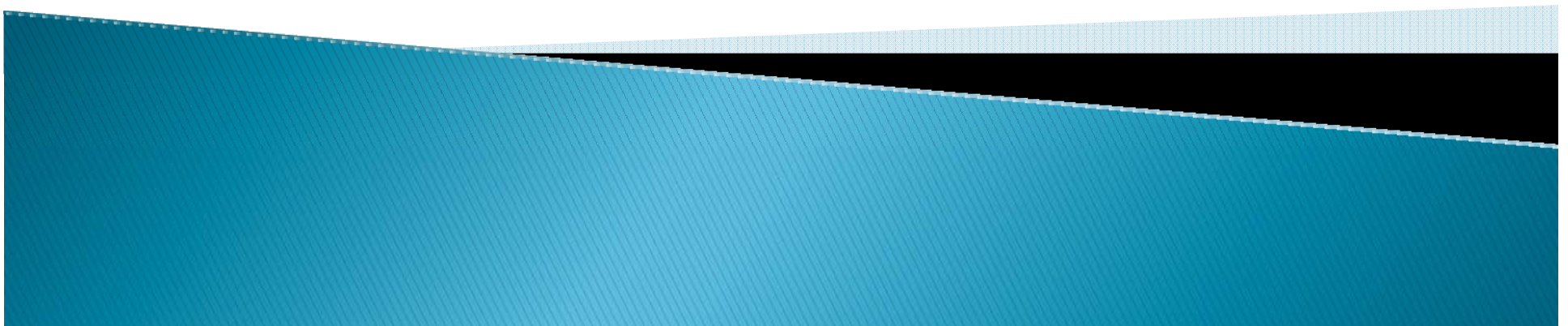


WELCOME

IZiNCG Satellite Session

May 14, 2009



FOOD AND NUTRITION BULLETIN

Volume 25, Number 1, March 2004

SUPPLEMENT 2:
*International Zinc Nutrition Consultative
Group (IZiNCG) Technical Document #1*



**ASSESSMENT OF THE RISK OF ZINC
DEFICIENCY IN POPULATIONS AND
OPTIONS FOR ITS CONTROL**

Christine Hotz and Kenneth H. Brown, guest editors

March, 2004



Available on the IZiNCG web
site: www.izingc.org

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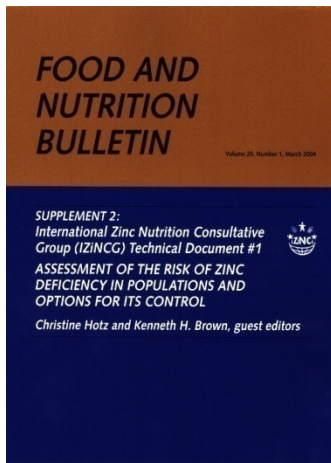
**Comprehensive review
of current knowledge
on zinc nutrition**

**Increased recognition
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public health problem**

**Provided groundwork
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International Nutrition Foundation
for





International Nutrition Foundation
for
United Nations
University Press

2004 -

- **Increased recognition of zinc deficiency as a public health problem**
- **Provided groundwork on prevalence estimates – allowed estimates of Global Burden of Disease due to zinc deficiency**
- **Increased interest in assessing prevalence of zinc deficiency**
- **Increased demand for information on how to include zinc in micronutrient programs**



IZiNCG

Technical Brief

No. 01 2007



Quantifying the risk of zinc deficiency: Recommended indicators

Efforts to estimate the global prevalence of zinc deficiency require the application of accurate, easily measurable indicators of zinc status or the risk of zinc deficiency in a given population. WHO, UNICEF, IAEA, and IZiNCG jointly recommended the following methods for assessing the zinc status of the population or the risk of inadequate zinc intake [1]:

- **Blood plasma or serum zinc concentration**
The concentration of zinc in blood plasma or serum is the best available biomarker of risk of zinc deficiency in populations.
The risk of zinc deficiency is considered to be elevated and of public health concern when the prevalence of low serum zinc concentrations is >20%.
For more information, see IZiNCG technical brief no. 2, 2007.
- **Dietary zinc intake**
Chronic inadequate dietary intake of zinc is the most likely cause of zinc deficiency. Hence, estimating the adequacy of zinc intake through quantitative dietary intake surveys is useful to evaluate the risk of zinc deficiency in populations.

The risk of zinc deficiency is considered to be elevated and of public health concern when the prevalence of inadequate intakes is >25%.
For more information, see IZiNCG technical brief no. 1, 2007.

