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Improved detection of fetal growth restriction with universal uterine artery Doppler screening and standardised care: a time-series cohort study

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Background

We evaluate whether a new FGR screening and management pathway combining **universal mid-trimester uterine artery Doppler, individualised third-trimester surveillance, extended FGR criteria and standardised delivery timing** improves antenatal detection of SGA and perinatal outcomes.

Methods

Single-centre time-series study of births at UCLH (September 2017–March 2019), comparing:

Pre-implementation (n=3,651): NICE/RCOG risk-based surveillance, with uterine artery Doppler and serial growth scans for selected high-risk pregnancies. SGA was defined as EFW <10th centile and delivery timing was clinician-led.

Post-implementation (n=3,557): universal uterine artery Doppler at the anomaly scan with risk-based third-trimester surveillance; expanded FGR criteria (EFW/AC <10th centile, reduced growth velocity or abnormal Dopplers); and standardised risk-based timing of delivery.

Primary outcome: antenatal detection of neonates with birthweight <10th centile. Secondary outcomes included intervention and perinatal outcomes.

Results

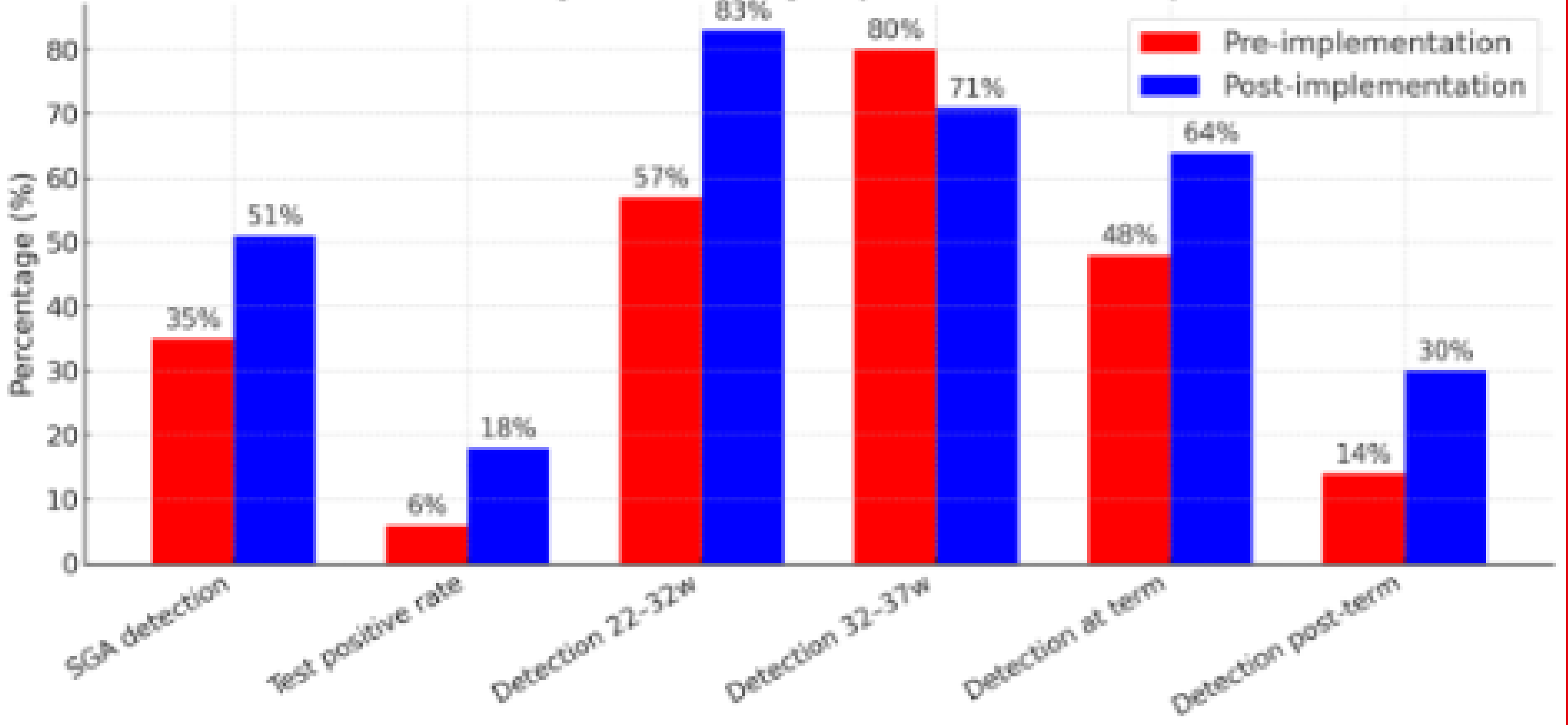
SGA detection increased from **34.9% to 50.9% (p<0.01)**, with greatest improvements at **37–40 weeks (47.7%→63.5%)** and **≥40 weeks (14.4%→30.1%)**.

