Low Cost, Rapid, Accurate Weight Estimates in Children

Inventor: Susan Abdel-Rahman

The Innovation: A method and device to quickly estimate pediatric weights by combining two separate measurements, such as girth and long bone length. The "MercyTAPE" directly displays the estimated weight with no need to consult ancillary tables. The device is calibrated for ages 2 months to 16 years, and by multiple criteria is more accurate than competing methods. A second "BabyTAPE" is available for infants Pre-term – 2 months.

Background:

Accurately estimating the weight of pediatric patients is important in drug dosing, resuscitation interventions, and nutritional assessments. In advanced economies and non-emergency situations, direct weighing is preferable but requires fixed equipment and adequate time. In developing countries, and in emergencies, limited time or resources require a weight estimation method that is rapid, accurate, simple and inexpensive.
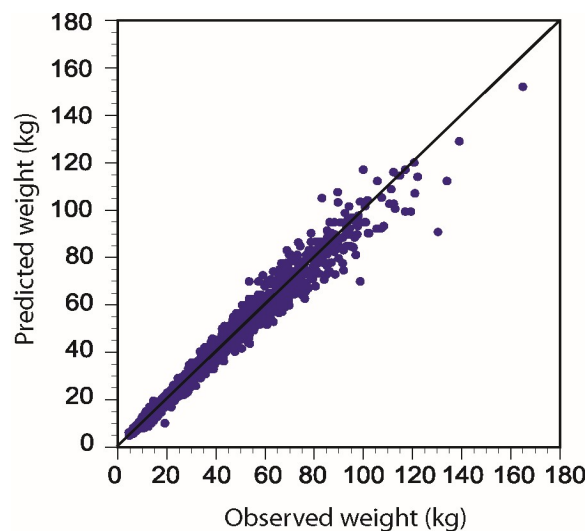
Several pediatric weight estimation methods exist, but often become increasingly inaccurate near domain edges, i.e., for older children or infants, and for children who are naturally stocky or extremely thin. A major source of inaccuracy is reliance on a single scale factor, such as overall length of the child, or reported age.

Applications:

- Low-cost, rapid, accurate weight estimation for children Pre-term to 16 years
- Can be separately calibrated for any large population of interest
- Developing countries and remote situations, where weight scales are rare
- Situations requiring high mobility and light weight
- Emergency and trauma use anywhere when speed is critical
- Insert to packaging for medications.

Advantages:

- Based on objective mathematical model, calibrated against CDC population data
- Accurate, so less chance of wrong dosage or unnecessary intervention
- Evaluations in Asia and West Africa confirm accuracy across diverse populations
- Can be printed on paper from electronic file, so very low cost and disposable
- Direct read out, so less training and time required, and less chance for error

IP Status: U. S. Patent 8.590,168 Issued November 26, 2013;
FDA Class 1 approval April 30, 2015 (MercyTAPE)
FDA Class 1 approval October 10, 2019 (BabyTAPE)

Licensing: Children's Mercy, Kansas City seeks to have discussions with companies that are interested in licensing and/or research collaborations.