

Malnutrition and the MUAC Z-Score Tape

Malnutrition is a threat to children's long-term health and development. A simple tool called the Mid-Upper Arm Circumference (MUAC) z-score tape is strengthening communities' ability to identify, address and prevent malnutrition.

Malnutrition weakens immunity, increases vulnerability to illness and risk for chronic diseases.



Forms of Malnutrition²



UNDERNUTRITION

- **Wasting** (below healthy weight-for-height)
- **Stunting** (below healthy height-for-age)
- **Underweight** (under healthy weight-for-age)



OVERNUTRITION

- **Overweight/Obesity** (above healthy weight-for-height)

Importance of Regular Screening and Early Identification

Body measurements are a common way to assess nutritional status and growth and can be used as indicators for malnutrition risk:

Body Mass Index (BMI)

Mid-Upper Arm Circumference (MUAC)

Weight-for-height and length

Height/length-for-age

Weight-for-age

MUAC Measurement

A plastic strip used to assess malnutrition around the middle of a child's upper arm.

- ▶ Validated anthropometric measure
- ▶ Less expensive, easy to implement vs height and weight
- ▶ Published WHO MUAC guidelines for severe acute malnutrition³
- ▶ Originated in clinical settings in 1950s
- ▶ Instrumental in resource-restricted settings
- ▶ Particularly beneficial in populations with disabilities

¹One in three people suffers malnutrition at global cost of \$3.5 trillion a year – UN | UN News.

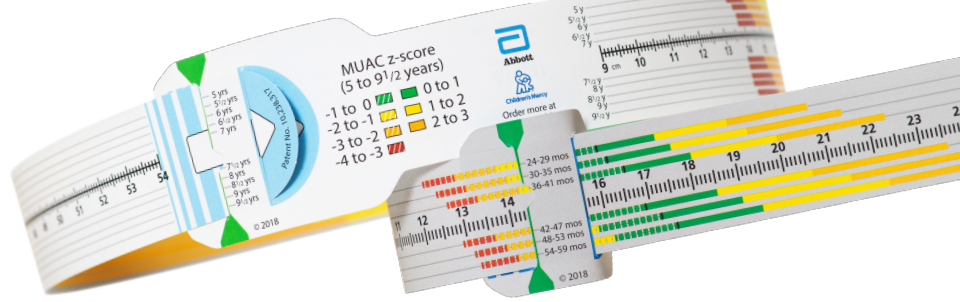
²World Health Organization, Malnutrition. 2024. <https://www.who.int/health-topics/malnutrition>.

³World Health Organization, Guideline: updates on the management of severe acute malnutrition in infants and children. 2013. <https://www.who.int/publications/i/item/9789241506328>.



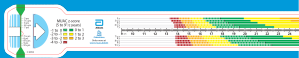


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MUAC z-score tape expands the functionality of MUAC



In 2019, the MUAC z-score tape was developed in response to the need for a single-step estimation of nutritional status across a broad age and body type range, without formal training or the need for reference charts and calculators. The MUAC z-score tape integrates a population comparison called a z-score, which expands functionality across four categories and further simplifies its use in resource-restricted settings.

 FORMS OF MALNUTRITION DETECTABLE	MUAC TAPE 	MUAC Z-SCORE TAPE 	COMMUNITY/HEALTH SYSTEM BENEFITS
APPLICABLE AGE RANGE	Undernutrition	Undernutrition, overnutrition	Addition of overnutrition provides opportunity to address different varieties of malnutrition and NCD risk
INFORMATION PROVIDED	6 months to 59 months	Circumference of child's arm (cm) and z-score color coding	Expands screening population
SCREENING OVER TIME	Circumference of child's arm (cm)	Ability to track children through various malnutrition stages	Provides additional information without reference charts or calculators
SCREENING OVER TIME	Single point-in-time detection of severe malnutrition	Supports early identification of at-risk children	

MUAC z-score implementation in communities

The Abbott Center for Malnutrition Solutions is collaborating with others to bring innovative approaches to identify, address and ultimately prevent malnutrition. These programs are integrating the MUAC z-score tape to build capacity and help strengthen the community response around the world.

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MUAC Z-SCORE RESEARCH REFERENCES ARE AVAILABLE AT [MALNUTRITION.ABBOTT](https://malnutrition.abbott).