The test-positive rate increased from **5.9% to 17.9% (p<0.01)**. Although overall caesarean birth increased, this was **not observed among screen-positive pregnancies**.

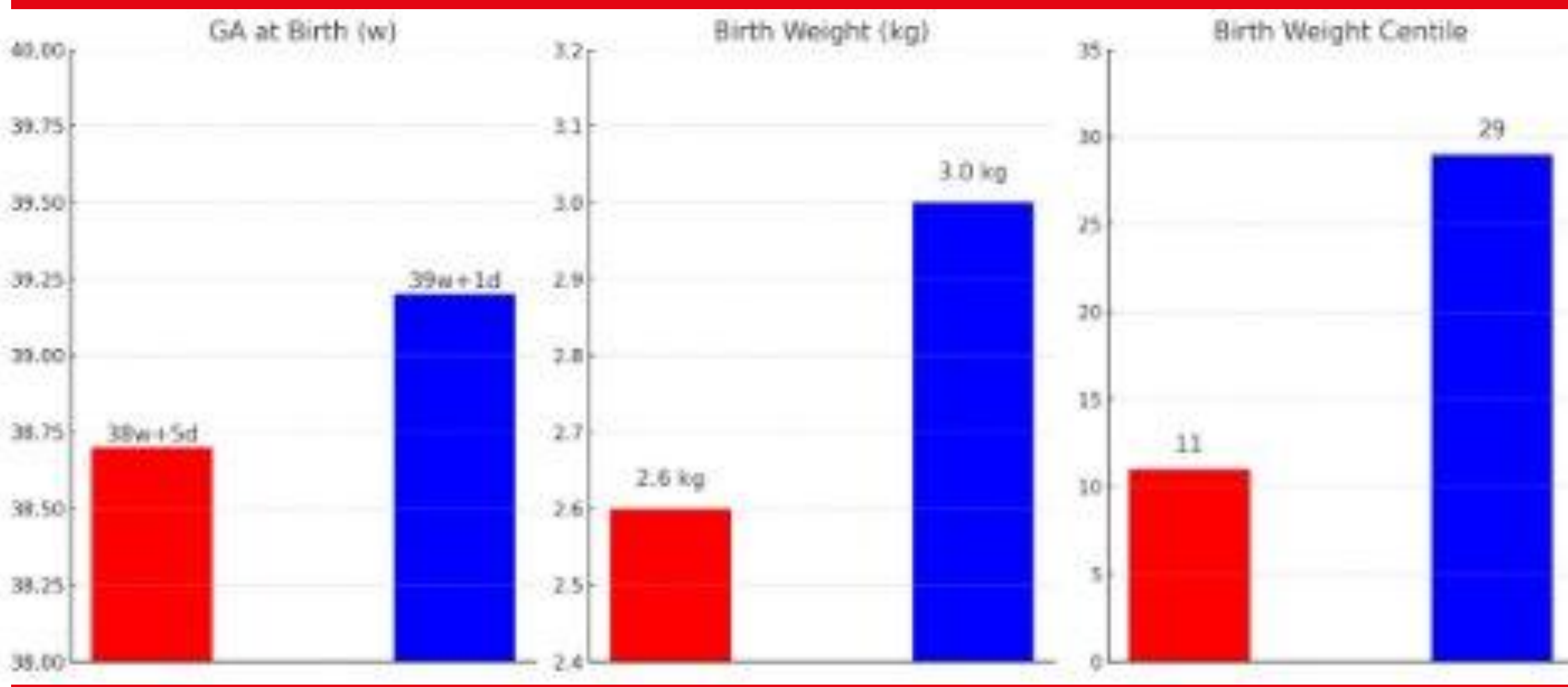
Post-implementation, screen-positive pregnancies were delivered later (**38+5→39+2 weeks**) without deterioration in perinatal outcomes.

Conclusion

A combined FGR screening and management pathway **improved SGA detection, particularly at term**. Despite increased screen-positive rates, standardised management enabled later delivery without worsening perinatal outcomes.



SGA antenatal detection pre- and post- implementation.



Gestational age and weight at birth pre- and post- implementation.