

Effect of INTERGROWTH-21st charts on identification of small-for-gestational age fetuses

Amanda Merricks, Oliver Hugh, Jason Gardosi

Perinatal Institute, Birmingham

Corresponding author:

Professor Jason Gardosi MD FRCOG

Perinatal Institute

5-6 Greenfield Crescent

Birmingham B15 3BE

jgardosi@perinatal.org.uk

Tel: 0121 607 0101

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Contrary to previous versions, the new Green Top Guideline (GTG) for fetal growth by the Royal College of Obstetricians and Gynaecologists [1] does not specify which fetal growth charts should be used, and leaves it to individual maternity units to check whether the charts they opt for are suitable for their population. According to a recent Freedom of Information survey [2], 17 National Health Service (NHS) Trusts ('units') in England had moved from GROW to INTERGROWTH-21st (IG21) charts since the GTG's wide circulation in 2023 and publication in 2024.

We assessed the effect that this switch had on the screen positive rate of small-for-gestational age (SGA), a key marker according to the Saving Babies' Lives Care Bundle Element 2b (fetal growth) [2] which NHS England requires units to report before publication as part of their Maternity Services Monthly Statistics (MSMS) [3].

At the time of this analysis, data up to April 2025 were published by MSMS, which allowed inclusion of Trusts with 6 or more months of data pre- and post their respective date switching INTERGROWTH. As control, each unit was matched with two units of similar size according to their respective birthrate in 2024, that had continued using GROW over the same period. We performed an interrupted time-series model with unit-level random intercept before and after the change date, adjusting for the time before and after the switch. All analyses were carried out using R version 4.4.1 (R Foundation for Statistical Computing, Vienna, Austria).

Of the 26 NHS Trusts known to be current users of INTERGROWTH charts, 23 had responded to the FOI requests, and 17 of these had switched from GROW to INTERGROWTH since MSDS data reports began. Of the 17 trusts, 8 were excluded for incomplete or unusable data submission to MSDS, and 2 for having less than 6 months of data recorded. This left 7 units with valid data for analysis pre and post their reported switch date to INTERGROWTH according to their FOI responses [2]. Supplementary Table 1 is a pseudonymised list of these units, together with 2 GROW units as controls for each, matched by birthrate. Non-pseudonymised lists of the 23 Trusts from the FOI survey have been submitted to NHS England.

Figure 1 displays the new INTERGROWTH units' screen positive rates, showing a sharp decrease from an average of 8.7% before to 4.9% after their respective switch date - a reduction by 44%. In the matched GROW trusts, the screen positive rate stayed constant with an average of 9.1% and 9.0%, respectively, over the same period. The interrupted time-series analysis found that post-switch, the INTERGROWTH units had 47% lower odds of a screen-positive result than prior to their chart switch (OR: 0.53; 95% CI: 0.47 – 0.61).

This analysis shows firstly that the SBL data reported on NHS Digital's MSMS is haphazard and of varying quality. As a result, about half of the Trusts from which published data were sought had to be excluded because of incomplete or invalid data. This may be a result of data entry not being monitored but published as submitted, without checks on data quality and ascertainment.

The pattern with SGA screen positive rate that emerges is that it drops by nearly a half as soon as the INTERGROWTH fetal weight standard was implemented, while the matched control group showed no change over the same time period. Such a large reduction in antenatal identification of SGA fetuses may lead to many missed diagnoses of babies at risk of fetal growth restriction and stillbirth. Extrapolated to the 26 NHS Trusts currently using INTERGROWTH to monitor fetal growth in their population, which had a total of 120,555 births in 2024, this would translate to a halving of antenatal identification of pregnancies at SGA related risk in about 10,000 pregnancies per month. The negative impact on the NHS England's efforts of stillbirth prevention is likely to be substantial. Recent analysis of a large NHS database with pregnancy outcomes showed that use of INTERGROWTH would fail to identify 68% of babies at risk of stillbirth [5].

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Conceptualisation: JG, OH. Data analysis and verification: AM, OH. Initial draft: JG. All authors had access to the data and reviewed, edited and approved the final draft.

