Reviewer’s report

Title: Centile Charts for Birthweight for Gestational Age for Scottish Singleton Births

Version: 1 Date: 14 October 2007

Reviewer: Katie Groom

Reviewer’s report:

General

This is a large retrospective cohort of >100,000 births during 2002-2003 from the Scottish Birth Registry. It highlights changes in mean birthweights over the last few decades and reinforces the need to use relevant birthweight centile charts when classifying infants as small for gestational age.

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Major Compulsory Revisions

This paper provides valuable information regarding changes in birthweight over the last few decades and highlights the need to use up to date centile charts. However, I feel there are a few issues that should be highlighted to discourage clinicians from taking this data at face value and introducing these birthweight centiles into their clinical practice.

In the discretionary revisions section I have highlighted some issues regarding population birthweight centiles versus customised birthweight centiles. I realise why the authors may have not chosen to use the concept of ‘customised’ birthweight centiles for this manuscript and I think the conclusion that ‘centiles appropriate for the population being studied should be used’ is sound. However, I think these new centiles do not account for all the changes within this population and are likely to underestimate small for gestational (SGA) and growth restricted (IUGR) babies at early gestations. For publication the authors should expand a little on these concepts in the discussion.

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Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

Page 4. Methods. Gestational age calculated primarily on ultrasound dating. What percentage based on ultrasound? What gestations were ultrasounds done (first or second trimester)? Were menstrual dates assessed and gestational age only changed if ultrasound dates differ by #7 or 10 days? (as per majority clinical practice).

Page 6 and 14. Table 1 and reference to it. Mean ‘birthweight’ should be added for clarification.
Page 7. Discussion. Birthweight centiles can only be applied after birth and therefore cannot be used to provide ‘important information to clinicians as to which babies may be at higher risk’. However, they can be used to estimate risk and plan management for future pregnancies and for epidemiological studies. The concept of customised centiles has been used for antenatal growth charts (GROW) but can only consider fundal height and ultrasound EFW.

Incorrect labelling of figures – text and legend refers to figs 1, 2a-b, 3-6 and actual figures labelled 1-7.

Discretionary Revisions (which the author can choose to ignore)

The majority of new work on birthweight centiles utilizes the concept of customised birthweight centiles (UK – Gardosi 1992, Sweden 2001, Australia – Pain 2006, New Zealand 2004, France 2006). This article acknowledges this concept but has not used it for generating birthweight centiles.

In the discussion the authors have commented on the method used by Gardosi and others for generating birthweight centiles. ie. they are calculated from an adjusted birthweight range expected at 40 weeks and extrapolated back using a standard, longitudinal ultrasound-derived curve of intrauterine weight gain. The method used in this study differs in that it uses actual birthweight of preterm infants. The number of infants at very preterm gestations are small and the mean birthweights will have been influenced by the much higher proportion of pathological pregnancies and accompanying growth restricted infants which are delivered at preterm gestations. Thus the centile charts are likely to underestimate SGA/IUGR at early gestations. In addition they have commented in the discussion section their aim was to produce birthweight centiles ‘which can be used to assess which babies are SGA rather than those with intrauterine growth’. However, I feel quite strongly this should not be the case; IUGR babies are those at greatest risk of perinatal morbidity and mortality and these are the infants we should be trying to identify if we wish to have any impact on improving birth outcomes.

In calculating birthweight centiles the authors have considered parity and fetal sex but made no account for maternal ethnicity or maternal height and weight.

In the discussion it is acknowledged that in 2001 only 2% of the Scottish population was of an ethnic minority (presumably non-Caucasian) but is this true for women of childbearing age (and those included for the calculation of birthweight centiles) and may this have changed since 1975-1989 when the last centile charts were produced? (and so contributed to changes in mean birthweight).

I feel maternal size may well be a significant contributor to increased mean birthweight as increasing BMI and rates of obesity has become a well documented worldwide issue over the last few decades. The authors have not
included maternal weight and height in their calculation of birthweight centiles and suggest that the SMR02 data is less complete for this. As the centiles are calculated from such a large population it should be possible to use a subset with this data available. At least a comparison of the two datasets would be helpful to see if the difference in increasing mean birthweight is due to maternal size (otherwise some other factor). I feel the authors should at least acknowledge that maternal size is also likely to have changed over the period of time studied and that these new centiles do not account for this.

(With regard to their comment on smoking this should probably not be accounted for when estimating birthweight centiles as this is likely to be a pathological contributor and not a ‘normal’ effect).

**What next?:** Accept after discretionary revisions

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**

I declare that I have no competing interests