PREFACE

Vitamin A deficiency (VAD), is the single most important cause of childhood blindness in developing countries. It also contributes significantly, even at subclinical levels, to morbidity and mortality from common childhood infections. Heightened awareness of the role of vitamin A in human health has led to an international effort to eliminate VAD and its consequences as a public health problem by the year 2000.

In 1987 WHO estimated that VAD was endemic in 39 countries based on the occurrence of clinical eye signs or symptoms, or very low blood levels of vitamin A (<0.35 μmol/l). This document updates this information based on biochemical evidence of subclinical VAD, i.e. population-based blood levels of vitamin A ≤0.70 μmol/l, supported by other biological indicators and such ecological risk factors as diet. It is now estimated that VAD, including clinical and subclinical forms of severe and moderate degrees of public health significance, exists in 60 countries, and it is likely to be a problem in at least an additional 13 countries. An estimated 2.8 to 3 million preschool-age children are clinically affected, and 251 million more are severely or moderately subclinically deficient. At least 254 million children of preschool age are thus "at risk" in terms of their health and survival.

VAD is the result of two primary factors. First, there is a persistent inadequate intake of vitamin A to satisfy physiological needs. This is frequently exacerbated by secondary dietary circumstances such as insufficient consumption of dietary fat, which leads to inefficient absorption of this micronutrient. The second factor causing VAD is a high frequency of infections. Infections depress appetite, prompting an elevation in the body's vitamin A utilization and consequently the nutrient's inefficient conservation. Other conditions related to poverty, e.g. social underdevelopment (particularly affecting women); inadequate environmental sanitation; and insufficient water supply for growing food, drinking and maintaining adequate personal hygiene are associated with malnutrition generally, often including VAD. These conditions of deprivation are reflected in high infant and child mortality rates, which may be reduced to a degree by improved vitamin A status. It is important, therefore, to identify populations with subclinical VAD, as well as those with xerophthalmia, to quantify the at-risk population and to implement intervention programmes that reflect the true magnitude and severity of the problem. Recent methodological developments and refinements in their interpretation permit this to be accomplished far more readily than in the past.

This document provides a comprehensive listing of data on the magnitude and distribution of VAD based on clinical and biochemical parameters that are supported by ecological risk factors. The intention is to provide an overview of the global distribution of VAD. However, in the absence of, in particular, nationally representative data from all countries concerned, national prevalence estimates have been made based on the best available representative sub-regional data. Estimates of the numbers of people "affected" and "at risk" are thus approximations subject to refinement as more representative and comprehensive data become available. Nevertheless, it is clear that there is a significant VAD problem in at least parts of most countries in Africa, South and South-East Asia, and some areas of Latin America and the Western Pacific. Generally speaking, VAD is not believed to be of public health significance in countries with established market economies; however, most of these countries have not recently conducted surveys that would detect subclinical deficiency if it were to occur among their less affluent populations. Thus far little information is available from the former socialist countries of central Europe.
Global prevalence of vitamin A deficiency

This document is a first step in providing updated national estimates of VAD and in generating regional and global figures on this basis. The data serve as a baseline for tracking progress nationally and globally towards the virtual elimination of VAD, which is one of the end-of-decade micronutrient goals endorsed by the World Summit for Children (1990), the International Conference on Nutrition (1992), and the World Health Assembly (1993).

The document is divided into four sections. The first section describes the nature of VAD and reviews the epidemiological issues involved in measuring and interpreting VAD prevalence studies. It also describes in some detail the steps taken in extracting data from various sources. The second section presents summary tables of the most recent VAD prevalence data by country and WHO region. The third section presents more detailed sub-national prevalence data by WHO region and, where available, sub-national areas, thereby showing the geographic variability of VAD within countries. Biological data are presented with information concerning the specific laboratory procedures employed. The fourth section provides complete bibliographic information for all data sources presented in the national and sub-national prevalence tables.