- **Stunting prevalence**
Height-for-age—a measure of nutritional stunting—is the best known and easiest to measure of the adverse outcomes associated with zinc deficiency in populations. Stunting prevalence is expressed as the percent of children under 5 years of age with height-for-age below the expected range of a reference population (i.e., less than 2.0 standard deviations with respect to the reference median).

Detailed information on measuring and interpreting serum zinc concentration and dietary assessment methods are provided below on stunting prevalence. The following sections will

As a preliminary step in estimating the global prevalence of zinc deficiency, the risk of zinc deficiency can be estimated for each country based on existing values for the national prevalence of stunting in preschool children. Data on stunting rates were derived from the most recent DHS and WHO

Prevalence of nutritional stunting in children under 5 years of age



Technical Brief

No. 02 2007



Stunting with serum zinc concentration

weeks or months. However, other factors can independently affect the serum zinc concentration. For example, infection can lower serum zinc concentration, while muscle breakdown during weight loss can liberate zinc to the circulation and increase serum zinc concentration.

For these reasons, serum zinc concentration may not be a reliable indicator of an individual's zinc status. Nevertheless, distribution of serum zinc concentrations among a representative sample of a population can be used to assess the risk of zinc deficiency in that population. In addition, use of the serum zinc concentration rises consistently in response to zinc supplementation, this indicator can be used as evidence of successful implementation of a zinc intervention program [2].

Issues concerning the collection and specimens for serum zinc concentration

Specimens should be taken from the veins of a sample of people among populations or sub-population, as defined by age, geographic region, status, or other descriptors. More information on sample size issues is available in the full document [3].

When serum is used to assess the impact of an intervention, such as supplementation, diversification, it is important to schedule when the end of the intervention occurs.

When serum is used to assess the impact of an intervention, such as supplementation, diversification, it is important to schedule when the end of the intervention occurs. In serum in very low concentrations, exogenous sources of zinc can result. Therefore, samples must be using alcohol swabs, syringes, and transfer pipettes, while avoid blood cells—hemolysis—and with ambient zinc in air or water. A detailed description of techniques and suitable materials for the specimens is provided in the full document [3].

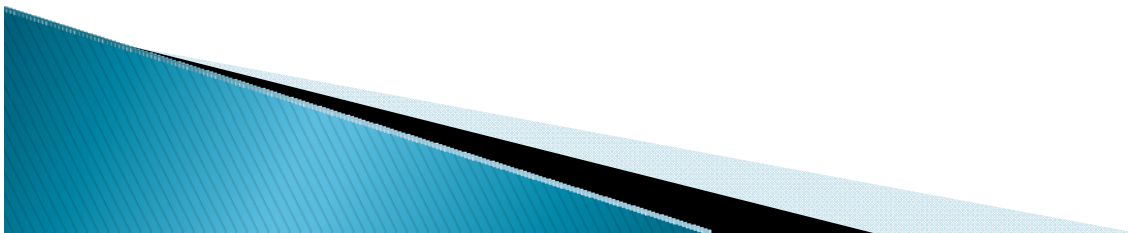
www.IZiNCG.org

Encouraging further assessment of population zinc status

- ▶ Conclusions of the Joint WHO/UNICEF/IAEA/IZiNCG Interagency Meeting on Zinc Status Indicators
 - Food and Nutrition Bulletin 28(Supplement 3) 2007
 - **Biochemical Indicators** **SY Hess, KH Brown**
 - Serum zinc is preferred indicator for prevalence and impact assessment
 - **Functional Indicators** **C. Fisher-Walker, RE Black**
 - Linear growth stunting for prevalence estimates
 - **Dietary Indicators** **C. Hotz**
 - Risk of inadequate intake; design and assessment of fortification programs



- ▶ Information and experience with zinc intervention strategies has increased
- ▶ IZiNCG undertook to compile and analyze all available information



