride and manifests as joint pain, numbing and tingling of the extremities, back pains and knock-knees.68 Negative health effects such as cognitive impairment, hypothyroidism and uterine cancer have also been claimed, along with suggestions that children are exceeding agreed limits.69 But Cheng, Chalmers and Sheldon (2007) point out that the limitations of collecting evidence (problems measuring fluoride exposure, long latency in chronic disease, and modest effect sizes) make it ‘almost impossible’ to detect risks following the introduction of fluoridation.70

**Decay has decreased in countries with fluoridated water – but also those without**

The proposition that fluoridated water makes a difference to oral health is countered by evidence that countries without fluoridated water have equivalent levels of oral health.

The NHMRC evaluation found that water fluoridation reduces tooth decay by 26 per cent to 44 per cent in children and teenagers, and by 27 per cent in adults. Other

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65 National Health and Medical Research Council (NHMRC), *Information paper – Water fluoridation: dental and other human health outcomes*, report prepared by the Clinical Trials Centre at University of Sydney, NHMRC, Canberra, 2017, p46.

66 ibid., p40.


69 ibid., p6.

dental health researchers agree, and are in no doubt as to the strength of the evidence. According to the Oral Health Tracker:

The association between the consumption of low-concentration fluoride and reduced rates of dental caries was originally established in the 1930s and has been continually reinforced by a robust and expanding evidence base.  

Australians born after 1970 (when the majority of water fluoridation programs commenced in Australia) had approximately half as many dental caries compared with their parents’ generation. Others point out that the 1970s was also when the use of fluoridated toothpaste became common.

The so-called York review (conducted by York University in 2000) also found that studies that met the minimal quality threshold indicated that water fluoridation reduced the prevalence of caries; however, the size of the effect was uncertain.

The Cochrane Review concluded that water fluoridation is effective at reducing caries levels in both deciduous and permanent teeth in children, but did not find evidence to determine the effectiveness of water fluoridation for preventing caries in adults.

Similarly, a European Commission report states that ‘the effect of continued exposure to fluoride from whatever source is questionable once the permanent teeth have erupted’.

Even some articles that are critical of water fluoridation acknowledge the positive impact of fluoride in the prevention of dental caries (e.g. Peckham & Awofeso 2014), pointing out that the action of fluoride on dental caries prevention is topical. This may explain, in part, why countries which do not practise water fluoridation have levels of decayed, missing and filled teeth (DMFT) which are comparable to countries where water fluoridation is practised.

A graph presented to the Committee by Fluoride Free WA (FFWA) shows the development of DMFT for 12-year-olds in a selection of western industrialised

72 Ibid.
74 A Systematic Review of Water Fluoridation, NHS Centre for Reviews and Dissemination, the University of York, p67.
76 European Commission, Critical review of any new evidence on the hazard profile, health effects, and human exposure to fluoride and the fluoridating agents of drinking water, Scientific Committee on Health and Environmental Risks (SCHER), 2011.
countries from 1960 to around 2015 (see Appendix 2). Some countries are listed as having water fluoridation and some are listed as not having water fluoridation, but all follow the same pattern of an overall decreasing number of DMFT over the period. When asked to comment on this graph, the delegated chair of the Fluoridation of Public Water Supplies Advisory Committee (FPWSAC) said that he had been told by the director of the centre (in Sweden) that produced the data that the graph may have used the data incorrectly.77

However, a very similar graph, using the same source data, was published in an article in the British Medical Journal in 2007.78 Both graphs listed the data as being sourced from the oral health country/area profile project (or program), otherwise known as CAPP. The CAPP database was established by the faculty of odontology at Malmö University in Sweden on behalf of the WHO Global Oral Health Programme for oral health surveillance. While the graph provided by FFWA is overcrowded, making individual lines difficult to read, the end points of each line on the graph appear to correspond to figures available on the CAPP website. While both graphs show the same downward trend over time, they are difficult to compare because they present different timespans. However, it seems reasonable to accept that the graph presented in a respected peer-reviewed journal, using data sourced from a long-established dental institute, is not misrepresenting the situation.

Aside from this, world maps illustrating tooth decay and fluoridation in the Oral Health Atlas show that access to fluoridated water does not necessarily correlate with the lowest levels of tooth decay. Table 1 shows that countries in which less than five per cent of the population have access to fluoridated water are represented across all of the decay categories, from very low to high. Some countries may have other population-based fluoridation initiatives, such as fluoride added to table salt, and this may contribute to good oral health in countries without fluoridated water. According to the atlas, 300 million people worldwide use fluoridated table salt, compared to 370 million using fluoridated water. But using fluoride toothpaste is by far the most common way to access fluoride, with 1500 million people accessing it this way.79

Reliable information on access to fluoride across the world is difficult to come by. Even large parts of the map in the Oral Health Atlas, published as recently as 2015, are marked as ‘no data’. Five to six per cent of the world’s population is believed to have access to fluoridated water. The status can change if a country (or part of a country) decides to introduce or to cease fluoridation. For example, trials of fluoridation in

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77 Dr Richard Lugg, Chair, Fluoridation of Public Water Supplies Advisory Committee, Department of Health, Letter, 5 June 2018.
England in the 1950s were stopped following resistance from water companies, and now only around 10 per cent of the population receives water with added fluoride. Fluoride is not added to drinking water in Scotland, Wales or Northern Ireland.  