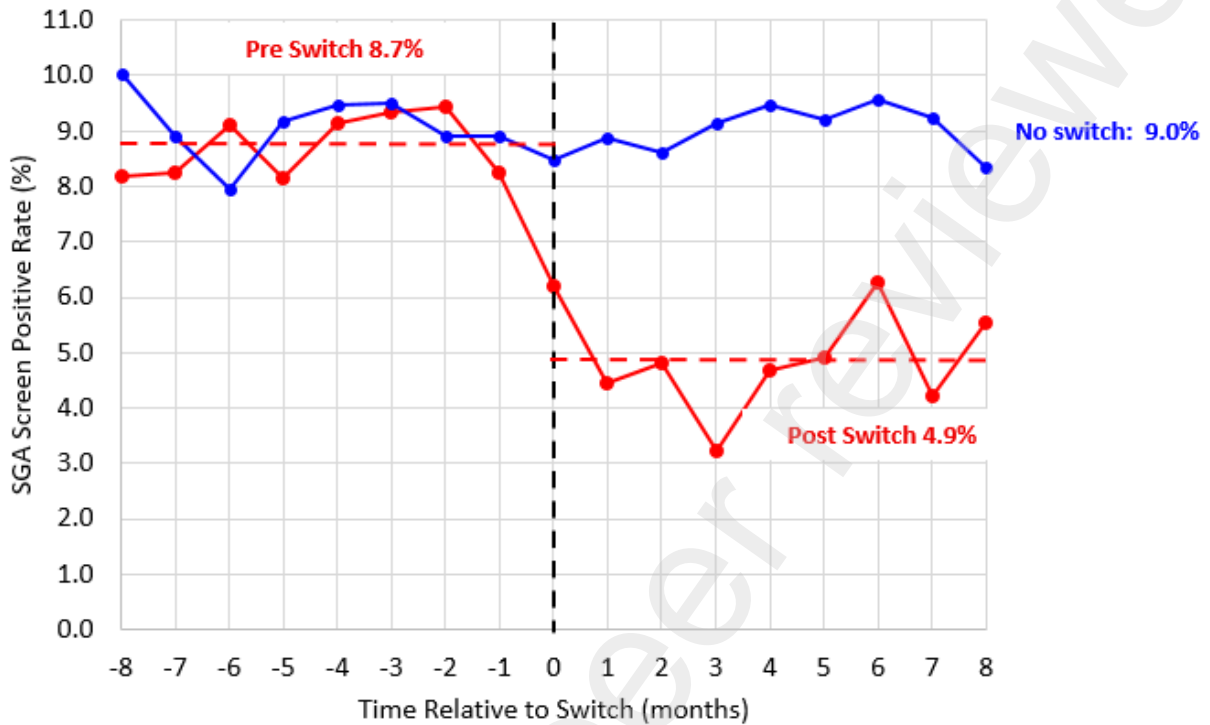
Declaration of interest:

All authors are employees of the Perinatal Institute, a not-for-profit social enterprise that has developed and licenses the GROW fetal growth chart referred to in this article.

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Figure 1 Screen positive rates for SGA for NHS units before and after their respective switch dates to the INTERGROWTH fetal weight charts¹ (n=7), compared to birthrate-matched units that continued using GROW² fetal weight charts² (n=14).



¹ INTERGROWTH21st Consortium charts <https://intergrowth21.com/tools-resources/fetal-growth>

² Perinatal Institute GROW charts <https://www.perinatal.org.uk/GROW2.0/>

Supplementary Table 1

List of NHS units included in comparative analysis. Switch dates based on FOI survey.*

Trust switched to INTERGROWTH	Switch Date	2024 Birth Rate	Birthrate matched Trusts continuing with GROW	2024 Birth Rate
A	01/10/2024	1775	1	1735
			2	1775
B	02/04/2024	2740	3	2505
			4	2760
C	02/04/2024	6580	5	5560
			6	6770
D	01/04/2024	2620	7	2480
			8	2620
E	01/03/2024	3585	9	3685
			10	4300
F	01/11/2023	3375	11	3275
			12	3570
G	15/06/2024	4980	13	4880
			14	5285
Average		3665		3657

¹ Adapted From Corfield & Devlin: How are Intergrowth fetal weight charts being used in England? (Ref 2, submitted)