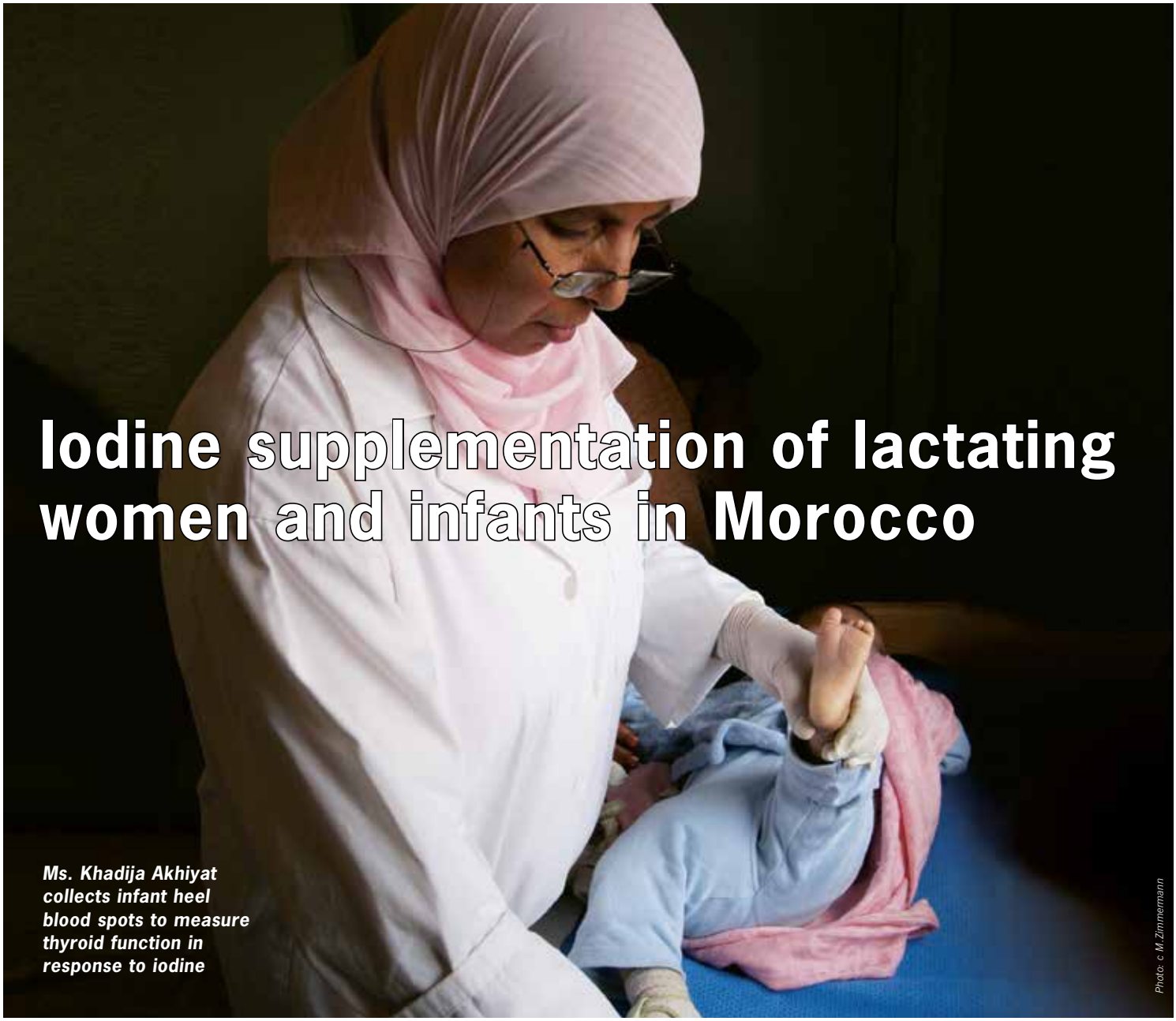


Iodine supplementation of lactating women and infants in Morocco

Ms. Khadija Akhiyat collects infant heel blood spots to measure thyroid function in response to iodine

Photo: © M Zimmermann

A new Moroccan study shows that a single capsule of iodized oil given to lactating mothers in the first month postpartum is passed on through breast milk and covers infant iodine needs during the first year

Excerpted from: **Bouhouch R et al. Direct iodine supplementation of infants versus supplementation of their breastfeeding mothers: a double-blind, randomised, placebo-controlled trial. Lancet Diabetes & Endocrinology; online publication, 22 November 2013.**

