

Nutrition Surveillance

Kevin Sullivan, PhD, MPH, MHA

The views expressed in this paper are the views of the authors and do not necessarily reflect the views or policies of the Asian Development Bank (ADB), or its Board of Directors, or the governments they represent. ADB does not guarantee the accuracy of the data included in this paper and accepts no responsibility for any consequences of their use.

- The ultimate goal is to improve the nutritional status of the population, especially among the poor
- Prevent the many negative consequences of micronutrient deficiencies

Nutrition Surveillance

- Primary sources of information on nutritional status of a population
 - Cross-sectional surveys
 - Monitoring of populations
 - Other routinely collected data sources
 - Research studies

Cross-Sectional Surveys

- Generally performed once every 5 to 10 years
- Representative of the population
- Usually household-based
- Frequently collect information on:
 - Prevalence of micronutrient deficiency
 - Proportion of households using fortified food products
 - Testing of fortified foods
 - Knowledge, Attitudes, and Behaviors related to micronutrient deficiencies and fortified food use

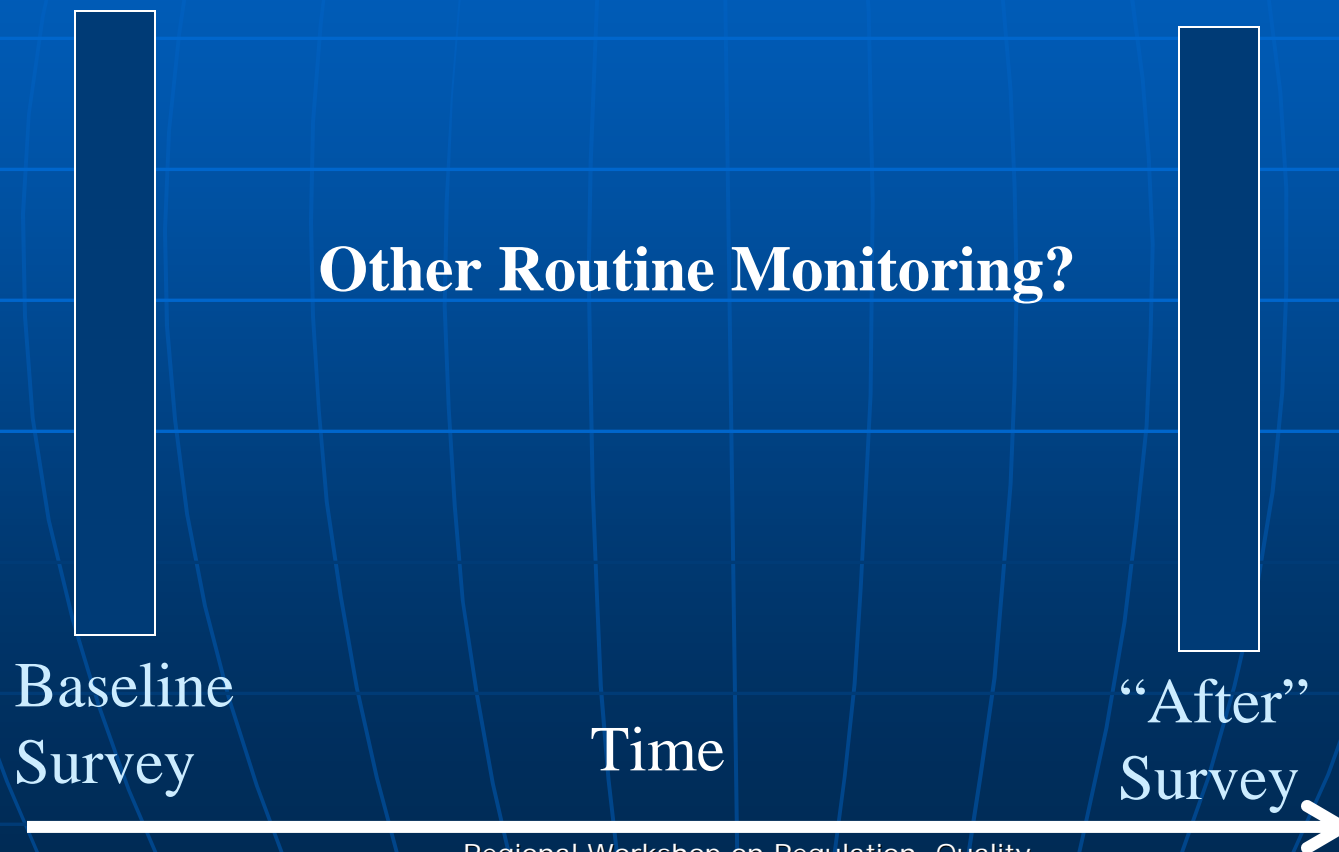
How do you assess the impact on the population?