Table 1: Level of decay in relation to access to fluoridated water

| Level of tooth decay in 12-year-olds (average number of decayed, missing and filled teeth) |
|-------------------------------------------------|---------------------------------|---------------------------------|---------------------------------|
| Very low (0–1.1)                                | Low (1.2–2.5)                   | Moderate (2.6–3.5)              | High (more than 3.5)            |
| Finland                                         | France                          | Philippines                     | India                           |
| Mexico                                          | Austria                         | Brazil                          | Peru                            |
| Spain                                           | Czech Republic                 |                                 | Brunei                          |
| UK                                              | Colombia                        |                                 |                                 |
| Sweden                                          | Venezuela                       |                                 |                                 |
| China                                           | Thailand                        |                                 |                                 |
| Canada                                          | Vietnam                         |                                 |                                 |
| US                                              | Chile                           |                                 |                                 |
| New Zealand                                     | Ireland                         |                                 |                                 |
| Malaysia                                        | Australia                       |                                 |                                 |

<table>
<thead>
<tr>
<th>Percentage of population with access to appropriate levels of fluoride in the water</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 5%</td>
</tr>
<tr>
<td>6–25%</td>
</tr>
<tr>
<td>26–50%</td>
</tr>
<tr>
<td>51–75%</td>
</tr>
<tr>
<td>76–100%</td>
</tr>
</tbody>
</table>

Source: Compiled from maps from the Oral Health Atlas  

Other countries where schemes have been withdrawn include Germany, Finland, Japan, the Netherlands, Sweden, Denmark and Switzerland. In Israel, fluoridation was discontinued in 2014 following public pressure, but was reinstated in 2016. In Canada, rates vary between provinces, with about 75 per cent of Ontario but just 4 per cent of British Columbia accessing fluoridated water.  

The Oral Health Atlas, while stating that there is a large body of evidence demonstrating the effectiveness of fluoride in preventing decay, acknowledges that evidence varies ‘from very strong to weak’ for different modes of delivery (e.g. water, salt, milk, toothpaste, mouth rinses, gels and varnishes). Its assessment of the most

84 ibid., p66.
suitable fluoride intervention places toothpaste first, for both high and low-middle income countries. Water is next, followed closely by salt and then milk.

Acceptance that fluoride helps prevent dental decay does not necessarily indicate acceptance of water fluoridation. Given that other countries have obviously found ways to administer fluoride that do not rely on the public water supply, it could be argued that ingestion of fluoride (via water) is not correlated with dental caries reduction, but topical application is directly related to reductions in tooth decay. The instances of fluoride in water being discontinued (or never introduced) in other countries was in some cases because of public campaigns centred on civil liberties (that is, people should have a choice as to whether they consume fluoridated water), in some cases based on a perceived health risk in the community and in some cases for logistical, technical or economic reasons. The fact that good oral health is not confined to the less than six per cent of the world population that access fluoridated water is worth noting.

It is difficult to prove that fluoridated water reduces inequality

Proponents of water fluoridation, including the Department, are fond of the argument that it reduces inequalities in dental health. While other fluoride treatments – even toothpaste – can be cost prohibitive for some people, fluoridated water is available to everyone at little or no cost to the individual. A 2011 European Commission report says that while there is some evidence for this, there is not enough to ‘substantiate the idea that water fluoridation is the best way to tackle social inequalities in dental health’.  

While the NHMRC asserts that water fluoridation provides a particular benefit to those ‘less likely to adopt preventive dental behaviours or who struggle to pay for dental care’, it acknowledges that more high quality research is needed to prove that it reduces inequalities in oral health.

Awofeso (2012) believes that dental hygiene, access to quality dental care, smoking, poverty and poor nutrition have a greater influence on socioeconomic disparities in dental caries prevalence than water fluoridation. For example, despite Australia’s high level of fluoridated water, since the late 1990s the prevalence of dental decay had

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85 In some places, such as The Netherlands, community concern about the safety of fluoridated water has been cited as a reason for not adding fluoride. Community lobbying on the adverse health effects of fluoride has been behind the decision not to fluoridate the water supply in some parts of the United States.

86 European Commission, Critical review of any new evidence on the hazard profile, health effects, and human exposure to fluoride and the fluoridating agents of drinking water, Scientific Committee on Health and Environmental Risks (SCHER), 2011.

87 National Health and Medical Research Council (NHMRC), Information paper – Water fluoridation: dental and other human health outcomes, report prepared by the Clinical Trials Centre at University of Sydney, NHMRC, Canberra, 2017, p55.
increased, particularly among children in low socioeconomic households where the number of caries was 1.5 times that of those in better-off areas.\textsuperscript{88}

\textbf{People are drinking more and more bottled water}

One of the problems in assessing the impact of fluoridated water is that the government does not actually know how many people are drinking it. According to the Australian Bureau of Statistics, each Australian consumes an average of 1064ml of plain water per day, accounting for half of total beverage consumption on any given day.\textsuperscript{89} But not all of this is fluoridated tap water. Some people who are not comfortable ingesting fluoride install expensive reverse osmosis water filters to remove the fluoride. Consumption of bottled water has also increased and is now the fastest growing beverage market in the world.\textsuperscript{90} According to a Roy Morgan Research survey, in 2015 27 per cent of Australians aged 14 or more drank bottled water in any given seven days (and around 30 per cent in WA, where bottled water consumption is highest).\textsuperscript{91}

