

Targeted birth length and parental height measurement in babies with birthweight $\leq 9^{\text{th}}$ centile: improved uptake during second study during one calendar year in a single newborn unit

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BACKGROUND

The contribution of intrauterine growth restriction (IUGR) and parental height to childhood short stature is difficult to determine in countries, including the UK, where birth length (BL) is not routinely measured. Moreover measured parental height may become unavailable if one parent leaves the home.

Take the following clinical scenario:

A child presents at 7 years with short stature, birth weight (BW) 2.8 kg at 40 weeks gestation, maternal height of 162 cm and father's height unavailable (reported height 165 cm):

- What was the birth length (as opposed to birth weight)? Not known

- If BL was $< 2SD$ at birth, had catch up growth occurred by 2 years? Not known

- How reliable is the father's height? Probably not very reliable – men are known to overestimate their height! (Cizmecioglu et al 2005)

In a previous study we attempted to measure BL in all babies born with BW $< 9^{\text{th}}$ centile in a single Scottish maternity unit during a full calendar year (1st July 2008 – 30 June 2009), to measure both their parents; and to follow up the short babies (BL $< 2SD$) at two years (Montgomery Sardar et al 2015).

In this earlier study, 341/481 (71%) eligible babies were measured, consent for follow up at 2 years was obtained in 73/103 short babies (48%), maternal height was measured in 222 mothers (46% of eligible), paternal height measured in 118 (24% of eligible), and 57/73 (78%) children who were eligible for measurement at 2 years attended clinic.

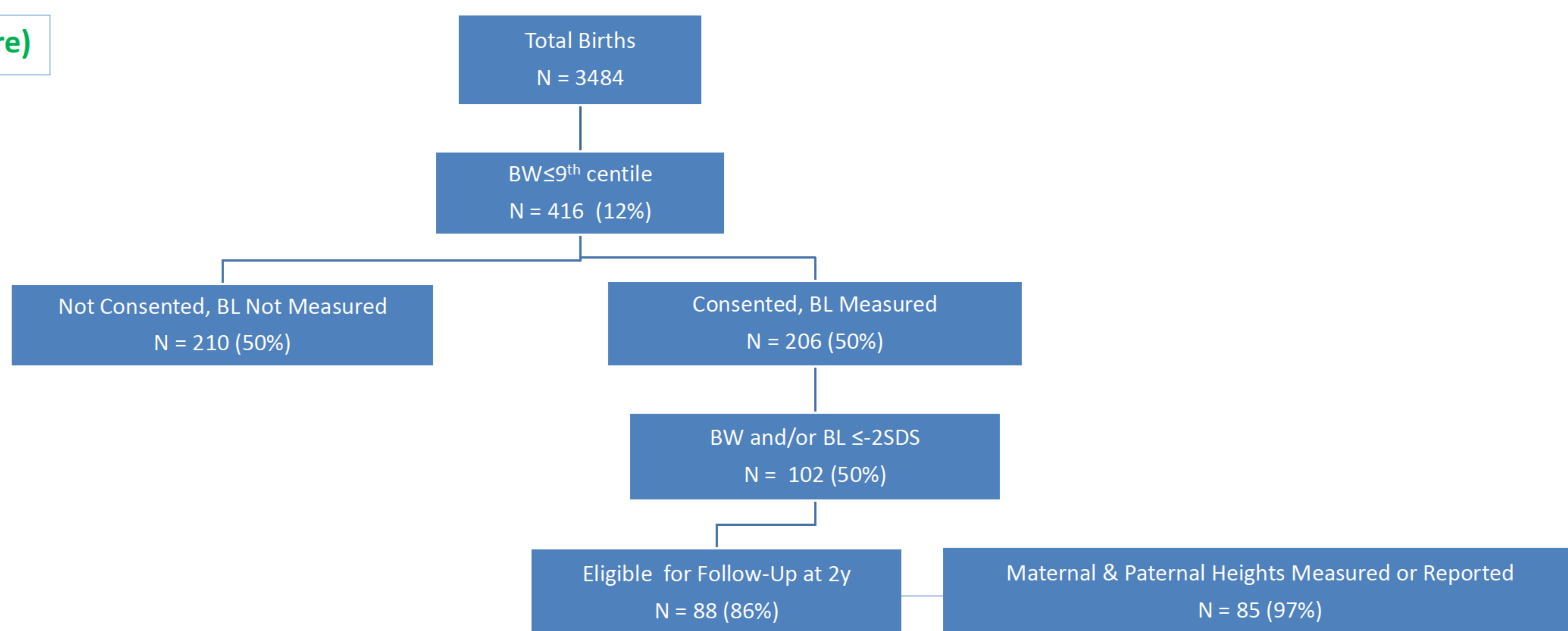
Given these relatively disappointing results, we resolved to repeat the study in the same unit during one calendar year in the hope of improving uptake of targeted measurement.

OBJECTIVE AND HYPOTHESES

Objective: To re-evaluate the feasibility of measuring BL and parental height in light ($\leq 9^{\text{th}}$ centile) with more concentrated effort on measuring parental heights

Hypothesis: Targeted measurement of short babies and their parents is feasible, worthwhile and could become part of good clinical practice.

RESULTS (See Figure)



SUMMARY OF FINDINGS

- Between 7th October 2013 and 6th October 2014, 3510 babies were born in the unit in whom BW data was available in 3484 liveborn infants.
- BW was $\leq 9^{\text{th}}$ centile in 416 (11.9%) infants of 28-41wks gestation (Figure 1).
- Consent to participate was obtained in 206 (50%) infants, refused in 127 (31%) and not requested by oversight in 78 (19%).
- BL was measured in 189 (92%) consented infants, of whom 14 (7%) were Light, 50 (26%) Short and 38 (20%) Light+Short.
- Both parents were measured in 175/206 (85%) infants.
- Follow-up at 2y is planned for 88 children, of whom 85 (97%) have one or both PH measured or reported.

CONCLUSION

- This second study has demonstrated a high success rate for both birth length measurement and parental heights in consented babies than the first study
- Consent for participation in this observational study was as much, if not more, of a problem than previously, perhaps indicating increasing wariness amongst the public of having personal information recorded and stored.
- The children who were short at birth are due to be measured between October 2015 and October 2016 in order to determine whether or not they have shown catch up growth.
- If measurement of light infants and their parents in the newborn period and follow-up of short children at 2 years were to be incorporated into standard practice rather than in the context of a research study, then our targeted approach probably would be feasible and effective.

REFERENCES

Cizmecioglu F, Doherty A, Paterson WF, Young D, Donaldson MDC. Measured versus reported parental height. Arch Dis Child 2005;90(9):941-942.

Montgomery Sardar C, Kinmond S, Siddique S, Cooper A, McGowan S, Paterson W, Donnelly S, Gault EJ, Donaldson M. Short stature screening by accurate length measurement in infants with a birth weight $< 9^{\text{th}}$ centile. Horm Res Pediatr DOI: 10.1159/000376611