- Usually a need for a baseline, cross-sectional survey to determine:
 - What is the prevalence?
 - Who is affected?
 - What are the economic costs of the deficiency?
 - Primary healthcare costs to treat micronutrient-related conditions
 - Impact on economic development
 - Cost-effectiveness of various intervention approaches
 - Advocacy tool
 - Serves as a baseline for future cross-sectional surveys

Follow-up cross-sectional survey

- Has the prevalence declined?
 - In which groups?
 - By how much?

Cross-sectional surveys



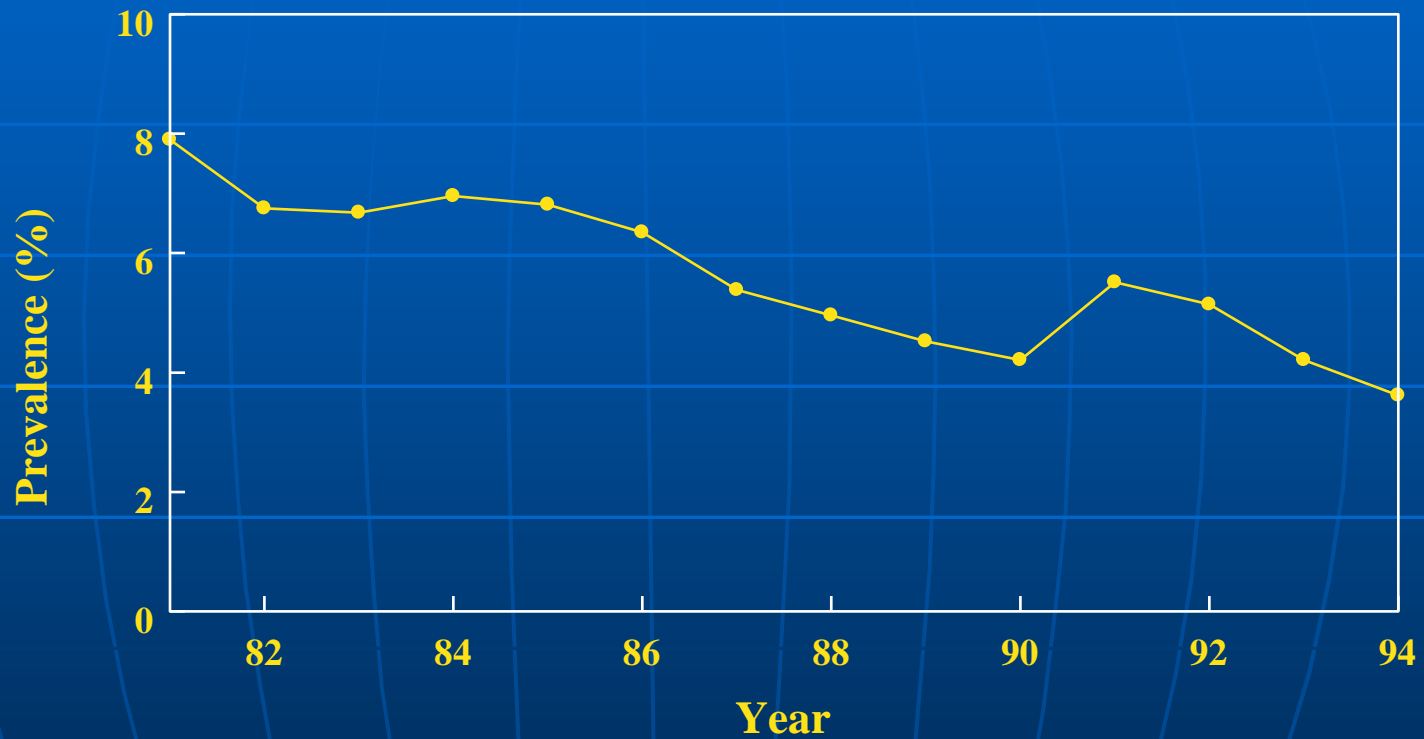
Nutrition Monitoring

- Purpose: to measure secular changes in the micronutrient status of a population
