

Iodine deficiency in Australia: is iodine supplementation for pregnant and lactating women warranted?

Warwick P Anderson

TO THE EDITOR: I refer to the article by Gallego and colleagues in the 19 April 2010 issue of the Journal,¹ which stated that (as at the time of writing, in July 2009) Australia had no formal policies for iodine supplementation in pregnant and lactating women. In January 2010, the National Health and Medical Research Council (NHMRC) released a public statement, *Iodine supplementation for pregnant and breastfeeding women*.²

The NHMRC recommends that women who are pregnant, breastfeeding or considering pregnancy take an iodine supplement of 150 µg each day; and women with pre-existing thyroid conditions should seek advice from their medical practitioner before taking a supplement. The public statement also provides information on the increased need for iodine during pre-pregnancy, pregnancy and breastfeeding, the risks of not having enough iodine and the types of supplement that should and should not be used.

The statement was developed in consultation with an expert reference group and was based on a review of recent international scientific literature for the efficacy of iodine supplementation in increasing iodine levels in pregnant and breastfeeding women to levels that mitigate the risks associated with iodine deficiency.³

The public statement and supporting literature review can be found on the NHMRC website.^{2,3}

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1 Gallego G, Goodall S, Eastman CJ. Iodine deficiency in Australia: is iodine supplementation for pregnant and lactating women warranted? *Med J Aust* 2010; 192: 461-463.

2 National Health and Medical Research Council. Iodine supplementation for pregnant and breastfeeding women [public statement]. Canberra: NHMRC, 2010. http://www.nhmrc.gov.au/publications/synopses/new45_syn.htm (accessed Jun 2010).

3 National Health and Medical Research Council. Iodine supplementation during pregnancy and lactation [literature review]. Canberra: NHMRC, 2009. http://www.nhmrc.gov.au/publications/synopses/new45_syn.htm (accessed Jun 2010). □

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TO THE EDITOR: We disagree with the opinion expressed by Gallego and colleagues that Australian “women planning a pregnancy and pregnant and lactating women should be advised to take an iodine supplement”,¹ and offer two reasons to support our view.

First, the data suggesting mild iodine deficiency in Australian women were collected from opportunistic samples of women not representative of the population at large and were obtained before the introduction of mandatory iodine fortification of bread in October 2009. We believe that recommending iodine supplementation in pregnancy without evaluating the effect of mandatory iodine fortification on iodine intake and status of pregnant women in Australia is premature.² This is supported by a recent report, developed by the Dietitians Association of Australia on behalf of the National Health and Medical Research Council (NHMRC).³ The report clearly shows that the recommended iodine intake for pregnant women (recommended dietary allowance, 220 µg/day) is achievable from foods alone, together with iodine fortification of bread.

Second, there are no randomised controlled trials (RCTs) that have examined the effect of iodine supplementation of pregnant women from regions of mild iodine deficiency (as in Australia) on neurodevelopment of the offspring or any other clinical outcomes. Gallego et al state that “iodine-containing supplements consistently benefit the iodine and thyroid status of both mother and newborn”, citing a review of iodine supplementation of pregnant women from populations with mild-to-moderate iodine deficiency.⁴ In fact, none of the six RCTs included in that review showed a clear effect of supplementation on maternal and newborn thyroid hormone concentrations, which suggests that the maternal thyroid is able to adapt to meet the increased thyroid hormone requirements of pregnancy in areas of mild-to-moderate iodine deficiency.⁵ Furthermore, Gallego et al cite no evidence to support their statement “Even subclinical hypothyroidism in the mother, occurring as a consequence of iodine deficiency, can cause irreversible brain damage in the fetus ...”.

In our view, major public health recommendations advising routine iodine supplementation for women planning a pregnancy, as well as pregnant and lactating women, should await the results of current RCTs⁶⁻⁸

examining the effect of maternal iodine supplementation on longer-term maternal health and neurodevelopmental outcome of children in regions with mild-to-moderate iodine deficiency, including Australia and New Zealand.

Competing interests: We are chief investigators of the NHMRC-funded multicentre RCT, which investigates the effect of iodine supplementation in pregnancy on neurodevelopment of children and general health and wellbeing of mothers. The supplements used in the trial are manufactured and donated to the trial by Blackmores.

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1 Gallego G, Goodall S, Eastman CJ. Iodine deficiency in Australia: is iodine supplementation for pregnant and lactating women warranted? *Med J Aust* 2010; 192: 461-463.

2 Australian Population Health Development Principal Committee of the Australian Health Ministers Advisory Committee. The prevalence and severity of iodine deficiency in Australia. Canberra: Tasmanian Department of Health and Human Services, 2007. http://www.foodstandards.gov.au/_srcfiles/Item%202%2005%20-%20Attachment%201%20-%20Prevalence%20and%20severity%20of%20iodine%20deficiency%20in%20Australia.pdf (accessed Aug 2010).

