

## BMI BASICS for Professionals (Adapted from CDC website)

### What Is BMI?

BMI is an anthropometric index of weight and height that is defined as body weight in kilograms divided by height in meters squared.<sup>[13]</sup> **BMI = weight (kg) / height (m)<sup>2</sup>**

BMI is the commonly accepted index for classifying adiposity in adults and is now also recommended for use with children and adolescents. However, BMI is interpreted differently in this population than it is with adults. In children and adolescents aged 2-20 years, BMI (referred to as BMI-for-age) is used to identify those who may be overweight or at risk of overweight, based on age and sex. Like weight-for-stature, BMI is a screening tool used to identify individuals who are overweight, at risk of overweight, or underweight. BMI is not a diagnostic tool.<sup>[14]</sup>

### BMI Wheel

The BMI Wheel shows weight from 20 to 80 pounds on one side, and from 80 to 350 pounds on the other. To determine BMI, the patient's height is located on the rotating height scale (in inches). Then, the height value is rotated to point to the patient's weight. A window pointer on the wheel indicates the patient's BMI. The wheel is commercially available.

### Measuring Stature

The patient should stand on the footplate of the stadiometer without shoes. The individual is positioned with heels close together, legs straight, arms at sides, shoulders relaxed. Ask the patient to inhale deeply and to stand fully erect without altering the position of the heels. Make sure that the heels do not rise off the foot plate. Make sure the patient's head is in the Frankfort plane. Lower the perpendicular headpiece snugly to the crown of the head with sufficient pressure to compress the hair. Hair ornaments, buns, braids, etc. must be removed to obtain an accurate measurement. To ensure an accurate reading, the measurer's eyes should be parallel with the headpiece.

### Weighing Procedures

A Toledo self zeroing weight scale or digital scale is preferred and should be calibrated regularly. For all patients, there is a need to respect privacy. Privacy includes where the measurements are taken, clothing removal, provision of gowns, describing the measuring process, and interpreting the numbers.

The patient is weighed wearing only lightweight undergarments, or gown. The patient stands on the center of the platform of the scale. The weight of the individual is recorded to the nearest 0.01 kg or 1/2 oz.

William Dietz, MD, PHD, Director, Division of Nutrition & Physical Activity – Centers for Disease Control & Prevention

There are several potential limitations to Body Mass Index which require that it not be used as the exclusive standard by which to judge overweight. The first limitation is that, as you know, BMI is weight divided by height squared.

Weight and height do not directly measure body fatness, so that an additional criteria that should be used for determining whether somebody who is overweight is overfat, is a measure of a skinfold thickness – like the tricep skinfold thickness. This will help differentiate those who are both overweight and overfat from those who are overweight because of increased muscle mass or bone mass.

One of the questions is how sensitive and specific the BMI is for the identification of those individuals with increased fatness (especially in children). Our task force compared body fatness in children and teenagers measured by DEXA (which is a definitive measure of body composition) with children with a BMI over the 95<sup>th</sup> percentile. The overwhelming majority of those children – 95 percent of those children with a BMI greater than the 95<sup>th</sup> percentile – also had increases in percent body fat compared to the general population. The second consideration is how valid Body Mass Index is as a predictor of risk. We know, from studies of 5 to 10 year-old children whose BMI is greater than the 95<sup>th</sup> percentile, that 60 percent have a least one additional cardiovascular disease risk factor – like elevated systolic or diastolic blood pressure, elevated cholesterol or triglycerides, or elevated insulin levels. In addition about 15 percent of those same children (with a BMI greater than the 95<sup>th</sup> percentile) have two or more risk factors.

Therefore, BMI not only identifies children who have increased body fatness, but in addition BMI also indicates that those children who are overweight have associated risk factors.