A water fluoridation survey conducted by the Department in the Bunbury area in 2011 showed that bottled water was the most common type of water consumed for 6.4 per cent of respondents. By 2018, this figure had grown to 15.5 per cent.\textsuperscript{92}

While concerns about fluoride in the water have not been cited specifically in any articles pondering the reasons for drinking bottled water, water quality and health concerns have been raised. A survey on bottled water use conducted by water supplier Queensland Urban Utilities found that 35 per cent of respondents prefer bottled water to tap water. Of those, 38 per cent believed bottled water was better quality, 19 per cent thought that it was better for their health and 18 per cent preferred it because they knew what was in it.\textsuperscript{93}

\begin{thebibliography}{99}
\bibitem{89} ABS, \textit{Australian Health Survey: Consumption of Food Groups from the Australian Dietary Guidelines, 2011–12}, Cat. 4364.0.55.012, Australian Bureau of Statistics, Canberra, 11 May 2016.
\bibitem{92} Dr Richard Lugg, Chair, Fluoridation of Public Water Supplies Advisory Committee, Department of Health, Letter, 5 June 2018.
\end{thebibliography}
Bottled water marketers had generated doubts about the source and quality of tap water, and Sydney Water said it was now imperative for water utilities to proactively communicate the quality and safety aspects of their water.94

While the Food Standards Code allows between 0.6 and 1.0 milligrams of fluoride per litre of bottled water (the same as for public water supplies) not all bottled water contains fluoride. If fluoride has been added, it must be stated on the label.95 People may be drinking bottled water specifically to avoid the fluoride added to tap water, or for other reasons, such as convenience and health. Either way, with possibly fewer than 10 per cent of bottled waters in Australia having a fluoride content that would benefit teeth,96 many people who buy bottled water to drink at home are inadvertently missing out on fluoride.

The Department says that people who rely on rainwater or bottled water are usually told to seek advice concerning fluoride requirements from their local dental professional, school dental service, community dental service or from the Australian Dental Association. It says that in most cases, the use of fluoridated toothpaste will provide some access to dental caries prevention.

In certain small, remote Aboriginal communities where bottled water is the chief source of drinking water, the Department had considered specifying that the bottled water contain fluoride, but decided this was not viable.97

**Studies of oral health are notoriously difficult to conduct**

While it may be correct that there are few peer reviewed scientific papers in recognised scientific journals linking fluoridation of drinking water and adverse health, some scientists claim that it is very difficult to have research that opposes fluoridation accepted by such journals.98

They assert that a certain amount of gatekeeping occurs to avoid upsetting the status quo. For example, Trevor Sheldon, dean of the Hull York Medical School in the United

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97 Dr Richard Lugg, Chair, Fluoridation of Public Water Supplies Advisory Committee, Department of Health, Letter, 5 June 2018.
Kingdom (which conducted the York review of fluoridation in 2000\textsuperscript{99} and reached similar conclusions as the Cochrane Review), said the US CDC (Centres for Disease Control and Prevention) could not accept that they might be wrong about fluoridation. He said pro-fluoridation beliefs were entrenched and would not easily change, despite ‘the poor data quality and lack of evidence from the past 40 years’.\textsuperscript{100}

Arguments about the interpretation of evidence and which evidence should be believed, or even considered, continue to rage. Each side accuses the other of bias and, at times, wilful misrepresentation. The debate is fuelled by gaps in the evidence and data which are a consequence of oral health studies being notoriously difficult to conduct. Many that have attempted to measure the effect of fluoridated water have not accounted for confounding factors, such as diet, oral hygiene practices, use of other fluoride products, and the length of time the participant has had access to fluoridated water. This is one of the reasons the Cochrane Collaboration dismissed so many studies. The NHMRC also had strict requirements for inclusion of studies in its review.

A WA Department of Health study comparing the oral health of children in the fluoridated metropolitan area with children in a non-fluoridated part of the South-West has been used by the Department as evidence that children with access to fluoridated water have better dental health outcomes than those that have no access.

The 2016 report\textsuperscript{101} describes a study conducted by the epidemiology branch which analysed data collected from children aged 5 to 12\textsuperscript{102} who had presented at select Dental Treatment Centres (DTC) between January 2011 and December 2012. In total, 10,825 children were included in the analysis. Of these, 9972 attended a Perth metropolitan DTC and 853 attended a DTC in the South West.\textsuperscript{103}

The study reports that for deciduous teeth (for children aged 5 to 9) and for permanent teeth (children aged 6 to 12), ‘the proportion of children without any dental caries was consistently higher for children from the metropolitan area compared with the South West of WA’. But it notes that ‘differences were only statistically significant for children aged 5 and 7 years and 9 to 12 years’.

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\textsuperscript{99} A Systematic Review of Water Fluoridation, NHS Centre for Reviews and Dissemination, the University of York, p67.
\textsuperscript{101} K Crouchley and R Trevithick, Dental Health Outcomes of Children Residing in Fluoridated and Non-Fluoridated Areas in Western Australia, Department of Health, Western Australia, 2016.
\textsuperscript{102} Only those with birthdays on certain days of the month, to randomise the sample.
\textsuperscript{103} Data for the first attendance only was used in cases where there had been multiple attendances.
A table in the report which sets out the individual scores for decayed, missing and filled teeth as well as the combined dmft (decayed, missing, filled deciduous teeth) average in each age group (5 to 9), shows that only 4 out of 20 of the South West figures were significantly different from the metropolitan. In the corresponding tables for permanent teeth (DMFT), only three of the 24 South West figures were significantly different from the metropolitan.

