

Addendum to *Indicators and Methods for Cross-Sectional Surveys of Vitamin and Mineral Status of Populations* (19 August 2008).

Since the release of the *Indicators and Methods for Cross-Sectional Surveys of Vitamin and Mineral Status of Populations* manual, there has been an update on iodine deficiency from WHO/UNICEF/ICCIDD (Assessment of iodine deficiency disorders and monitoring their elimination: A guide for programme managers, 3rd ed, 2007). Below is information to update the *Indicators and Methods for Cross-Sectional Surveys of Vitamin and Mineral Status of Populations* manual.

On Page 23 of the manual, please replace Table 2.3 with the following:

Table 2.3 Recommended age and sex groups for assessments

Micronutrient deficiency	Preschool children	School-age children	Women of reproductive age		Men
			Not Pregnant	Pregnant	
VAD (Serum retinol)	1	-	2	2	-
ID and Anemia (Hb, serum ferritin, TfR)	1	1	1	1*	1*
IDD (Urinary iodine)	1	1	1	1	1

1 = the indicator is recommended by WHO expert group and cutoff values are available

2 = either not directly recommended by WHO expert group and/or cutoff values have not been established; however, other expert groups, institutions, or experts may have recommended the group and/or cutoff values

- = no WHO expert group recommendations on the group with the specific indicator

*There are cutoff values for anemia in these groups by a WHO expert group but no cutoff values for serum ferritin or TfR

(Updated 19 August 2008)

Starting on Page 101 of the manual, please replace sections A2.3 and A2.3.1 with the following:

A2.3 Iodine Deficiency

The primary indicator of iodine deficiency is urinary iodine concentration (UI) and the primary measure of coverage in most areas is the proportion of households using adequately iodized salt (Table A2.7). Details of these and other possible indicators and sustainable elimination criteria can be found elsewhere.ⁱ Some additional details of urinary iodine and salt iodine levels are described next.

Table A2.7 Iodized salt and urinary iodine criteria for monitoring progress towards sustainable elimination of IDD

Indicators	Goals
Salt iodization - Proportion of households using adequately iodized salt*	>90%
Urinary iodine - Median in the general population	100-199 µg/l
Median in pregnant women	150-249 µg/l

*Internationally defined as ≥ 15 ppm

Source: WHO/UNICEF/ICCIDD 2007

Although there are other clinical and biological indicators of iodine status, including goiter and thyroid volume by ultrasonography, these are not generally recommended for most cross-sectional surveys. Measures of thyroid size are slow to respond to changes in iodine status, such as occurs when a salt iodization program has been recently implemented, and could provide misleading information on the *current* status of iodine deficiency in a population.ⁱⁱ

A2.3.1 Urinary iodine as the primary indicator of iodine nutrition

For iodine deficiency, the goal is to assure that the population has adequate iodine nutrition, which is usually determined by the median level of iodine in casual urine specimens for a population (Table A2.7).

Some important features of UI include:

- Most survey participants are willing to provide urine specimens
- Only a small amount of urine is required (0.5-1.0 ml) for laboratory testing
- UI is a good marker of recent dietary iodine intake of the *population*
- In individuals, UI varies throughout the day and from day to day, therefore a single UI is *not* a useful indicator of iodine status at the *individual level*
- Relating iodine to creatinine is unnecessary (per WHO recommendations)ⁱ
- Transportation of urine specimens does not require refrigeration or preservation

Details on urinary specimen storage and iodine laboratory methods can be found elsewhere.ⁱ Urinary iodine assays are relatively simple to perform but require special attention to prevent iodine contamination of the laboratory area and equipment.

Additional interpretation of urinary iodine based on median levels in different populations is presented in Table A2.8. Populations with “insufficient intake” of iodine may be defined as having *severe*, *moderate*, or *mild* iodine deficiency. A common misinterpretation of Table A2.8 is to state that *individuals* with a urinary iodine < 20 µg/l have “severe” iodine deficiency, *individuals* with a urinary iodine 20-49 µg/l have “moderate” iodine deficiency, and *individuals* with a urinary iodine 20-49 µg/l

have “mild” iodine deficiency. As stated earlier, casual urine specimens are **not** useful for classifying *individuals*, but summary information (proportion below a cutoff or a median) is useful for classifying *populations*.

An additional criterion for urinary iodine levels in children and non-pregnant women is that not more than 20% of urinary iodine values should be below 50 µg/l.

Table A2.8 Epidemiologic criteria for assessing iodine nutrition based on median urinary iodine concentrations in different target groups.

Median urinary iodine (µg/l)	Iodine intake	Iodine Status
School-age children (≥6 years), men, and non-pregnant, non-lactating women		
< 20	Insufficient	Severe iodine deficiency
20-49	Insufficient	Moderate iodine deficiency
50-99	Insufficient	Mild iodine deficiency
100-199	Adequate	Adequate iodine nutrition
200-299	Above requirements	May pose a slight risk of more than adequate iodine intake in these populations
≥300	Excessive	Risk of adverse health consequences (iodine-induced hyperthyroidism, autoimmune thyroid disease)
Pregnant Women		
< 150	Insufficient	
150-249	Adequate	
250-499	Above requirements	
≥ 500	Excessive*	
Lactating women and children less than 2 years of age		
< 100	Insufficient	
≥ 100-199	Adequate	

Source: WHO/UNICEF/ICCIDD 2007

*The terms “excessive” means in excess of the amount required to prevent and control iodine deficiency.

- i World Health Organization, UNICEF, and the International Council for the Control of Iodine Deficiency Disorders (ICCIDD). Assessment of Iodine Deficiency Disorders and Monitoring their Elimination: A Guide for Programme Managers, 3rd Ed. WHO, Geneva, 2007 (http://whqlibdoc.who.int/publications/2007/9789241595827_eng.pdf).
- ii Gorstein J, Sullivan K, Houston R, Gerasmov G. Goiter assessment: help or hindrance in tracking progress in iodine deficiency disorders control program? *Thyroid*. (2001) 11(12):1201-1202.