Thresholds for Small for Gestational Age Among Newborns of East Asian and South Asian Ancestry

Joel G. Ray, MD, MSc,[1,2,3] Depeng Jiang, PhD,[4] Michael Sgro, MD,[5] Rajiv Shah, MD, MSc,[2] Gita Singh, MD, MSc,[2] Muhammad M. Mamdani, PharmD, MA, MPH[4]

[1]Department of Medicine, St. Michael's Hospital, University of Toronto, Toronto ON

[2]Department of Obstetrics and Gynecology, St. Michael's Hospital, University of Toronto, Toronto ON

[3]Department of Health Policy Management and Evaluation, St. Michael's Hospital, University of Toronto, Toronto ON

[4]Applied Health Research Centre, Li Ka Shing Knowledge Institute, St. Michael's Hospital, University of Toronto, Toronto ON

[5]Department of Pediatrics, St. Michael's Hospital University of Toronto, Toronto ON

Abstract

Objective: To determine the risk that newborn infants of East Asian and South Asian ancestry may be misclassified as small for gestational age (SGA).

Methods: We performed a single-centre, cross-sectional study of a cohort of liveborn infants born to women who had been born in Canada (n = 2362), East Asia (n = 1565) and South Asia (n = 753) and generated smoothed birth weight curves for males and females. We determined the rate of misclassification of infants of East Asian and South Asian maternal origin as SGA, using conventional weight centile cut-offs, rather than those specific to each ethnic group.

Results: Infants of Canadian-born mothers had a mean birth weight that was 144 g and 218 g greater than newborns of mothers of East Asian and South Asian origin, respectively. Using the 3rd centile cut-off for infants of Canadian-born mothers, 7 per 1000 female and 14 per 1000 male infants of East Asian maternal origin were potentially miscategorized as SGA at birth. Among female and male infants of mothers of South Asian origin, the corresponding rates were 29 and 46 per 1000.

Conclusion: Birth weight curves may need to be modified for newborns of East Asian and South Asian parentage to make a more accurate diagnosis of SGA.

Résumé

Objectif : Déterminer le risque de classification erronée des nouveau-nés d'ascendance asiatique orientale et asiatique méridionale comme présentant une hypotrophie fœtale (HF).

Méthodes : Nous avons mené une étude transversale unicentrique portant sur une cohorte d'enfants nés vivants issus de femmes nées au Canada (n = 2 362), en Asie orientale (n = 1 565) et en Asie méridionale (n = 753), et avons généré des courbes lissées de poids de naissance pour les garçons et les filles. Nous avons déterminé le taux de classification erronée des nouveau-nés d'origine maternelle asiatique orientale et asiatique méridionale comme présentant une HF, au moyen de seuils conventionnels quant au centile de poids, plutôt qu'au moyen des seuils propres à chaque groupe ethnique.

Résultats : Le poids de naissance moyen des nouveau-nés issus de mères nées au Canada était de 144 g et de 218 g supérieur à celui des nouveau-nés issus de mères d'origine asiatique orientale et asiatique méridionale, respectivement. Lorsque l'on a appliqué le seuil du 3^{e} centile des nouveau-nés issus de mères nées au Canada, 7 filles sur 1 000 et 14 garçons sur 1 000 issus de mères d'origine asiatique orientale ont fait l'objet d'une classification erronée potentielle comme présentant une HF à la naissance. Chez les filles et les garçons issus de mères d'origine asiatique méridionale, les taux correspondants étaient de 29 et de 46 sur 1 000.

Conclusion : Il est possible que les courbes de poids de naissance doivent être modifiées en ce qui concerne les nouveau-nés issus de mères d'origine asiatique orientale et asiatique méridionale, et ce, afin de permettre un diagnostic plus précis de l'HF.

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INTRODUCTION

Soon after birth, the weight of an infant is plotted on a birth weight chart to determine whether he or she is of appropriate weight for gestational age. This also offers a baseline measure for future comparison. Newborns that are small for gestational age (SGA) may have a higher probability of short stature than newborns that are appropriate for gestational age; they display less cognitive ability in mathematics and reading comprehension in early and middle life, and are less likely to attain higher-income professional or managerial jobs than appropriate for gestational age newborns.[1–4] While opinions differ about whether SGA should

be defined as having a birth weight below the 3rd centile[5] or the 10th centile,[6] most recommend that special testing and growth surveillance be instituted in the postnatal period among affected infants.[2,5] Labelling an infant as SGA may not only necessitate greater use of health care resources but is also associated with higher parental stress.[7]

Canadian data suggest that infants born to parents of East Asian and South Asian ancestry may be of lower birth weight than those of white European descent.[8–11] Like maternal height[8] and weight[12] in pregnancy and infant weight in the first two years of life,[13,14] lower birth weight among Asian newborns appears to reflect an ethnic predisposition. However, the birth weight curves commonly used in Canada are based on a small sample of 300 infants of white European ancestry.[5] Even improved and updated Canadian curves do not consider differences across ethnic groups.[6] Since centile birth weight curves have not been formally developed for East Asian or South Asian Canadians, it is conceivable that some Canadian newborns of Asian ancestry are currently being misclassified as SGA. The fact that nearly 60% of all immigrants to Canada are from Asia[15] highlights the relevance of this issue.