However, a test (multivariate logistic regression model) to assess whether there was an association between area of residence and dental problems found that children from the South West had 1.5 times the odds of having one or more decayed, missing or filled deciduous teeth (above the threshold of 1.0), and 1.6 times the odds of having one or more decayed, missing or filled permanent teeth. It also found that Aboriginal children had almost 2.5 times the odds of having one or more decayed, missing or filled permanent teeth compared to non-Aboriginal children.

The study controlled for age, sex, Aboriginal status and having an initial examination at a DTC but was unable to control for the effects of other individual level factors which may contribute to the risk of caries, including socioeconomic status, diet, and dental and oral hygiene.

The report also notes that the sample size for individual ages in the South West ‘may have limited the power of the descriptive statistics to detect other small differences between the two groups as statistically significant’. The small survey numbers for the South West also distorts the percentages.

The FFWA took exception to the way the study results were reported, and in particular the use of ratio of odds as a measure. They maintain that ‘(t)he respective odds of DMFT being at or above the particular threshold value selected by WA Health does not express the percentage difference in DMFT between the two populations’. Based on this, they questioned the use of the odds ratio in a letter the Minister for Health sent to the acting chief executive officer of the Shire of Wyndham East Kimberley in June 2017, in which it was described as a percentage difference in dental decay rates (i.e. ‘children from unfluoridated areas of WA are at 50–60 per cent greater risk of having tooth decay compared with children drinking fluoridated water’). The Committee accepts that likelihood, or risk, is an accepted way of reporting epidemiological data, but acknowledges that the reporting of the percentage figure could be misleading if not adequately explained.

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104 Significance (the p-value) indicates the likelihood that an event is due to chance rather than due to the presence of an actual event. In cases where the p score is not below a certain value, we cannot be confident that the result was not due to chance.
105 Mr Andrew Parry, President, Fluoride Free WA, Transcript of Evidence, 9 May 2018, p5.
106 ibid., pp5-6.
Despite flaws in the study, Dr Lugg said:

_The only reason I quote it is because of its consistency with all the other results. If this was giving inconsistent results, you would probably say that it is not a very good study, but actually it is consistent with everything else._

While the Committee holds doubts about the usefulness of the report, it does not subscribe to the FFWA assertion that the Department deliberately pursued an improper political purpose in choosing to report ‘a specially selected ratio of odds’ and committed ‘scientific fraud’ in doing so. Nor does it accept the failure to control for socioeconomic effects is a ‘second instance of scientific fraud’. Accusing public servants of acting fraudulently in the course of performing their job is unfair, and the FFWA has discredited itself in making such accusations.

**Consultation in communities where fluoridation is proposed needs to be reviewed**

While metropolitan Perth has had access to fluoridated water since 1968, other parts of the State were not fluoridated until much later and some people in regional and remote communities still do not have fluoridated water (see Appendix 3). The two water companies that are independent of the Water Corporation, Aqwest (in Bunbury) and Busselton Water, do not add fluoride to the water they supply. In some communities, fluoridation has only commenced within the past two years: Dongara/Port Denison, Moora and Port Hedland in 2016 and Kununurra, Yanchep and Newman in December 2017.

There has been a degree of opposition to fluoridation in every area in which the Department has proposed to commence fluoridation in the past decade, notably Kununurra, Moora, Dongara, Yanchep and Carnarvon. Of these communities, Carnarvon is the only one where fluoridation has not been introduced. In Dongara, according to the Member for Moore, there was a sustained campaign ‘demonstrated by 800 people taking the time to fill in a petition to Parliament’. Petitions to Parliament were also presented by the residents of Kununurra and Yanchep. In Carnarvon a strong campaign supported by the local Member of Parliament, who presented 800 letters of objection to the Minister for Health (the Hon. Kim Hames at the time), prevented the implementation of fluoridation in 2012. The Committee has been informed by the Member for Moore that the high Aboriginal population was a key

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consideration in the decision to fluoridate Moora. This does not appear to have been the case in relation to Carnarvon.

Part of the Department’s community consultation process usually involves conducting a survey of residents that asks questions about their beliefs and attitudes in relation to fluoridation. The survey reports, eight of which are available on the Department’s website, show that there is not always overwhelming support for fluoridation. In three of the communities, less than half of those surveyed agreed that fluoride should be added, in another three around half agreed and in two more than half agreed. There was also a high proportion of ‘unsure’ responses (around a quarter on average) and in the youngest age group there were often more ‘unsure’ responses than ‘yes’ responses. The response rate to the some of the surveys was also very low, at less than 20 per cent. (See Appendix 4 for a summary of results).