- A number of issues to consider in developing a monitoring system

Design of Monitoring System

- Given that the micronutrient to measure, indicator(s), and target group have been identified,
- Determine:
 - Target site (e.g., health clinic)
 - Use of current infrastructure vs. new monitoring system
 - Number of sites and participants

Prevalence of Anemia Among Low-income Children in Vermont USA, 1981-1994



Sherry B, et al.. Arch Pediatr Adol Med 1997;151:929.

Other Possible Indicators

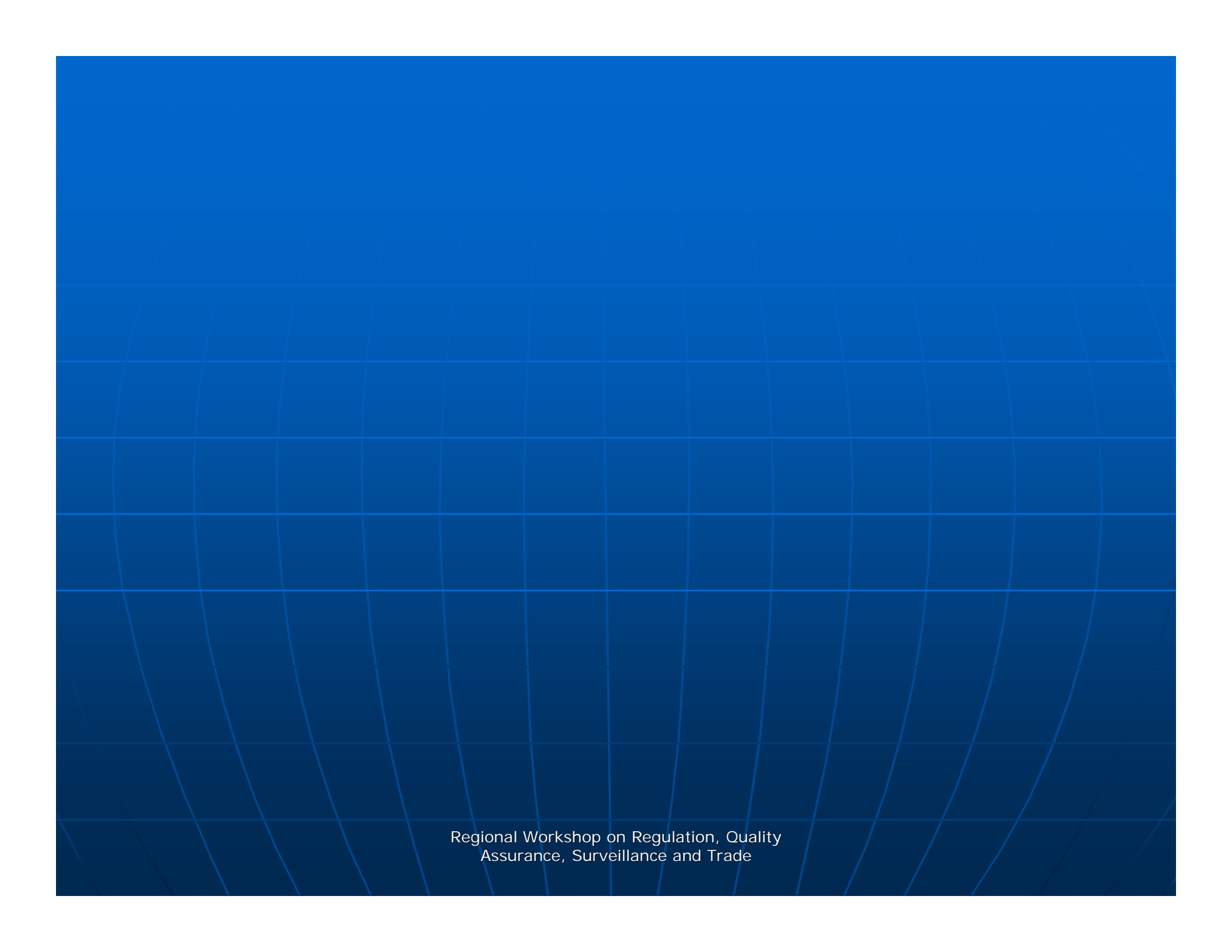
- Folic acid – frequency of neural tube defects (NTD's)
- Iron deficiency – frequency of maternal mortality
- Vitamin A deficiency – frequency of xerophthalmia, child mortality rates

