



IVACG Statement

The Annecy Accords to Assess and Control Vitamin A Deficiency

Summary of Recommendations and Clarifications

The International Vitamin A Consultative Group (IVACG) undertook a comprehensive review of recommendations for the control of vitamin A deficiency developed over the last 20 years, the first such review in as many years. IVACG commissioned a series of expert papers that were presented at an expert panel meeting in Annecy, France, in October 2000. The recommendations with supporting evidence were refined based on the deliberations at Annecy and presented for final agreement during the XX IVACG Meeting in Hanoi, Vietnam, in February 2001. The expert papers and an extensive summary prepared by Dr. Alfred Sommer and Dr. Frances R. Davidson appear in *The Journal of Nutrition* (2002;132[9S]:2843S–2990S).

A summary of the recommendations for the control of vitamin A deficiency, called the Annecy Accords, follows.

Standardized nomenclature has been introduced to clarify the descriptions of vitamin A deficiency.

The term "vitamin A deficiency disorders" (VADD) was introduced to cover all physiological disturbances caused by low vitamin A status, including clinical signs and symptoms. "Vitamin A deficiency" (VAD) is defined as liver stores of vitamin A < 20 µg/g (0.07 µmol/g) and its surrogates. VADD covers what was previously referred to as "subclinical" (e.g., impaired iron mobilization, disturbed cellular differentiation, depressed immune response) or clinical (increased infectious morbidity and mortality, growth retardation, anemia, xerophthalmia) manifestations.

Nonocular, systemic manifestations of VAD are often misleadingly referred to as "subclinical," which could suggest that they are less important. These physiological manifestations, however, can be severe and are associated with a marked increase in the risk of death. The term "subclinical" should be abandoned.

New criteria can more accurately determine the extent and severity of VAD in a population.

Maternal night blindness. A woman's history of having experienced night blindness (XN) at some point during her last live-birth pregnancy is considered more accurate than questioning parents about XN in their preschool-age children. Therefore, a minimal prevalence criterion of 5% XN in these women is considered an indicator of VAD in the wider population.

Serum retinol. Serum retinol concentration as an indicator of VAD has been raised to < 20 µg/dL (0.70 µmol/L), double the concentration originally adopted in 1980. The rate of VAD among preschool-age children as an indicator of VAD has been raised to > 15% from > 5%. High-performance liquid chromatography (HPLC) is considered the only laboratory technique that is reliable for routine measurement of serum retinol. When HPLC measurements are not available, assessment of VAD should be based on clinical criteria.

Under-5 mortality rate. Populations whose children less than 5 years of age have high mortality rates (U5MR) invariably prove to have significant VAD. Thus, countries with U5MR > 50 per 1,000 live births are likely to have a VAD problem. Countries with U5MR of 20 to 50 per 1,000 live births may have a problem, and its presence or absence needs to be documented.

Intervention strategies have been clarified.

Dietary diversification alone is deemed inadequate to normalize vitamin A status.

The U.S. Institute of Medicine recently concluded that the bioavailability of β -carotene, the primary provitamin A source in plants, is only half that previously assumed. Additional studies using data from developing countries estimate that it takes 21 μg β -carotene from a typical mixed plant diet of vegetables and fruits to yield 1 μg retinol equivalent. It is thus virtually impossible to completely correct widespread VAD by diet alone in developing countries where populations remain dependent on conventional plant-based foods. Supplementation of mothers and young children remains an essential intervention in VAD populations.

The supplementation schedule for new mothers and their infants has been revised.

A recent multicountry study sponsored by the World Health Organization (1998; *Lancet* 352[9136]:1257-1263) indicated that the currently recommended supplementation schedule is inadequate for postpartum women and young infants, and is unlikely to sustain adequate or even improved vitamin A status in children beyond 6 months of age. The size and frequency of doses have been increased as follows:

Schedule for routine high-dose vitamin A supplementation in vitamin A-deficient populations

Population	Amount of vitamin A to be administered	Time of administration
Infants 0–5 months	150,000 IU as three doses of 50,000 IU with at least a 1-month interval between doses	At each DTP contact (6, 10, and 14 weeks) (otherwise at other opportunities)
Infants 6–11 months	100,000 IU as a single dose every 4–6 months	At any opportunity (e.g., measles immunization)
Children 12 months and older	200,000 IU as a single dose every 4–6 months	At any opportunity
Postpartum women	400,000 IU as two doses of 200,000 IU at least 1 day apart and/or 10,000 IU daily or 25,000 IU weekly	As soon after delivery as possible and not more than 6 weeks later and/or during the first 6 months after delivery

Fortification can reduce VAD. The fortification of commonly consumed foods by a population subgroup at risk for VAD can significantly reduce the prevalence and severity of VAD. However, to be successful, such programs often must address political, regulatory, and trade barriers.

Thorough monitoring and evaluation are essential. Whatever vitamin A intervention strategies are implemented, rigorous and repeated evaluation is necessary to ensure that the intervention is achieving its goal.

IVACG offers these recommendations as the culmination of the best available evidence at this time in an effort to generate more effective and efficient VAD control programs. They are meant to be more practical and helpful than the recommendations they replace.

About IVACG

Established in 1975, the International Vitamin A Consultative Group guides international activities for reducing vitamin A deficiency in the world. IVACG concentrates its efforts on stimulating and disseminating new knowledge, translating that new knowledge to enable its practical application, and providing authoritative policy statements and recommendations that others can use to develop appropriate prevention and control programs.

IVACG Steering Committee

David Alnwick, M.Sc.
Omar Dary, Ph.D.
Frances R. Davidson, Ph.D.,
IVACG Secretary

Alfred Sommer, M.D., M.H.Sc.,
IVACG Steering Committee Chair
Kraisid Tontisirin, M.D., Ph.D.
Suttalak Smitasiri, Ph.D.
Clive E. West, Ph.D., D.Sc.
Keith P. West, Jr., Dr.P.H.

IVACG Secretariat Staff

Suzanne S. Harris, Ph.D.

Veronica I. Triana, M.P.H.

The publication of this statement is made possible by support from Micronutrient Global Leadership, a project of the Office of Health, Infectious Disease and Nutrition, Bureau for Global Health, U.S. Agency for International Development, under Cooperative Agreement Number HRN-A-00-98-00027-00.

December 2002

Printed in the United States of America.

Additional single copies of this and other IVACG publications are available free of charge to developing countries and for US\$3.50 to developed countries. Many IVACG publications can be downloaded free at: <http://ivacg.ilsi.org>. Copies can be ordered from the IVACG Secretariat:



IVACG Secretariat
ILSI Research Foundation
One Thomas Circle, NW, 9th floor
Washington, DC 20005-5802, USA

Tel: 202-659-9024
Fax: 202-659-3617
E-mail: hni@ilsi.org
Internet: <http://ivacg.ilsi.org>

International Vitamin A Consultative Group (IVACG)

The ILSI Research Foundation's Human Nutrition Institute serves as the IVACG Secretariat