FOOD AND NUTRITION BULLETIN

Volume 25, Number 1, March 2004

SUPPLEMENT

International Zinc Nutrition Consultative
Group

Technical Document #2

SYSTEMATIC REVIEWS OF ZINC
INTERVENTION STRATEGIES

Kenneth H. Brown and Sonja Y Hess, guest
editors

March, 2009

**Systematic Review of
Evidence for Impact of
Zinc Intervention
Strategies**

**Prepared & reviewed
by IZiNCG Steering
Committee**

**IUNS and Food Nutr
Bull coordinated
external review**

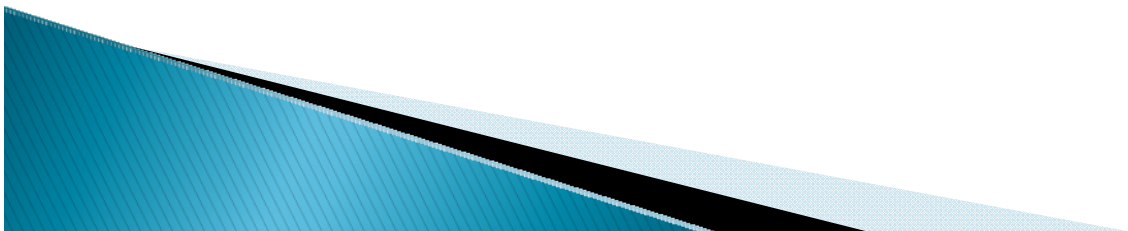
- **UNICEF**
- **WHO**

International Nutrition Foundation
for



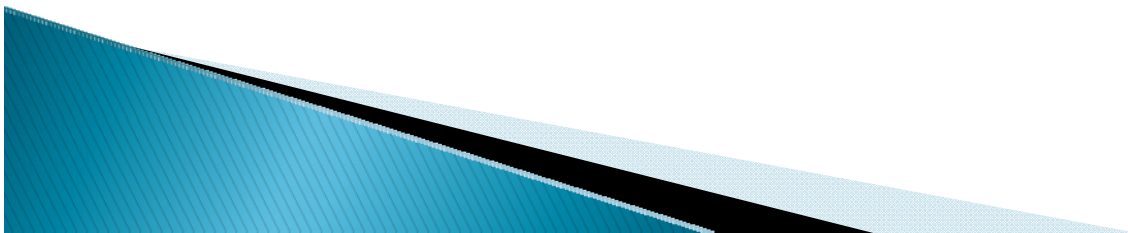
Content

- ▶ Preventive zinc supplementation in children
- ▶ Therapeutic zinc supplementation in children
- ▶ Zinc supplementation during pregnancy and lactation
- ▶ Zinc fortification
- ▶ Dietary Diversification to enhance zinc intakes
- ▶ Zinc intake through breastmilk
- ▶ Improving zinc status through biofortification
- ▶ Conclusions and mainstreaming zinc interventions