The Committee sought clarification on how the FPWSAC weighs up community campaigns and the results of the surveys in deciding whether to recommend to the Minister that a community be fluoridated. FPWSAC delegated chair Dr Richard Lugg said that there was no particular threshold of support that had to be met. In the case of Carnarvon, where 70 per cent of those surveyed were opposed, the advisory committee had not even had to make a recommendation because the Premier and the Minister for Health had decided not to go ahead with fluoridation. (A recommendation from the advisory committee is only required in order to go ahead with fluoridating a water supply.) The results of the surveys, in fact, appear to have no bearing on the decision. The Minister for Health says as much in a response to a Legislative Council committee which presented petitions from fluoridation opponents in 2017:

*While community consultation is important to inform public health decisions and to provide a social context to those decisions, the overriding driver for public health decisions always remains the protection of the health of the community as a whole.*

Dr Lugg elaborated during the hearing, saying that unless there was ‘an exceptional situation that would require a deferral or an abandonment of the idea’, the public health imperative would endure. Residents may well wonder why they were ‘consulted’ if their views are not taken into account.

While Dr Lugg asserts that the Department’s approach to consultation has changed for the better, the evidence presented did not give the Committee confidence that this was the case. Dr Lugg said consultation used to consist of ‘holding a meeting and relying on the few people who turn up to give you some idea of what is going on in the

110 Hon Roger Cook, Minister for Health, Letter, 5 December 2017, p7.
111 Dr Richard Lugg, Chair, Fluoridation of Public Water Supplies Advisory Committee, Department of Health, Transcript of Evidence, 9 May 2018, p8.
The meeting, which would be advertised in the local paper, would usually be held at lunchtime, restricting the ability of working people to attend. Meetings were now held in the evening, and in most cases a survey would also be conducted.

Dr Lugg did not agree with the Committee’s suggestion that the public meetings were held to provide communities that they intended to fluoridate with information on the process, rather than for the purposes of consultation. But communities reported not knowing of any meetings being held until the decision to fluoridate had already been made.

In Dongara, for example, consultation was supposed to have occurred in 2010, but the Department apparently had missed the advertising deadline for the local paper and as a result there were no attendees at the meeting. Dr Lugg agreed with the Member for Moore that a consultation with no attendees was ‘(n)ot a very good one’, but noted that this was an example of the old ineffective style of community engagement that had since evolved.

Nevertheless, the decision to fluoridate was made and around five years later, according to Dr Lugg, Dongara was provided with an information session. However, the Member for Moore asserts that the session was promoted to the community as a consultation, leading them to believe that they may still have some opportunity to influence the decision.

Dr Lugg maintains that it was not described as consultation:

_We never said it was a consultation session. We always maintained it was an information session. But I know that people in Dongara, and it has happened elsewhere – it happened in Kununurra also – see it as a consultation, as a last chance to get the department to back off, sort of attitude. That was never going to happen. But that is the way that people looked at it._

The question that remains is that if the original consultation was inadequate, should the Department have organised another round of consultation? A survey was not conducted in Dongara – but then, the chances of survey results having any impact on the decision seem very slim.

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112 Dr Richard Lugg, Chair, Fluoridation of Public Water Supplies Advisory Committee, Department of Health, _Transcript of Evidence_, 9 May 2018, p5.
113 _ibid._, pp11–12.
114 Mr RS Love, Member, Education and Health Standing Committee, _Transcript of Evidence_, 9 May 2018, p11.
115 Dr Richard Lugg, Chair, Fluoridation of Public Water Supplies Advisory Committee, Department of Health, _Transcript of Evidence_, 9 May 2018, p12.
Dr Lugg admitted early in the hearing that community consultation used to be about getting ‘a feeling for what sort of opposition there might be in the town and what ... political bombs the minister might be exposed to’. 116 We submit that this is still the primary purpose of the surveys and consultation meetings, since there seems to be no use made of the survey data. That might explain why the survey instrument has not been scrutinised in the seven years that it has been in use.

The Department’s poor record on consultation is ammunition for anti-fluoride groups who see the Department as trying to ‘manufacture consent’ and ‘manage dissent’. 117 FFWA says that if a community was provided with all the information on fluoridation it would generally oppose it, ‘so the only way to achieve what you want if you want to fluoridate is not to inform the public’. 118

I think what upsets most people is that when a town is fluoridated, nobody knows about it until it has happened. 119

Kununurra is another example of where an advertisement failed to appear in the local paper, for which the FPWSAC later apologised. FFWA vice president John Watt suggested that a better method of alerting a community of the intention to fluoridate would be to include a notice on water utility bills. 120

The advisory committee is not perceived as transparent

Community concerns have also been raised in relation to the transparency of the FPWSAC. While the composition of the committee is known, the names of the individuals have not been released, apart from the delegated chair. The committee consists of three government officers – the director of ChemCentre, a representative from the Water Corporation and the Chief Health Officer (represented by Dr Lugg) – and three appointed members, chosen by the Minister from a panel of three nominees from the following organisations: the Australian Medical Association, the Australian Dental Association and the WA Local Government Association.

The advisory committee made a decision not to publicly disclose the names of the members because of fears that they may be harassed. However, not revealing the names makes it more difficult for the advisory committee to counter suggestions that the committee may be biased or that particular members may have a conflict of interest. It also fuels claims that the advisory committee operates in a covert manner. Dr Lugg said that the committee would review its decision not to release the names ‘if

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116 Dr Richard Lugg, Chair, Fluoridation of Public Water Supplies Advisory Committee, Department of Health, Transcript of Evidence, 9 May 2018, p4.
117 Mr Andrew Parry, President, Fluoride Free WA, Transcript of Evidence, 9 May 2018, p10.
118 ibid.
120 ibid., p10.
it was felt that it was imperilling the credibility ... of the committee’. 121 We welcome this undertaking, but are also mindful of cases of violence by anti-fluoride campaigners towards fluoride supporters in the eastern states. Apart from being completely unacceptable, targeting of advisory committee members may discourage members from joining or remaining on the FPWSAC.

