

Von: Grimberg, Adda <GRIMBERG@email.chop.edu>

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An: Ken Ong; Flück Pandey, Christa Emma (DBMR)

Betreff: Re: Expert advice for national versus WHO growth curves in Switzerland

Dear Christa,

I do not have "the answer" for you, but let me share my thoughts.

1. US approach: Current clinical standard in the USA is to use the WHO charts for recumbent length (up to age 2 yrs) and thereafter use the US charts developed by the CDC for standing heights. The rationale is that the WHO study for recumbent lengths was designed better:
 1. WHO was designed to generate a standard chart (how infants SHOULD grow under ideal circumstances) rather than a reference chart (describes how infants do grow in the designated population).
 2. WHO used longitudinal data whereas the CDC infant curves were mathematically constructed from disparate, out-dated, non-representative data sources.
 3. Standing heights in the WHO study were derived from cross-sectional data, so no real improvement over the US data, which were felt to be more locally representative.
2. In USA, we also have racial/ethnic groups within our population that are shorter. We do not have separate growth charts for them, and they were not well represented in the reference groups upon which the national growth charts were based. Growth assessments are never made solely on one parameter, as all have their limitations. In this case, yes, we follow everyone's growth on the US growth charts, but we always take parental heights and height velocity into account. If a child from a generally shorter subgroup is "short" on the population growth chart but is growing with normal velocity and channeling toward their parental target height, then we do not proceed with a growth eval looking for pathology. Conversely, a child who has abnormally slow height velocity/dropping height centiles or is significantly below his/her parental target height channel prompts eval even if their current height is still above the "short" cut-off for the general population. As long as the growth chart cut-offs are not taken as absolutes in determining clinical practice, but placed within the context of the greater clinical picture for each child, children should not be harmed either way you ultimately decide to go.
3. Eiholzer's study was robustly designed and performed.
 1. Terri Lipman's study of growth measurements in primary care practices (pediatric and family practice) from different geographic areas of the USA showed great measurement errors (by both frequency and magnitude), that were improved with staff training. That improvement lasted upon retesting 6 months after training (I can get you the paper if you wish, but do not have it available at the satellite clinic where I am today). Anyway, Eiholzer's study relied primarily on measurements from 34 pediatric practices, but he trained the practices and I presume retested them during the "control" visits 4 months later. Data collection took place over 2 years.
 2. Would have been reassuring to see plan for regular calibration of the stadiometers thruout those two years, not just at the start of the study.
 3. We typically measure height/length in triplicate and take the arithmetic mean for instances where accuracy is highly critical (eg. ped endo clinics evaluating growth, or for any research study). Primary care clinics generally take only one height measurement per visit. No mention was made of replicate measurements here.
 4. Head placement was different from the Frankfurt plane method we typically use.
4. The question remains how you as a national group want to handle obesity. All our populations are growing faster, mainly pushed by obesity and earlier sexual development. Eiholzer included all children in his reference data (including those with obesity), whereas the WHO set a priori exclusion criteria. In essence, the philosophical question is whether growth patterns of children with obesity are considered "normal" and hence, part of the reference by which all children are compared (i.e. do we institutionalize obesity as the new "normal"?). If you choose to exclude children with obesity, you can still use Eiholzer's study, just re-analyze the data accordingly.

I hope this helps.

Best wishes,

Adda

Adda Grimberg, MD

Scientific Director, Diagnostic and Research Growth Center

Children's Hospital of Philadelphia

Professor of Pediatrics

Perelman School of Medicine, University of Pennsylvania

Buerger Center, room 12-213

3500 Civic Center Blvd.

Philadelphia, PA 19104

tel: 215-590-3618

fax: 215-590-3053