Cost Issues

- Equipment
- Supplies
- Laboratory-related
- Forms
- Computers
- Report development/distribution

Regional Approaches

- For each fortified food product, agree on target group and indicator
- Use recommendations from WHO, UNICEF, and expert groups



Regional Workshop on Regulation, Quality
Assurance, Surveillance and Trade

Who and What to Measure Summary

- Select target group
- Select indicator

How would you measure the deficiency

Need to take into account accuracy of indicator, costs, level of invasiveness

- Clinical indicators
- Biologic
 - Finger stick
 - Urine
 - Blood sample

Biologic vs. Clinical Indicators

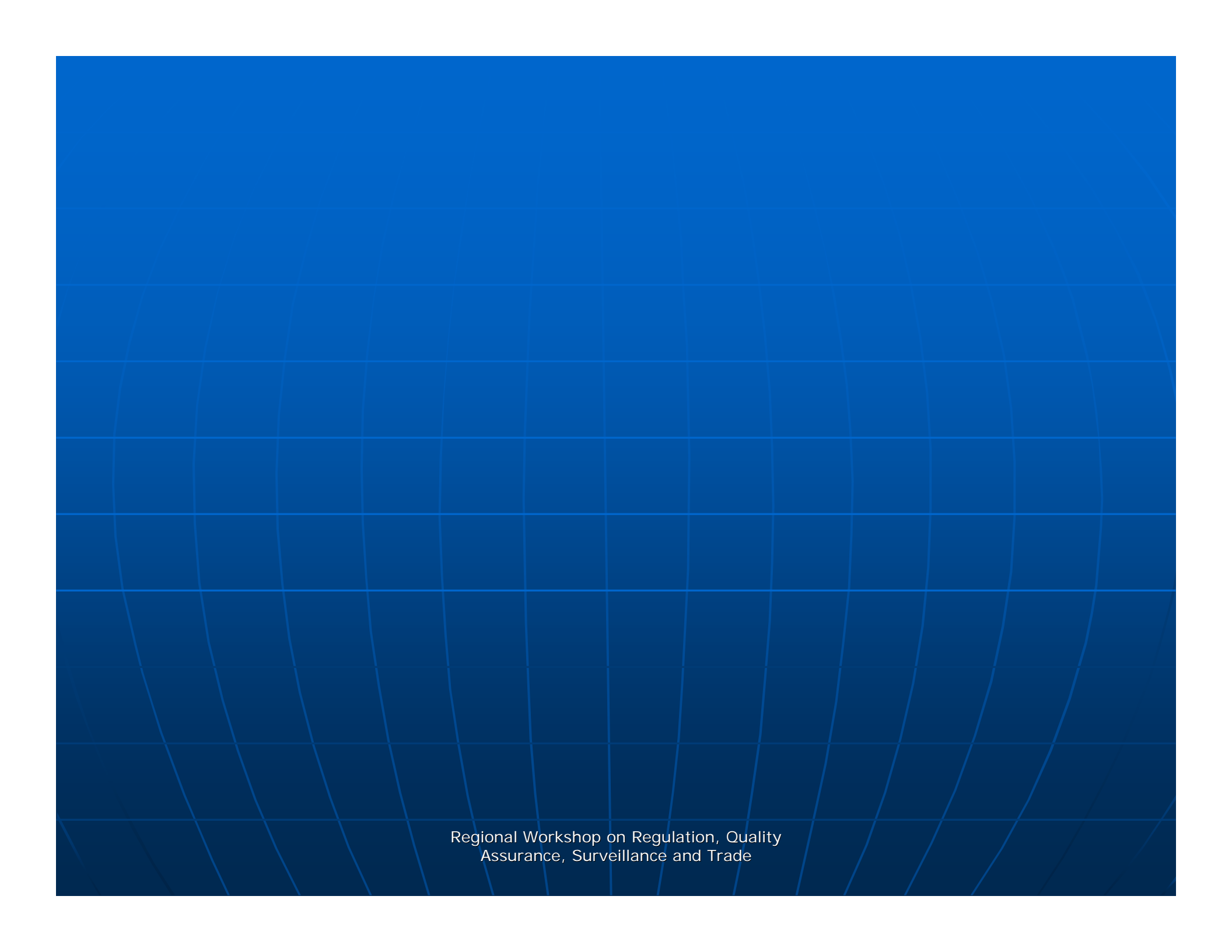
- As a general rule, clinical indicators can be useful for diagnostic purposes and for identifying populations with severe deficiencies, but are less useful for monitoring purposes
- Biologic indicators tend to be more objective