We derived ethnicity-specific birth weight centiles for male and female infants born to mothers from East Asia and South Asia. We then evaluated the number of these children who might be miscategorized as SGA when conventional centile cut-offs for Canadians are used, rather than those specific to each ethnic group.

METHODS

We performed a single-centre, cross-sectional study between January 1, 2002, and October 31, 2007, at St. Michael's Hospital in Toronto, where 44% of the population is foreign-born.[15] This unit performs about 2500 deliveries each year and is equipped with a level II nursery and on-site neonatal care.

The main data source for the study was the St. Michael's Hospital obstetrics database. As a routine part of each woman's care, maternal, obstetrical, and neonatal data are recorded on a standardized form completed by the obstetrician, nurse, and pediatrician in the peripartum period. This form records information about current smoking, maternal country of birth, and whether the woman had immigrated to Canada within the preceding five years. Paternal information is not collected, and the country of birth of the infant's father was not considered in the current study. Perinatal details recorded include gestational age at delivery and infant birth weight.

The obstetrics database form was designed to summarize antepartum, intrapartum, postpartum, and newborn events, allowing caregivers at all levels to track the maternal and newborn course in hospital. All information from each obstetrics database form is entered monthly by a data clerk, and the database is maintained by a clinical nurse practitioner. In an unpublished validation study, we found strong agreement between the patient charts and the obstetrics database with respect to infant gestational age at birth (concordance coefficient 0.93) and infant birth weight (concordance coefficient 0.98).

For the current study, we included all singleton, liveborn infants born between 35 and 41 completed weeks' gestation. This represented nearly all infants delivered at St. Michael's Hospital. Gestational age at birth was determined using the estimated date of delivery, dating from the first trimester ultrasound. We also required that the country of birth of the infant's mother be recorded in the database for that child to be included. Because we were interested in birth weight, infants born from the same mother (i.e., siblings) were each included in the current dataset. We excluded stillborn infants and those identified at birth with any chromosomal disorder or other congenital anomaly.

We created three infant groups representing the region of birth of the infant's mother: Canada, East Asia, and South Asia (Table 1, footnote). Infants whose mothers were born in Canada served as the reference group.

Smoothed birth weight centile curves were derived using the LMS method.[16] This method summarizes the changing distribution by three curves representing the skewness (L), median (M) and coefficient of variation (S), where skewness (L) is expressed as a Box-Cox power transformation. Using the penalized likelihood method, the L, M, and S curves are fitted as cubic splines by nonlinear regression, and the extent of smoothing is expressed as smoothing parameters. The 3rd, 10th, 50th, 75th, 90th, and 97th centiles were calculated from the smoothed L, M, and S parameters.[17]* Using the smoothed curve data, we then determined the number and rate of newborns of East Asian and South Asian maternal origin who were above the 3rd and 10th centile SGA thresholds within their own ethnicity-specific birth weight curves, but below the 3rd and 10th centile sex-specific weight cut-offs for infants of mothers born in Canada. Crude odds ratios and 95% confidence intervals were used to express the relative risk of this occurring. Logistic regression analysis was used to generate adjusted odds ratios, with maternal age (in years), gravidity, living in Canada less than five years (yes/no), diabetes mellitus before or during the current pregnancy (yes/no), as well as current cigarette smoking (yes/no) included in the model, a priori.

*The curves are available at http://www.stmichaelshospital.com/birthweights.php.