There have also been concerns raised about the position of the chair of the committee. The statutory chair is listed as the Chief Health Officer, Dr Tarun Weeramanthri. However, a permanent instrument of delegation issued by Dr Weeramanthri assigns this role to Dr Lugg. As such, Dr Lugg has been described as the chair of the FPWSAC for the past 10 years. This seems to irritate FFWA, which states that ‘WA Health and Dr Lugg himself act as if Dr Lugg were the chairman of the advisory committee on a continuous basis’. 122 In the interests of clarity, it may be more appropriate for Dr Lugg to be described as the delegated chair.

However, it is not the title that concerns this Committee so much as the length of tenure of the delegation. As has been evidenced recently in the Royal Commission into Misconduct in the Banking, Superannuation and Financial Services Industry, the position of chair is critical in terms of bringing a fresh perspective and in the degree to which board members feel able to question him or her. Such a long delegated tenure seems to be counter to modern governance standards.

As the 2017 Review of Safety and Quality in the WA Health System points out, ‘the WA healthcare community is close knit’ which means that ‘people are unwilling, sometimes unable and understandably uncomfortable in challenging others whom they know well’. 123 The report says that ‘without appropriate tension in the system, there is a risk of system collusion’. 124 The Committee does not have evidence that that is the case with the FPWSAC, but can see potential for these problems if membership and the chairmanship is not refreshed. While the three appointed members have three-year appointments (albeit with eligibility for re-appointment), the other members do not have limited tenure. Like Dr Lugg, one had been on the committee for at least a decade until recently replaced. 125

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121 Dr Richard Lugg, Chair, Fluoridation of Public Water Supplies Advisory Committee, Department of Health, Transcript of Evidence, 9 May 2018, p4.
122 Mr Andrew Parry, President, Fluoride Free WA, Transcript of Evidence, 9 May 2018, p9.
124 ibid.
125 Dr Richard Lugg, Chair, Fluoridation of Public Water Supplies Advisory Committee, Department of Health, Transcript of Evidence, 9 May 2018, p2.
Conclusions

Fluoridation of the water has come to be seen as one of the most successful public health measures in the years since its introduction in the US in 1945. In its 2017 assessment, the NHMRC examined evidence that met strict inclusion criteria around relevance and quality and concluded that fluoridation helps prevent tooth decay without causing health problems. But as studies such as the Cochrane Review point out, teasing out the impact of fluoridated water on dental cavities is less straightforward than it seems, with many factors to be considered.

However, the Department of Health relies on fluoridated water as its foundation oral health strategy – the strategy that underpins all others. Further, once the Water Corporation takes responsibility for adding fluoride and monitoring levels after the decision to add it has been approved, the dental health of the community seems to be simply assured. But that is questionable given that the oral health of Australian children has not necessarily improved since 2000.\textsuperscript{126}

Relying on fluoridated water to deliver the desired oral health outcomes risks leaving other important strategies under-developed. Initiatives outlined in the State Oral Health Plan 2016–2020 are commendable and must have equal, if not greater, status than a simple set and forget fluoride additive in drinking water. No amount of fluoride in the water will eliminate the effects of too much sugar consumption.

If the Department wants to ensure that the population reaps the benefits of fluoride, it will need to reassess its education strategy and find creative ways to counter scepticism and opposition. This is more difficult if the Department is not the trusted source of information. The Department needs to demonstrate that it is open to all points of view and to take seriously the concerns of the community. Failure to do this has, in a sense, given rise to the extreme stance taken by some community groups who feel that their concerns have not been addressed.

The Department needs to form a credible response to the question of why many countries without fluoridated water have comparable levels of decay to those with fluoridated water. It also needs to assure the community that the addition of fluoride to the water is necessary and safe, given that the action of fluoride on teeth is topical.

If the Department is to build trust in its messages, it needs to reconsider its approach to consultation. Based on the evidence given to the Committee, members of the community are justifiably cynical about the Department’s intentions, and whether it actually wants to consult or just trouble shoot. There needs to be clarity over whether

engagement with the community is for the purposes of hearing (and taking into account) their views or whether it is to deliver information.

More transparent processes with regard to the operation of the FPWSAC will assist in building trust. Without diminishing his contribution to oral health in the State, the Department should consider whether the current (delegated) chair should remain in the position, given governance principles.

MS J.M. FREEMAN, MLA
CHAIR
Appendix One

Committee’s functions and powers

The functions of the Committee are to review and report to the Assembly on:

a) the outcomes and administration of the departments within the Committee’s portfolio responsibilities;

b) annual reports of government departments laid on the Table of the House;

c) the adequacy of legislation and regulations within its jurisdiction; and

d) any matters referred to it by the Assembly including a bill, motion, petition, vote or expenditure, other financial matter, report or paper.

At the commencement of each Parliament and as often thereafter as the Speaker considers necessary, the Speaker will determine and table a schedule showing the portfolio responsibilities for each committee. Annual reports of government departments and authorities tabled in the Assembly will stand referred to the relevant committee for any inquiry the committee may make.