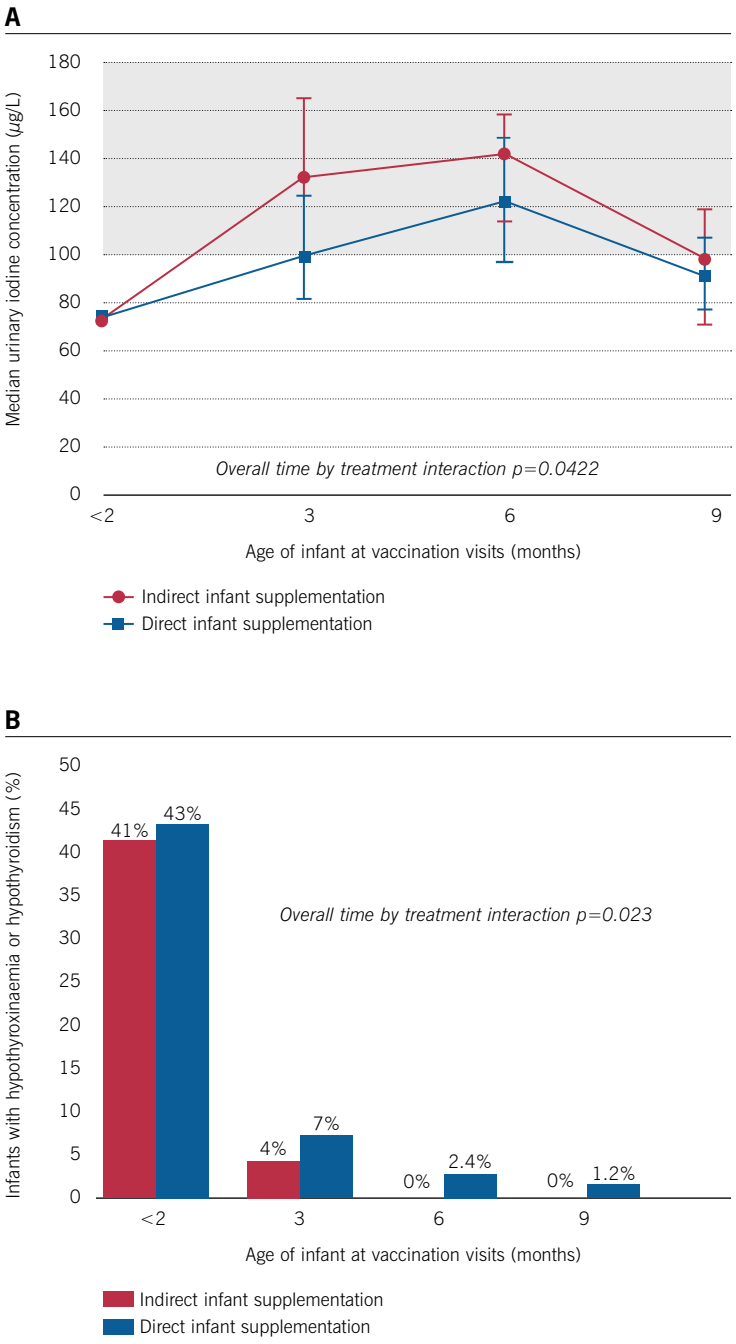
Iodine deficiency during infancy may impair brain development and increase infant mortality (1,2). Infants are at high risk for iodine deficiency because their requirements per kilogram body weight for iodine are higher than at any other time in the life cycle. Even in countries where most other age groups are iodine sufficient, infants may have insufficient intakes (3). Therefore, programs to control iodine deficiency in populations should emphasize this critical period.

Salt iodization remains the key strategy to control iodine deficiency (4). But in regions where iodized salt is not available or available only to a negligible extent, lactating women and infants should be supplemented with iodine. Supplementation with iodized oil may be preferable to daily supplementation in remote populations where channels of distribution are limited and where compliance with a single dose regimen is likely to be higher.

For lactating women, WHO recommends a single annual 'depot' dose of 400 mg of iodine as oral iodized oil and exclusive breastfeeding for at least six months, on the assumption that breast milk will then provide adequate iodine to the infant (4). If infants are not able to be breastfed or are not being provided iodine-fortified complementary foods, the recommended strategy is a single dose of 200 mg as iodized oil, given directly to the infant (5).

But the recommendations for iodized oil supplementation have surprisingly little evidence base. There have been no published studies providing oral iodized oil to lactating women to determine if this supplies adequate iodine to the breastfeeding infant.

FIGURE 1 (A) Urinary iodine concentrations (µg/L) and (B) prevalence of hypothyroidism after supplementation with iodine. The grey area shows WHO criteria for adequate iodine status based on the median UIC.



The aim of a recent study in southern Morocco was to evaluate the efficacy and safety of the current WHO recommendations for iodized oil supplementation in lactation and infancy, comparing direct supplementation of the infant to indirect supplementation through breast milk. Morocco has enacted national legislation mandating compulsory salt iodization, but because of poor compliance by the salt industry and a lack of enforcement many regions remain iodine deficient, and the national median UIC in children is only 69 μg/L (6).

A team from the Swiss Federal Institute of Technology (ETH) Zurich and the University in Marrakech conducted the study. In a double-blind, randomised, placebo-controlled intervention trial, breastfeeding mothers and their new-borns (n=482) received either: a) a single dose of 400 mg iodine to the mother and placebo to the infant (Group 1); or b) a single dose of 100 mg iodine to the infant and placebo to the mother (Group 2). Growth, thyroid function, urinary iodine concentrations (UIC) and breast milk iodine concentrations (BMIC) were measured at baseline, 3, 6, and 9 months, and mental and psychomotor development at 12 months.

At baseline, the median UIC in infants was 73 μg/L indicating iodine deficiency and 42% of the infants had low thyroid function. During the study, maternal UIC, BMIC and infant UIC were higher in Group 1 compared to Group 2, and the number of infants with thyroid hypofunction was lower in Group 1 compared to Group 2 *(Figure 1)*. At 3 and 6 months, the median infant UIC in Group 1 was sufficient (>100 μg/L). At 12 months the groups did not differ from each other in development measures.

In summary, this study provides the first direct evidence that, in areas of moderate-to-severe iodine deficiency without effective salt iodization, supplementation of the lactating mother with a single dose of iodized oil soon after delivery provides adequate iodine to the infant for up to six months during breastfeeding. Because infant immunization rates are high in nearly all countries, providing iodized oil to lactating mothers at the first vaccination visit is a strategy that could be easily implemented within existing health delivery systems. This approach appears to be safe and rapidly normalizes thyroid function in the infant, and may protect against potential damage from iodine deficiency until iodine-fortified complementary foods, such as micronutrient powders, are introduced.

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Many iodine-deficient women around the world struggle to provide both adequate iodine to their breastfeeding infants and meet their own iodine needs. Here, a woman in Laos with a large goiter caused by iodine deficiency breastfeeds her baby

(Photo: ©UNICEF, with permission)