Table 1. Characteristics of 4680 singleton liveborn infants born between 35 and 41 weeks' gestation, and their mothers, according to maternal region of birth

Characteristic	Maternal region of birth			
	Canada (n = 2362)	East Asia* (n = 1565)	South Asia† (n = 753)	*P*‡
Neonatal				
No. (%) female	1137 (48.1)	750 (47.9)	385 (51.1)	0.30
Mean (SD) gestational age at delivery, weeks	39.1 (1.3)	39.0 (1.3)	38.9 (1.3)	< 0.001
No. (%) born prior to 40 weeks' gestation	1325 (56.1)	998 (63.8)	482 (64.0)	< 0.001
No. (%) born prior to 37 weeks' gestation	85 (3.6)	56 (3.6)	21 (2.8)	< 0.001
Mean (SD) birth weight, grams	3439 (496)	3295 (440)	3221 (452)	< 0.001
Maternal				
Mean (SD) age, years	31.5 (5.6)	32.5 (4.7)	30.0 (5.0)	< 0.001
Median (interquartile range) gravidity	2 (2)	2 (2)	2 (2)	< 0.001
Median (interquartile range) parity	0 (1)	0 (1)	1 (1)	< 0.001
No. (%) living in Canada less than 5 years	25 (1.1)	278 (17.8)	161 (21.4)	< 0.001
No. (%) with diabetes mellitus before pregnancy	11 (0.5)	9 (0.6)	17 (2.3)	< 0.001
No. (%) with diabetes mellitus during pregnancy	26 (1.1)	31 (2.0)	39 (5.2)	< 0.001
No. (%) smoking during pregnancy	74 (3.1)	8 (0.5)	2 (0.3)	< 0.001

*Cambodia, China, Hong Kong, Indonesia, Korea, Japan, the Philippines, Taiwan, and Vietnam.

†Bangladesh, India, Pakistan, and Sri Lanka.

‡One-way ANOVA for continuous variables and the chi-square test for categorical data.

We estimated the absolute number per 1000 live births of infants born to mothers of East Asian and South Asian origin who might be misclassified as SGA using the 3rd[5] or 10th[6] smoothed centile cut-offs on the curves for infants of mothers born in Canada. We then repeated these calculations but used contemporary weight curves developed by Kramer et al., which were based on smoothed newborn weight data for all Canadian births (excluding those in Ontario) and used a mixture distribution method to correct for erroneous gestational age estimates.[6]

All *P*-values were two-sided, and significance was set at a value of 0.05. Statistical analyses were performed using SAS Version 9 (SAS Institute Inc., Cary NC). Curve fitting was completed using lmsChartMaker Light (Medical Research Council, UK). All maternal identifiers were removed from the final dataset prior to analysis, and permission to conduct the study was obtained from the St. Michael's Hospital Research Ethics Board.

RESULTS

During the period of study, 12 417 infants were born to 10 482 women. Of these 10 482 mothers, 8688 gave birth once, and 1794 gave birth two or more times. Of the 12 417 infants, 4523 were excluded because maternal country of birth was not known; 2954 were omitted because their mother was born in another country, their gestational age was outside of 35 to 41 weeks, or they had a congenital or chromosomal disorder or were part of a multi-fetal pregnancy; 237 did not have birth weight recorded; and 23 did not have gestational age recorded. The final dataset comprised 4680 singleton, liveborn infants, of whom 2362 had a mother born in Canada, 1565 in East Asia, and 753 in South Asia (Table 1). The corresponding crude birth weight centiles for male and female newborns according to gestational age are presented in Appendix 1A and 1B, respectively.

Infants of Canadian-born mothers weighed a mean of 144 g and 218 g more at birth than newborns of mothers of East Asian and South Asian origin, respectively (Table 1). This was so despite the opposite trend in the prevalence of maternal pre-pregnancy or gestational diabetes mellitus (Table 1). Infants of East Asian ancestry weighed more on average than those of South Asian ancestry.

After controlling for certain potential confounders, East Asian and South Asian male newborns above the 3rd centile weight on their own ethnicity specific curves were 1.60 (95% CI 1.01–2.54) and 2.78 (95% CI 1.64–4.70) times

Table 2. Risk that a singleton newborn child of maternal East Asian or South Asian birth is potentially misclassified as small for gestational age by using derived weight centiles for infants of Canadian-born mothers

		Maternal region of birth, male newborns			Maternal region of birth, female newborns		
Centile cut-off used to define SGA*	Measure	Canada (n = 1225)	East Asia (n = 815)	South Asia (n = 368)	Canada (n = 1137)	East Asia (n = 750)	South Asia (n = 385)
3rd	No. (%)	39 (3.2)	41 (5.0)	28 (7.6)	36 (3.2)	27 (3.6)	22 (5.7)
	Crude OR (95% CI)	1.00 (ref)	1.61 (1.03–2.52)	2.51 (1.52–4.13)	1.00 (ref)	1.14 (0.69–1.90)	1.85 (1.08–3.19)
	Adjusted OR (95% CI)†	1.00 (ref)	1.60 (1.01–2.54)	2.78 (1.64–4.70)	1.00 (ref)	1.28 (0.75–2.19)	2.03 (1.13–3.67)
	No. newborns potentially misclassified as SGA per 1000 live births	—	14	46	—	7	29
10th	No. (%)	110 (9.0)	116 (14.2)	76 (20.7)	106 (9.3)	96 (12.8)	72 (18.7)
	Crude OR (95% CI)	1.00 (ref)	1.68 (1.28–2.22)	2.64 (1.92–3.63)	1.00 (ref)	1.43 (1.07–1.91)	2.24 (1.62–3.10)
	Adjusted OR (95% CI)†	1.00 (ref)	1.70 (1.27–2.27)	2.66 (1.90–3.72)	1.00 (ref)	1.47 (1.08–2.01)	2.16 (1.51–3.07)
	No. newborns potentially misclassified as SGA per 1000 live births	—	50	111	—	25	88