Whenever a committee receives or determines for itself fresh or amended terms of reference, the committee will forward them to each standing and select committee of the Assembly and Joint Committee of the Assembly and Council. The Speaker will announce them to the Assembly at the next opportunity and arrange for them to be placed on the notice boards of the Assembly.
Appendix Two

Graphs comparing level of decay in various countries over time

**ABOVE:** Graph provided by Fluoride Free WA, showing the decrease in decay across countries with and without fluoridation since 1960.

**LEFT:** The graph which appeared in the British Medical Journal (Vol. 335, Iss. 7622) in 2007.
Appendix Three

Fluoride status of Western Australian water supplies

<table>
<thead>
<tr>
<th>Town</th>
<th>Supplied by…</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Perth metropolitan region</strong></td>
<td></td>
</tr>
<tr>
<td>Almost all of the region, including Dwellingup, North Dandalup and Yanchep¹</td>
<td>Integrated Water Supply Scheme (from eight dams in Darling Range and two in South West, groundwater from three aquifers, two seawater desalination plants, and groundwater replenishment scheme)</td>
</tr>
<tr>
<td>Two Rocks</td>
<td>Independent groundwater supply</td>
</tr>
<tr>
<td><strong>South West region</strong></td>
<td></td>
</tr>
<tr>
<td>Margaret River</td>
<td>Ten Mile Brook Dam</td>
</tr>
<tr>
<td>Boyanup, Dalyellup, Dardanup, Donnybrook, Dunsborough, Capel, Peppermint Grove Beach, Preston Beach, Augusta</td>
<td>Local treatment plants</td>
</tr>
<tr>
<td>Bridgetown, Nannup, Hester, Boyup Brook, Greenbushes, Balingup, Manjimup</td>
<td>Warren Blackwood Regional Water Scheme (Millstream Dam, Manjimup Dam, Yarragadee Bore, Tanjannerup Dam)</td>
</tr>
<tr>
<td>Kirup, Mullalyup</td>
<td>Surface or groundwater from Donnybrook</td>
</tr>
<tr>
<td>Quinlinup, Northcliffe</td>
<td>Manjimup or Pemberton schemes</td>
</tr>
<tr>
<td>Pemberton</td>
<td>Big Brook Dam via Lefroy Brook Dam</td>
</tr>
<tr>
<td>Australind, Clifton Park, Eaton, Pelican Point, Millbridge, Treendale, Kingston, Brunswick Junction, Roelands, Burekup</td>
<td>Treatment plants in Australind, Eaton and Picton</td>
</tr>
<tr>
<td>Collie, Allanson, Darkan</td>
<td>Harris Dam</td>
</tr>
<tr>
<td>Harvey, Waroona, Hamel, Binningup, Myalup, Yarloop</td>
<td>Integrated Water Supply Scheme</td>
</tr>
<tr>
<td><strong>Goldfields and Agricultural region</strong></td>
<td></td>
</tr>
<tr>
<td>Bannenburg²</td>
<td>Aquwest, from Yarragadee aquifer</td>
</tr>
<tr>
<td>Busselton³</td>
<td>Busselton Water, from Yarragadee and Leederville aquifers</td>
</tr>
<tr>
<td><strong>Goldfields and Agricultural region</strong></td>
<td></td>
</tr>
<tr>
<td>Majority of towns in region</td>
<td>Goldfields and Agricultural Water Supply scheme (Mundaring Weir)</td>
</tr>
<tr>
<td>Laverton, Leonora, Menzies, Wiluna</td>
<td>Local groundwater sources</td>
</tr>
</tbody>
</table>
### Appendix Three

#### Great Southern region

| Majority of towns in region, including Brookton, Narrogin, Katanning, Williams, Bodddington, Hyden, Lake Grace, Lake King, Newdegate, Wagin, Mt Barker, Albany, Denmark, Walpole, Kojonup, Tambellup | Great Southern Towns Water Supply Scheme (Harris Dam)  
Lower Great Southern Towns Water Supply Scheme  
(ygroundwater from South Coast borefields near Albany) |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Hopetoun, Bremer Bay, Esperance, Condingup, Gibson</td>
<td>Local groundwater sources</td>
</tr>
<tr>
<td>Ravensthorpe, Salmon Gums</td>
<td>Local surface water sources</td>
</tr>
<tr>
<td>Grass Patch</td>
<td>Water carted from Esperance or Salmon Gums</td>
</tr>
<tr>
<td>Frankland, Ongerup, Jeramungup, Cranbrook, Borden, Wellstead, Rocky Gully</td>
<td>Treatment plant, from small local dams</td>
</tr>
</tbody>
</table>

#### North West region

<table>
<thead>
<tr>
<th>Karratha, Dampier, Roebourne, Wickham, Point, Samson, Cape Lambert, Burrup Peninsula</th>
<th>West Pilbara Water Supply Scheme (Harding Dam, Millstream Aquifer, Bungaroo Valley groundwater source)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Port Hedland, South Hedland, Wedgefield Industrial Area</td>
<td>East Pilbara Water Supply Scheme (Yule and De Grey River borefields)</td>
</tr>
<tr>
<td>Newman¹</td>
<td>Groundwater via BHP Billiton operated borefields</td>
</tr>
<tr>
<td>Kununurra¹</td>
<td>Local groundwater</td>
</tr>
<tr>
<td>Wyndham</td>
<td>Moohalabara Dam</td>
</tr>
<tr>
<td>Remaining towns, including Broome, Camballin, Derby, Fitzroy Crossing, Halls Creek, Nullagine, Onslow, Tom Price</td>
<td>Local independent groundwater sources</td>
</tr>
</tbody>
</table>