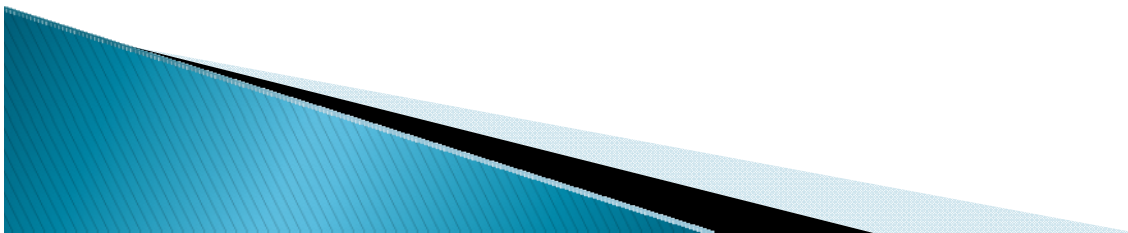
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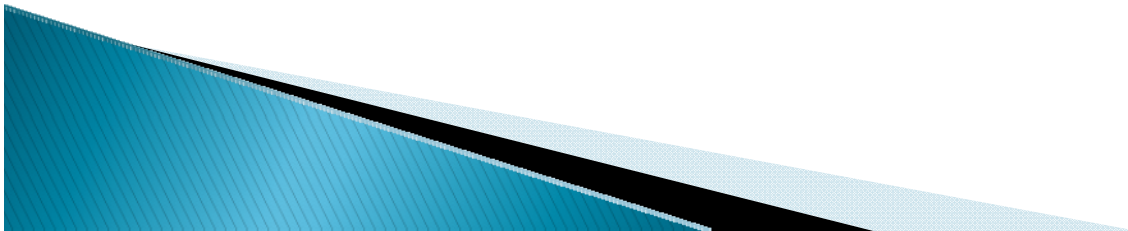
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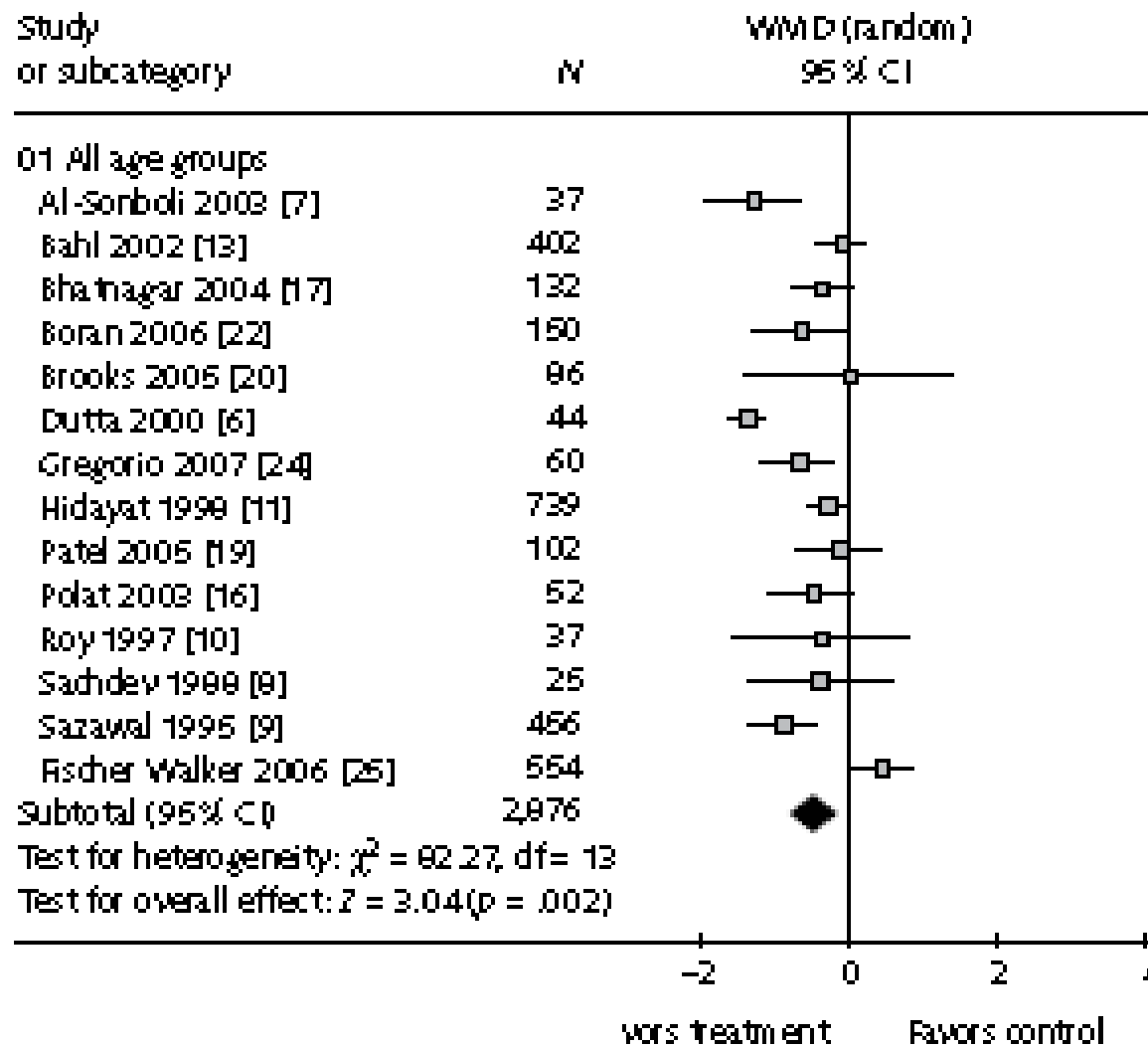
Summary of Conclusions

Population zinc status assessment:

- *The recommended biochemical indicator is the prevalence of serum zinc concentration less than the age/sex/time of day-specific cutoffs;*
- *When the prevalence is greater than 20%, intervention to improve zinc status is recommended*



Effect of adjunctive therapeutic zinc supplementation on duration of acute diarrhea



Reduced duration of acute diarrhea by 0.5 days (n=14; p<0.002)

Reduced duration of persistent diarrhea by 0.68 days (n=5; p<0.001)

No beneficial effect among children < 6 months of age

Summary of Conclusions: Zinc fortification

Benefits of Zinc Fortification

- ↑ Zn intake
- ↑ Zn absorbed
- Effective ↑ serum Zn
- Safe, cheap



- Uncertain efficacy
- Cost

Weight of evidence in favor of zinc fortification

Thank you!



Please visit our web site at www.izincg.org

Acknowledgements

