Ten repeat collections for urinary iodine from spot samples or 24-h samples are needed to reliably estimate individual iodine status in women

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Although the median urinary iodine concentration (UIC) is a good indicator of iodine status in populations, there is no established biomarker for individual iodine status. If the UIC were to be used to assess individuals, it is unclear how many repeat urine collections would be needed and if the collections should be spot samples or 24-h samples.

In a prospective, longitudinal, 15 mo study, healthy Swiss women (n=22) aged 52 – 77 y collected repeated 24-h urine samples (total n=341) and corresponding fasting second-void morning spot urine samples (n=177). From the UIC in spot samples, 24-h urinary iodine excretion (UIE) was extrapolated based on the age/gender-corrected iodine/creatinine ratio. Measured UIE in 24-h samples, estimated 24-h UIE, and UIC in spot samples were (geometric mean ± SD) 103 ± 28 µg/24 h, 86 ± 33 µg/24 h, and 68 ± 28 µg/L, respectively, with no seasonal differences. Intra-individual variation (mean CV) was comparable for measured UIE (32%) and estimated UIE (33%). The CV tended to be higher for the spot UIC (38%) than for the estimated 24-h UIE (33%) (P=0.12). Comparable intra-day variations in urinary iodine excretion have been previously reported in Danish adults.

The findings demonstrate that, in this population, ten spot urine samples or 24-h urine samples were needed to assess individual iodine status with 20% precision. Spot samples would likely be preferable because of their ease of collection. However, the large number of repeated urine samples needed to estimate individual iodine status is a major limitation and emphasizes the need for further investigation of more practical biomarkers of individual iodine status.

For more details, please see the full publication of this study, currently in press at The Journal of Nutrition: Konig F, et al. Ten repeat collections for urinary iodine from spot samples or 24-h samples are needed to reliably estimate individual iodine status in women. *J Nutr 2011 Sep 14 [Epub ahead of print].*