#### Mid-West region

<table>
<thead>
<tr>
<th>Geraldton, Dongara, Northampton, Mullewa, Walkaway, Greenough, Narngulu</th>
<th>Allanooka borefield</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carnarvon</td>
<td>Groundwater bores along the Gascoyne River</td>
</tr>
<tr>
<td>Exmouth</td>
<td>Groundwater bores along Cape Range Peninsula</td>
</tr>
<tr>
<td>Coomerdale, Nabawa, Yuna</td>
<td>Water carted from Geraldton and Moora</td>
</tr>
<tr>
<td>Coastal Midland District, including Eneabba, Jurien, Cervantes, Dandaragan, Leeman, Lancelin, Seabird, Watheroo, Badgingarra, Moora, Calingiri, Gingin, Bindoon</td>
<td>Treatment plants, from small independent groundwater sources</td>
</tr>
</tbody>
</table>

#### Towns with water fluoride concentrations of less than the recommended minimum (0.6mg/L)

#### Towns with water fluoride concentrations of more than the recommended maximum (1.0mg/L)

Fluoride concentrations are the mean for the year 1 July 2016 – 30 June 2017

Notes:
1. Yanchepe, Newman and Kununurra now receive fluoridated water. This is not reflected in water quality reporting for 2016-17, which information in this table is based upon.
2. Bunbury’s water supply and water quality testing is managed by Aqwest, not the Water Corporation.
3. Busselton’s water supply and water quality testing is managed by Busselton Water, not the Water Corporation.

Source: Information for this table was compiled from the Water Corporation’s Drinking Water Quality Annual Report 2016-17, pp9-15 and Appendix B; Aqwest’s Water Quality Report 2017, p38; and Busselton Water’s Annual Water Quality Report 2016-17, p14.
### Summary of public consultation surveys on fluoridation conducted by Department of Health

<table>
<thead>
<tr>
<th>Locality</th>
<th>Year</th>
<th>Conducted by</th>
<th>Method</th>
<th>Data weighted</th>
<th>Response rate</th>
<th>Response no.</th>
<th>Fluoride should be added</th>
<th>Fluoride is safe</th>
<th>Helps prevent decay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bunbury</td>
<td>2011</td>
<td>ECU Survey Research Centre, for Health Survey Unit, Epidemiology Branch</td>
<td>Phone</td>
<td>Yes</td>
<td>85%</td>
<td>457</td>
<td>65% 12% 19%</td>
<td>59% 9% 22%</td>
<td>79% 8% 15%</td>
</tr>
<tr>
<td>Moora</td>
<td>2011</td>
<td>Water Unit, Environmental Health Directorate</td>
<td>Postal</td>
<td>No</td>
<td>21%</td>
<td>156</td>
<td>51% 23% 26%</td>
<td>49% 19% 33%</td>
<td>49% 16% 30%</td>
</tr>
<tr>
<td>Jurien Bay</td>
<td>2011</td>
<td>Water Unit, Environmental Health Directorate</td>
<td>Postal</td>
<td>No</td>
<td>19%</td>
<td>154</td>
<td>51% 21% 29%</td>
<td>59% 17% 30%</td>
<td>52% 11% 30%</td>
</tr>
<tr>
<td>Two Rocks</td>
<td>2011</td>
<td>Environmental Health Directorate</td>
<td>Postal</td>
<td>No</td>
<td>23%</td>
<td>236</td>
<td>47% 34% 19%</td>
<td>49% 27% 26%</td>
<td>53% 18% 27%</td>
</tr>
<tr>
<td>Yanchep</td>
<td>2011</td>
<td>Water Unit, Environmental Health Directorate</td>
<td>Postal</td>
<td>No</td>
<td>27%</td>
<td>526</td>
<td>44% 39% 16%</td>
<td>42% 33% 24%</td>
<td>54% 22% 21%</td>
</tr>
<tr>
<td>Carnarvon</td>
<td>2012</td>
<td>Patterson Research Group, for Water Unit, Environmental Health Directorate</td>
<td>Phone</td>
<td>Yes</td>
<td>37%</td>
<td>357</td>
<td>13% 70% 17%</td>
<td>22% 57% 22%</td>
<td>27% 52% 21%</td>
</tr>
<tr>
<td>Hedland</td>
<td>2013</td>
<td>Patterson Research Group, for Water Unit, Environmental Health Directorate</td>
<td>Phone</td>
<td>Yes</td>
<td>16%</td>
<td>445</td>
<td>52% 17% 31%</td>
<td>54% 16% 31%</td>
<td>64% 13% 23%</td>
</tr>
<tr>
<td>Bridgetown</td>
<td>2014</td>
<td>Patterson Research Group, for Water Unit, Environmental Health Directorate</td>
<td>Phone</td>
<td>Yes</td>
<td>19%</td>
<td>356</td>
<td>59% 29% 12%</td>
<td>65% 20% 19%</td>
<td>69% 19% 12%</td>
</tr>
</tbody>
</table>