

## Clarification of INTERGROWTH-21st newborn birthweight standards – Authors' reply

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Jennifer Zeitlin and Isabelle Monier seek clarification regarding the INTERGROWTH-21st international standards for weight, length, and head circumference of newborn babies.<sup>1</sup> Here we aim to clarify any misunderstanding regarding this comprehensive set of standards.

First, in figure 1 of our Article,<sup>1</sup> we superimposed fitted centiles estimated using fractional polynomial regression according to each day of pregnancy (the most precise estimate of gestational age) on empirical centile values for each week of gestation based on individual data from more than 20 000 newborn babies. The empirical values were included simply to compare the fitted and raw data. We plotted the values at the median gestational age (a fair reference for the average measurement within a given week) to show that the trajectory of the raw data was consistent with fitted centiles modelled for each day of pregnancy. The text Zeitlin and Monier quote refers to this comparison in figure 1, which is unrelated to the data<sup>1</sup> in tables 2–4.

Second, in the statistical analysis, we mentioned the option of presenting centiles in completed weeks,<sup>1</sup> which was never needed because we subsequently published the more precise centiles for each day of pregnancy.<sup>2</sup> The smoothed centiles for the standards for newborn babies are presented in tables 2–4 of our Article in exact weeks of gestational age only to avoid publishing lengthy tables for each day of pregnancy; however, the tables in our Article match the tables on our website exactly for each corresponding week.

Third, for the construction of the INTERGROWTH-21st international standards for estimated fetal weight by ultrasound, we followed a similar strategy and format, and presented equations and figures with the fitted centile standards according to exact weeks and days of pregnancy.<sup>3</sup>

Users have free access to all of the INTERGROWTH-21st fetal and newborn standards, centiles, and Z scores by weeks and days of pregnancy, the most precise and beneficial format in modern obstetric practice. Additionally, free computer applications are available on our website for investigating individual cases and for uploading datasets to estimate centiles and Z scores in exact weeks and days throughout pregnancy from 8 weeks and 2 days onwards. Two free training modules for the rigorous standardisation of anthropometric measurements of newborn babies support these standards.<sup>4</sup>

Finally, the use of international standards of anthropometric measurements of newborn babies, including weight-for-length ratio and body composition<sup>5</sup> across populations irrespective of their ancestry, nationality, or skin colour, is necessary to quantify and prevent the long-term consequences of stunting and wasting, as well as the emerging problem of overweight at birth.<sup>6</sup>

We declare no competing interests.

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