Accessibility of Target Group

- Once a target group and indicator are determined, how accessible is that group? Discussed more later.

Example: Iron Fortified Flour

- Potential target group
 - Women of childbearing age
- Potential Indicator
 - Hemoglobin
 - Indicators of iron deficiency



Regional Workshop on Regulation, Quality
Assurance, Surveillance and Trade

Issues to Consider

- Who will benefit greatest from the intervention?
- What indicators would you use to measure the deficiency or impact?
- Different ways to assess the fortification program

Who will benefit greatest from fortification program?

- Which age/sex groups are at greatest risk of the consequences of the deficiency?
- Which age groups consume the fortified product in sufficient quantity?

Example: Iron Fortified Flour

Age/sex group most affected by iron deficiency	Children and women of childbearing age
Age group consuming the product	All except infants*

*Breastfeeding infants will benefit if mother consumes fortified flour products

Do you have to perform cross-sectional surveys?

- Depends on prior knowledge of impact of fortified product in a population
- Depends on the level of resources available

Nutrition Monitoring: Some Issues

- Which micronutrients?
- How easy and costly is the micronutrient to measure?
- Which age groups usually consume the fortified food in sufficient quantity?
- Which age/sex groups are most affected by the deficiency?
- Current infrastructure for nutrition surveillance
- Issue of representativeness

Monitoring Site

For many biologic indicators, illnesses affect the interpretation (e.g., acute phase reactant)

Need to monitor a healthy group

Implementation of Monitoring

- Purchase equipment and supplies
- Training
- Data entry and analysis
- Reporting of results
- Use of information for evaluation and planning

