# ANTHROPOMETRY: CHILDREN FROM BIRTH TO 5 YEARS

JUNE 2018

Good nutrition is essential for children's growth and development, and can substantially reduce their risk of death.

Anthropometry—the measurement of the human body—is used to determine and monitor nutritional status. Anthropometric data guide care and treatment; the design, implementation, monitoring, and evaluation of nutrition interventions; and policy design and resource allocation.

For more information, see the *Guide to Anthropometry: A Practical Tool for Program Planners, Managers, and Implementers* at https://www.fantaproject.org/tools/anthropometry-guide.

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## POPULATION-LEVEL CLASSIFICATIONS

At the population level, anthropometric indicators are often expressed in terms of prevalence (% of the population). Practitioners may use the following public health prevalence thresholds for these indicators to understand the magnitude of the nutrition problem. This information should be interpreted in context, considering economic, climatic, food security, and health trends.

**Public Health Prevalence Thresholds**

| Anthropometric Indicator | Prevalence Thresholds (%) | | | | |
|---|---|---|---|---|---|
| | Very low | Low | Medium | High | Very high |
| **Stunting:** % of children 0–59 months (height-for-age < -2 z-score) | < 2.5 | 2.5–9 | 10–19 | 20–29 | ≥30 |
| **Wasting:** % of children 0–59 months (weight-for-height < -2 z-score) | < 2.5 | 2.5 – < 5 | 5–9 | 10–14 | ≥15 |
| **Overweight:** % of children 0–59 months (weight-for-height >+ 2 z-score) | < 2.5 | 2.5 – < 5 | 5–9 | 10–14 | ≥15 |

| | Public Health Trigger Point for Action (%) |
|---|---|
| % of newborns with low birth weight (< 2,500 grams) | ≥15 |

*Source: World Health Organization (WHO) 2010; WHO and UNICEF 2017.*

## COMMON NUTRITION CONDITIONS, ANTHROPOMETRIC MEASUREMENTS, AND CUTOFFS

Anthropometric measurements commonly used for children include **height**, **weight**, **mid-upper arm circumference (MUAC)**, and **head circumference. Bilateral pitting edema**, a clinical indicator, is often assessed along with anthropometry. Some measurements are presented as indices, including **length/height-for-age (HFA)**, **weight-for-length/height (WFH)**, **weight-for-age (WFA)**, **body mass index-for-age (BMI-for-age)**, and **head circumference-for-age**. Each index is recorded as a **z-score**, which describes how far and in what direction an individual's measurement is from the median of the World Health Organization Child Growth Standards. A z-score that falls outside of the "normal" range indicates a nutritional issue. MUAC and low birth weight measurements are compared to cutoffs that apply to all children in a specific age range.

| CONDITION | DESCRIPTION | MEASURE or INDEX | MODERATE | SEVERE |
|---|---|---|---|---|
| **Stunting** reflects chronic undernutrition; increases risk of poor cognitive and motor development and death | Low length/height relative to age | HFA | <-2 to ≥ -3 z-score | < -3 z-score |
| **Acute malnutrition** occurs with rapid weight loss, inadequate weight gain, or bilateral pitting edema (accumulation of fluid beginning in both feet); increases risk of death | Low weight relative to length/height | WFH* or BMI-for-age (wasting) | <-2 to ≥ -3 z-score | < -3 z-score |
| | | MUAC (6–59 months) | ≥115 mm to < 125 mm | < 115 mm |
| | | Bilateral pitting edema | | If present |
| **Underweight** can indicate stunting, acute malnutrition, or both | Low weight relative to age | WFA | <-2 to ≥ -3 z-score | < -3 z-score |
| **Microcephaly** may indicate abnormal brain development | Small head size relative to age | Head circumference-for-age | <-2 to ≥ -3 z-score | < -3 z-score |
| **Overweight/obesity** reflects high levels of body fat; increases risk of noncommunicable diseases | High weight relative to length or height | WFH or BMI-for-age | > +2 to ≤ +3 z-score (overweight) | > +3 z-score (obese) |
| **Low birth weight** increases risk of infant death, stunting, reduced brain development | Low weight measured within 24 hours of birth | Weight | < 2,500 g to ≥ 1,500 g (low) | < 1,500 g (very low) |

*Children under 2 years are measured lying down (length), and children 2 years and older are measured standing up (height).