Statement

Kidney Health Australia (KHA) supports the review and recommendations of the National Health and Medical Research Council (NHMRC), that water fluoridation safely and effectively reduces tooth decay across the population at the current Australian levels. The NHMRC and KHA have not found any evidence to confirm a link between fluoride in water at optimal levels and chronic kidney disease (CKD).

Background

In Australia, the first inclusion of fluoride into community drinking water occurred in Tasmania in 1953. Since that time, all Australian capital cities and the majority of regional areas have implemented water fluoridation (around 89% of Australians have access to fluoridated drinking water). Current optimal fluoride levels vary according to climate and local water needs, but range from 0.6 mg/L to 1.1 mg/L, with a recommended maximum of 1.5 mg/L[1].

The aim of water fluoridation is to adjust the natural fluoride concentration in community drinking water to an optimal level to help reduce dental decay. Healthy kidneys are responsible for removing approximately half of all fluoride that is consumed. If the kidneys are not functioning properly, then less fluoride is eliminated from the body.

KHA 2007 and 2011 Position Statements

In 2007 KHA published a Position Statement '*The Risks of Consumption of Fluoridated Water for People with Chronic Kidney Disease (CKD)*'[2]. On the basis of available evidence (up to 1 June 2006) KHA developed the following position regarding consumption of drinking water containing optimum levels of fluoride:

- There is no evidence that consumption of optimally fluoridated drinking water increases the risk of developing CKD, although only limited studies addressing this issue are available.
- There is consistent evidence that impairment of kidney function results in changes to the way in which fluoride is metabolised and eliminated from the body resulting in an increased burden of fluoride.
- There is no evidence that consumption of optimally fluoridated drinking water poses any health risks for people with CKD, although only limited studies addressing this issue are available.

- There is limited evidence that people with stage 4 or 5 CKD who ingest substances with a high concentration of fluoride (which exceeds the optimal dose) may be at risk of fluorosis.
- Monitoring of fluoride intake and avoidance of fluoride-rich substances would be prudent for people with stage 4 or 5 CKD, in addition to regular investigations for possible signs of fluorosis.
- Fluoride concentrations in the final feed water to the dialysis machine must comply with established water quality guidelines.

The publication of the evidence base for this Position Statement[3] led to correspondence which counter-argued that fluoride can be consumed from multiple dietary sources, that measurement of fluoride levels are not routine for people with stage 4 or 5 CKD, and that detection of side-effects of excessive fluoride intake such as skeletal fluorosis can be problematical[4].

A further review of available evidence was conducted by KHA in 2011[5], and concluded that there was no new published evidence to retract the 2007 KHA Position Statement.

National Health and Medical Research Council Public Statements

Also in 2007, the National Health and Medical Research Council (NHMRC) published a Systematic Review on the Efficacy and Safety of Fluoridation and a Public Statement which recommended that water be fluoridated in the range of 0.6 to 1.1 mg/L[6]. The 2007 NHMRC review did not include any studies that assessed the association of water fluoridation and CKD, and reported one study that showed an increased prevalence of kidney stones in an area with fluoride concentrations outside the optimal fluoridation range[7].

Since the 2007 NHMRC review, new research has been published on the impact of water fluoridation and possible impacts on health. In 2014, the NHMRC commenced a new evidence evaluation on the health effects of fluoride in drinking water. The conclusion reached by NHMRC was that the existing body of evidence consistently shows that water fluoridation safely and effectively reduces tooth decay across the population at the current Australian levels. This advice was published via the NHMRC Public Statement 2017 – Water Fluoridation and Human Health in Australia[8], the NHMRC

Information Paper- Water fluoridation: dental and other human health outcomes, and their underpinning reports: the 2016 Evidence Evaluation and 2016 Technical Reports*.

The 2016 NHMRC Evidence Evaluation[9] identified one study that investigated the relationship between water fluoridation and CKD. This ecological study was of low quality and found no clear association between water fluoride levels and the prevalence of CKD of unknown aetiology[10]. The 2016 NHMRC Evidence Evaluation also included one ecological study of acceptable quality that reported a significantly lower prevalence of kidney stones in areas with water fluoridation[11]. Therefore, the NHMRC 2016 Evidence Evaluation concluded that there is no reliable evidence of an association between water fluoridation at current Australian levels, and CKD or kidney stones.

Conclusion

On the basis of the KHA 2011 Review and the NHMRC 2016 Evidence Evaluation, KHA concludes that there is no new published evidence to retract the 2007 KHA Position Statement. KHA recognises the need for further high-quality research into CKD of unknown origin, and supports efforts to build this evidence base.

* All NHMRC resources referred to in this document are available at https://www.nhmrc.gov.au/health-topics/health-effects-water-fluoridation

Reference List

(1) NHMRC, NRMMC. Australian Drinking Water Guidelines Paper 6 National Water Quality Management Strategy. National Health and Medical Research Council, National Resource Management Ministerial Council, Commonwealth of Australia, Canberra; 2011.
(2) Kidney Health Australia. The Risks of Consumption of Fluoridated Water for People with Chronic Kidney Disease: A Position Statement. 2007.
(3) Ludlow M, Luxton G, Mathew T. Effects of fluoridation of community water supplies for people with chronic kidney disease. *Nephrol Dial Transplant* 2007;22(10):2763-7.
(4) Schiffl H, Schiffl. Fluoridation of drinking water and chronic kidney disease: absence of evidence is not evidence of absence. *Nephrol Dial Transplant* 2007;23(1):411.
(5) Kidney Health Australia. Review of Kidney Health Australia Fluoride Position Statement. 2011.
(6) National Health and Medical Research Council (NHMRC). A systematic review of the efficacy and safety of water fluoridation. Australian Government, Canberra; 2007.
(7) Singh PP, Barjatiya MK, Dhing S, Bhatnagar R, Kothari S, Dhar V. Evidence suggesting that high intake of fluoride provokes nephrolithiasis in tribal populations. *Urological Research* 2001;29(4):238-44.
(8) National Health and Medical Research Council. NHMRC Public Statement 2017 - Water Fluoridation and Human Health in Australia. https://www.nhmrc.gov.au/_files_nhmrc/file/publications/17667_nhmrc_-_public_statement-web.pdf; 2017.
(9) Jack B, Ayson M, Lewis S et al. Health Effects of Water Fluoridation: Evidence Evaluation Report. Report to the National Health and Medical Research Council, Canberra.; 2016.
(10) Chandrajith R, Nanayakkara S, Itai K et al. Chronic kidney diseases of uncertain etiology (CKDue) in Sri Lanka: geographic distribution and environmental implications. *Environmental Geochemistry and Health* 2011;33(3):267-78.
(11) Public Health England. Water fluoridation: health monitoring report for England 2014. London.; 2014.