Types of Monitoring Systems

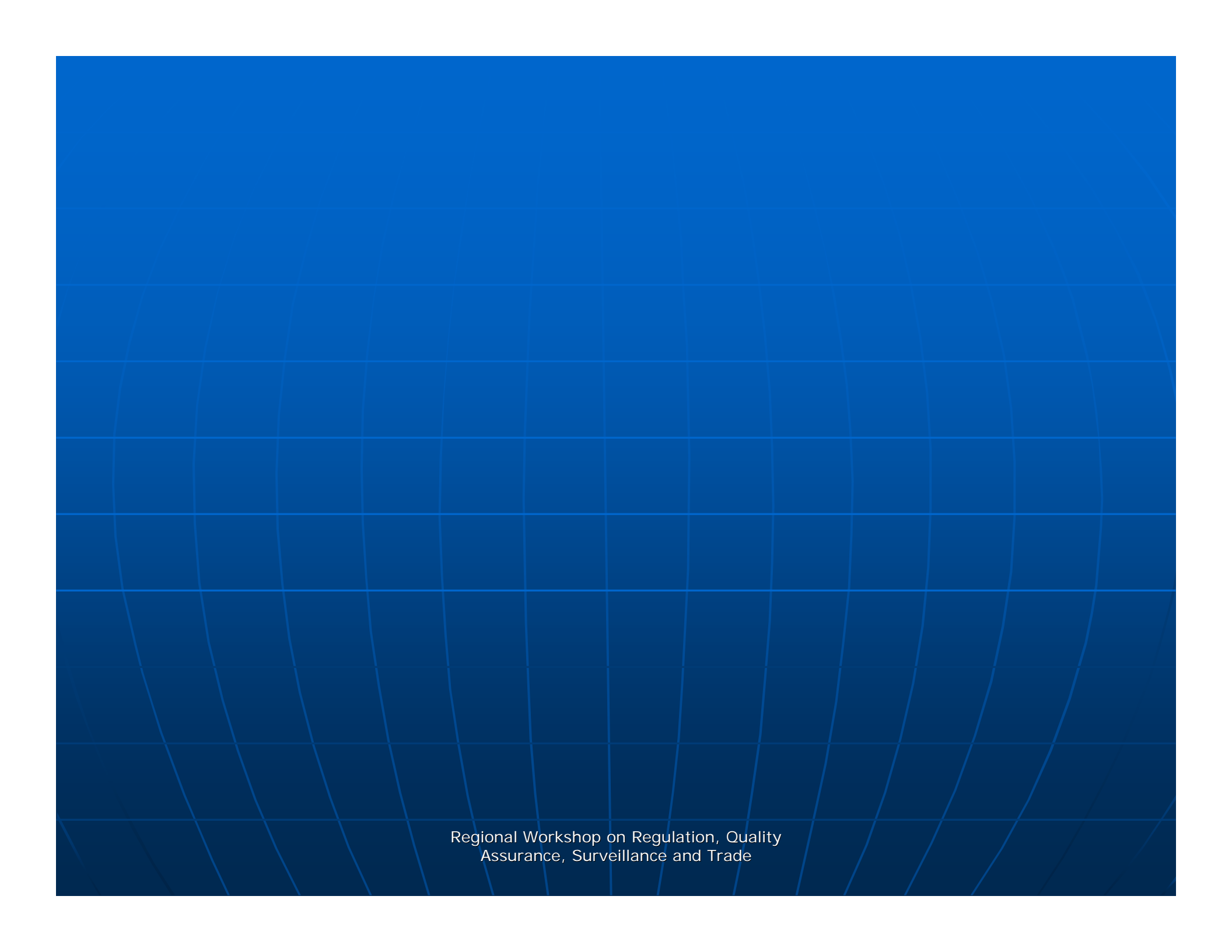
- Sentinel Reporting – a limited number of reporting sites are selected
- Comprehensive reporting – all clinics report

Must you have a monitoring system?

- Depends on prior knowledge of impact of fortified product in a population
- Depends on the level of resources available

Fortification as a Component of Micronutrient Deficiency Elimination Programs

- For some micronutrients, fortification is just **one** component
- Other public health activities might include:
 - Supplementation
 - Dietary changes (e.g., diversification)
 - Others



Regional Workshop on Regulation, Quality
Assurance, Surveillance and Trade

Example: Iodized Salt

Age group consuming the product	All except infants*
Age/sex group most affected by iodine deficiency	Developing fetus
Ideal target group for monitoring	Either pregnant women or women of childbearing age

*Breastfeeding infants will benefit if mother consumes iodized salt

Example: Iron Fortified Flour

Age group consuming the product	All except infants*
Age/sex group most affected by iron deficiency	Children and women of childbearing age
Ideal target group for monitoring	Either pregnant women or women of childbearing age

*Breastfeeding infants will benefit if mother consumes fortified flour products