3 National Health and Medical Research Council. Dietitians Association of Australia. A new food guidance system for Australia — foundation and total diets (revised draft report for public consultation). Canberra: NHMRC, 2009. http://www.nhmrc.gov.au/_files_nhmrc/file/guidelines/consult/consultations/draft_foundation_total_diets_public_consult.pdf (accessed Aug 2010).

4 Zimmermann M, Delange F. Iodine supplementation of pregnant women in Europe: a review and recommendations. *Eur J Clin Nutr* 2004; 58: 979-984.

5 Zimmermann MB. Iodine deficiency in pregnancy and the effects of maternal iodine supplementation on the offspring: a review. *Am J Clin Nutr* 2009; 89 (2 Suppl): 668S-672S.

6 Pregnancy iodine and neurodevelopment in kids (PINK). Australian New Zealand Clinical Trial Registry number: ACTRN12610000411044. <http://www.anzctr.org.au/ACTRN12610000411044.aspx> (accessed Aug 2010).

7 Maternal iodine supplementation and effects on thyroid function and child development (MITCH). Clinical trial identifier: NCT00791466. <http://www.clinicaltrials.gov/ct2/show/NCT00791466?term=iodine+supplementation+in+pregnancy&rank=3> (accessed Aug 2010).

8 Iodine supplementation during pregnancy and neuropsychological development. Clinical trial identifier: NCT01049659. <http://www.clinicaltrials.gov/ct2/show/NCT01049659?term=iodine+supplementation+in+pregnancy&rank=1> (accessed Aug 2010). □

Gisselle Gallego, Stephen Goodall and
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IN REPLY: While Zhou and colleagues disagree with our viewpoint that Australian “women planning a pregnancy and pregnant and lactating women should be advised to take an iodine supplement”,¹ we note that they suggest any such recommendation should await the results of their planned randomised controlled trial (RCT) examining the effects of maternal iodine supplementation on maternal health and neurodevelopmental outcome of the offspring. They neglect to mention that the National Health and Medical Research Council (NHMRC) issued a public statement in January this year, with supporting evidence attached, stating that: “The NHMRC recommends that all women who are pregnant, breastfeeding or considering pregnancy take an iodine supplement of 150 µg each day”.² Similar recommendations, based upon available scientific evidence, have been issued by the World Health Organization, International Council for Control of Iodine Deficiency Disorders, American Thyroid Association and American Endocrine Society.

We agree that there is a paucity of RCT evidence examining the effect of iodine supplementation of pregnant women living in mildly iodine-deficient areas, and this is regrettable. Given the overwhelming animal and human evidence that maternal iodine deficiency causes brain damage in the offspring of deficient mothers, we consider there are major ethical issues in conducting such trials where pregnant women would be deprived of iodine and their babies put at risk of brain damage.

Zhou and colleagues imply that mild-to-moderate iodine deficiency is not widely prevalent in Australia. This statement ignores the evidence from several clinical studies of pregnant women in New South Wales, Victoria and Tasmania, all showing that mild-to-moderate iodine deficiency is widespread in the majority of the Australian population. Analysis of the data in some of these studies shows between 20% and 40% of women tested are moderately to severely iodine deficient.³ Furthermore, food modelling studies by Food Standards Australia New Zealand (FSANZ) predict between 45% and 75% of Australian women will continue to be iodine deficient after the mandatory use of iodised salt in bread that commenced in October 2009.⁴

Finally, we disagree with their assertion that the recommended iodine intake for

pregnant women can be achieved by the majority of women from foods alone, together with iodine fortification of bread. A trial of bread fortification in Tasmania showed this was not achievable.⁵ If this were achievable, it is questionable why Zhou and colleagues would even consider conducting an RCT of maternal iodine supplementation in pregnant women in Australia and NZ.

Competing interests: Gisselle Gallego and Stephen Goodall coauthored reports for FSANZ and the Department of Health and Ageing on the cost-effectiveness of iodine fortification of bread in Australia and NZ. Stephen Goodall is an FSANZ fellow. Creswell Eastman is the vice-chairman of the International Council for Control of Iodine Deficiency Disorders, which is supported by the Australian Government Overseas Aid Program and the Canadian International Development Agency. Creswell Eastman is patron of the Australian Thyroid Foundation, which has received support from Cerebos (manufacturer of Saxa salt) and Blackmores.

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1 Gallego G, Goodall S, Eastman CJ. Iodine deficiency in Australia: is iodine supplementation for pregnant and lactating women warranted? *Med J Aust* 2010; 192: 461-463.

2 National Health and Medical Research Council. Iodine supplementation for pregnant and breast-feeding women [public statement]. NHMRC, 2010. http://www.nhmrc.gov.au/_files_nhmrc/file/publications/synopses/new45_statement.pdf (accessed Aug 2010).

3 Hamrosi MA, Wallace EM, Riley MD. Iodine status in pregnant women living in Melbourne differs by ethnic group. *Asia Pac J Clin Nutr* 2005; 14: 27-31.

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5 Seal JA, Doyle Z, Burgess JR, et al. Iodine status of Tasmanians following voluntary fortification of bread with iodine. *Med J Aust* 2007; 186: 69-71. □