

# INTERGROWTH 21<sup>st</sup> vs GROW in the NHS: an evidence based appraisal

---

The Perinatal Institute gets occasional enquiries about INTERGROWTH 21<sup>st</sup> standards for birthweight and fetal weight. Although freely available, we advise against their use on the grounds of patient safety, based on evidence which is set out below.

1. Intergrowth 21<sup>st</sup> (IG21) represents a standard based on data from 8 countries, with an average term weight which is 200g less than their own sub-cohort of UK data ([Villar 2014](#), Table 1). This results in their 10<sup>th</sup> centile limit being also much lower, and many fewer cases (usually 3-5%) are identified as SGA (<10), as shown in various studies (e.g. [Liu 2017](#) [Norman \(AFFIRM\) 2018](#); [Stampalija 2020](#); [Choi 2021](#) etc.). In part for this reason alone, about two-thirds of at-risk cases are missed when IG21 is applied in a multinational ([Francis 2018](#)) as well as a recent UK cohort ([Hugh 2023](#)). In contrast, the incidence of SGA (<10) and LGA (>90) using GROW (gestation related optimal weight) centiles are closer to 10% – around 12% and 8%, respectively – reflecting the fact that slow growth occurs more frequently than accelerated growth.
2. Conversely, the IG21 LGA (>90) rate is much higher (20%+) (e.g. [Norman \(AFFIRM\) 2018](#); [Francis 2018](#), [Stampalija 2020](#) etc) which can result in unnecessary investigations, interventions and maternal anxiety. Our NIHR funded national Big Baby trial to prevent shoulder dystocia (due to report in early 2024) used customised charts to define LGA. A competing research application which sought to define LGA by Intergrowth 21<sup>st</sup> centiles was rejected by the NIHR.
3. While Intergrowth presents itself as a global standard, there have been studies from around the world showing its unsuitability in local populations, including [China](#), [New Zealand](#), [Europe](#) (15 countries), as well as [England](#). The principle of a one size-fits-all standard has also been debunked by the multinational [WHO fetal growth study](#) which observed - and explicitly acknowledged - the need to recognise individual and country/ethnic variation affecting normal fetal growth.
4. In contrast, GROW customised charts facilitate personalised and equitable care, principles which the NHS subscribes to. There is also increased awareness of the need for equity in medical devices (such as growth charts), through the government's [Independent Review](#).
5. Head-to-head comparisons with customised assessment in identifying risk of adverse outcome have not favoured IG21 either; see our regularly updated [list of publications](#). The latest addition is a UK study of 2.27 million British European and South Asian pregnancies ([AJOG 2023](#)) which showed that uncustomised fetal weight standards including IG21 fail to recognise high BMI related stillbirth risk. We have in fact yet to find a study which shows any comparative advantage of IG21.
6. Use of GROW charts and the GAP programme have resulted in significant reductions in stillbirth rates ([AJOG 2018](#)), even before the roll-out of Saving Babies Lives in 2016/7. In an award winning study of [10 years of ONS data](#), the decline in stillbirths in GAP units was shown to be proportional to the increase in antenatal SGA detection.

7. Subsequently GAP aligned itself with the Saving Babies Lives Care Bundle and Element 2. The independent, NHSE commissioned [SPIRE evaluation of SBL](#) reported significantly increased SGA detection rates and reduced SGA stillbirth rates. As stated by the authors of the report, 15 of the 17 Trusts (88%) from which this data was obtained were in the GAP programme.
8. Based on these experiences and feedback, and lessons from audits of missed cases, we have developed the [2.0 upgrade of GROW](#), with improved features such as risk review throughout pregnancy, fetal growth velocity assessment, auto-plotting with prompts, and data pull-through to facilitate missed case audit. [Early results](#) show improved performance including increased detection of SGA babies. Links with maternity information systems are being established to avoid need for duplicate entry and the first have already been implemented to good effect.
9. Intergrowth charts are available for free, having been funded by a multimillion dollar grant from the Gates Foundation, although the costs of under-diagnosed SGA, missed stillbirth risk and over-diagnosed LGA have, to our knowledge, not been evaluated. In fact there is little if any outcome based evidence after 10 or so years since publication of the first IG21 studies.
10. As a not-for-profit social enterprise with the principal aim to improve maternity care, the Perinatal Institute provides GROW charts as part of the [GAP programme](#) for which we have to charge to cover costs. GAP also includes training, ongoing help desk support, software updates, audit tools, and automated (Power BI) as well as bespoke reporting. Where procurement allows economies of scale, as can be achieved through provision for whole networks or regions, we can discount costs for a coordinated service.

For further information or queries, please write to [GAP@perinatal.org.uk](mailto:GAP@perinatal.org.uk)

\* \* \*