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Brief Communication

Estimating Ideal Body Weight – A New Formula

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A simple formula for estimating ideal body weight (IBW) in kilograms for both men and women is presented. The equation IBW = 22 x H^2, where H is equal to patient height in meters, yields weight values midway within the range of weights obtained using published IBW formulae.

Key words: Ideal body weight, obesity, drug dosage

Many medications are administered on the basis of *ideal body weight* (IBW). This is especially important in the morbidly obese patient because certain classes of drugs with poor lipophilicity and narrow therapeutic indexes, when administered on the basis of total body weight (TBW), can lead to overdosage and drug toxicity.[1] For patients smaller than IBW, simply scaling the dose of drug to TBW is appropriate, because IBW and TBW approximate each other. However, for morbidly obese patients who are significantly larger than IBW, drug dosages should be scaled to IBW, or IBW plus some fraction of the difference between TBW and IBW.[2] How can IBW be determined?

The concept of IBW was initially proposed by the Metropolitan Insurance Company to describe a range of weights associated with longevity for men and women of different heights.[3] Although IBW tables are available, few clinicians use them and most rely on one of many complicated formulae to estimate IBW.[4-8] There is no absolute correct IBW for any individual, and each IBW equation will give a weight that differs for the same patient. IBW also varies for different populations, and within the same population at different times. For example, with each new American generation, height-weight tables have demonstrated a trend for adults to weigh more than their predecessors while experiencing similar or even greater longevity.[3]

We propose a simple approach to estimate IBW based on the body mass index (BMI). BMI is calculated by dividing the patient's weight in kilograms (kg) by the square of their height (H) in meters (m) (BMI = kg / H^2). A BMI between 20-25 is considered "normal" weight range. An equation, BMI = IBW / H^2 or IBW = BMI x H^2 can be constructed to reflect this. A similar concept was recently used to estimate "normal weight" for fluid administration.[9]

Using a range of BMI values, we found that for both men and women, IBW = 22 x H^2 yields weights that fall midway within and "best fits" the range of values obtained with accepted IBW formulae (Figure 1). We propose this formula as an extremely simple, rapid, and reproducible means of estimating IBW.

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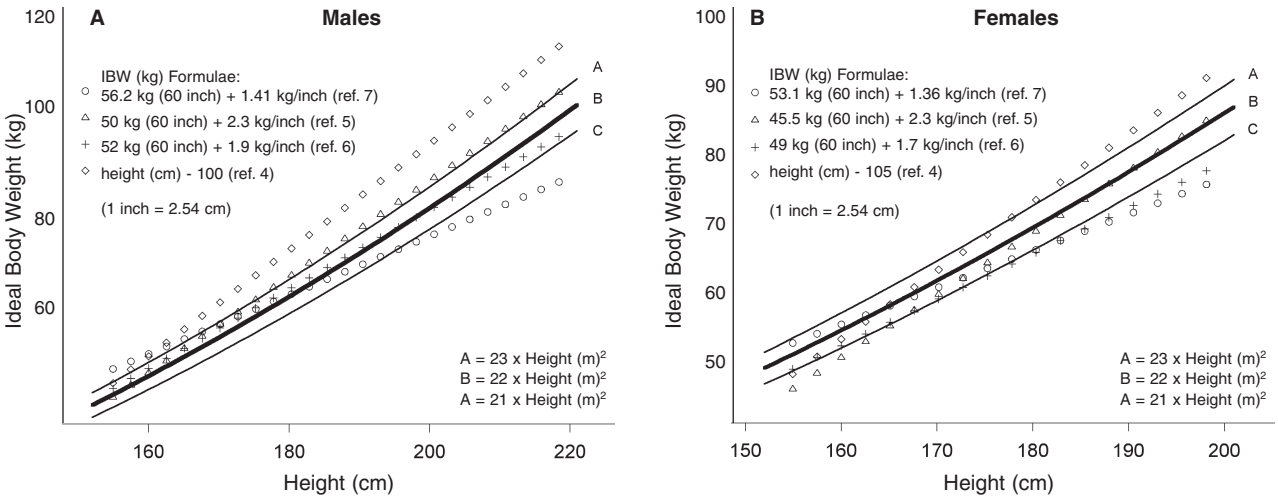

Figure 1. Estimated values for ideal body weight (IBW) for both males (A) and females (B) are shown using a variety of published formulae. The equation IBW = 22 x H^2 yields the best fit for both men and women.

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