*SGA centiles based on smoothed birth weight data.

†Adjusted for maternal age (in years), maternal gravidity (0, 1, 2, 3, etc.), living in Canada less than 5 years (yes/no), diabetes mellitus before or during the current pregnancy (yes/no), as well as current cigarette smoking (yes/no).

—Not applicable

more likely to be misclassified as SGA (i.e., below the 3rd centile weight), using curves for males of Canadian-born women (Table 2). This meant about 14 per 1000 East Asian and 46 per 1000 South Asian newborn males being potentially mislabelled as SGA (Table 2). For female newborns, the corresponding numbers were 7 per 1000 for East Asians and 29 per 1000 for South Asians. Using the 10th centile weight to define SGA, the figures were even higher, with as many as 111 per 1000 male and 88 per 1000 female newborns of South Asian origin being potentially miscategorized as SGA (Table 2).

Using the 3rd and 10th centile birth weights for neonates born across Canada as the referent,[6] a substantial number of male and female East Asian and South Asian newborns remained at higher risk of being potentially misclassified as SGA (Table 3).

DISCUSSION

We developed modified birth weight centiles for singleton infants born to mothers of East Asian and South Asian ancestry. Using a 3rd centile cut-off for infants of Canadian-born mothers, between 7 and 14 per 1000 infants born to mothers of East Asian origin may be miscategorized as SGA; using a 10th centile cut-off for SGA, the figure rose to between 25 and 50 per 1000 infants. Among infants of South Asian mothers, the rate varied from 29 to 46 per 1000 infants at an SGA cut-off at the 3rd centile, and 88 to 111 per 1000 at an SGA threshold at the 10th centile.

While previous studies have described differences in infant birth weight between Asian and Caucasian groups,[5,6,8,9,11,18,19] none of them created separate smoothed-curve birth weight centiles for male and female newborns or estimated the potential risk of SGA misclassification. It is clearly necessary to create separate weight centiles for male and female newborns. In our study, males of Canadian-born mothers weighed about 165 g more than their female counterparts at 40 weeks' gestation (Table 4). Among East Asians, the difference was about 70 g, and for South Asian infants it was approximately 110 g.

Table 3. Risk that a singleton newborn child of maternal East Asian or South Asian birth in current study is potentially misclassified as small for gestational age by using derived weight centile curves for Canadian-born infants

		Male newborns			Female newborns		
		Maternal region of birth			Maternal region of birth		
Centile cut-off used to define SGA*	Measure	All Canadian newborns† (n = 330 373)	East Asia (n = 815)	South Asia (n = 368)	All Canadian newborns† (n = 314 287)	East Asia (n = 750)	South Asia (n = 385)
3rd	n, (%)	9911 (3.0)	32 (3.9)	24 (6.5)	9428 (3.0)	20 (2.7)	18 (4.7)
	Crude OR (95% CI)	1.00 (ref)	1.32 (0.93–1.88)	2.26 (1.49–3.42)	1.00 (ref)	0.89 (0.57–1.38)	1.59 (0.99–2.55)
	Newborns potentially misclassified as SGA per 1000 livebirths, n	—	5	35	—	3	18
10th	n, (%)	33037 (10.0)	103 (12.6)	66 (17.9)	31428 (10.0)	91 (12.1)	69 (17.9)
	Crude OR (95% CI)	1.00 (ref)	1.30 (1.06–1.60)	1.97 (1.51–2.57)	1.00 (ref)	1.24 (1.00–1.55)	1.97 (1.51–2.55)
	No. newborns potentially misclassified as SGA per 1000 livebirths	—	34	84	—	19	80

*SGA centiles based on smoothed birth weight data.

†Smoothed centile data for Canadian newborns, derived from Kramer et al.[6]

—Not applicable

Our data were derived from a limited sample of 4680 singleton infants without evidence of a chromosomal or congenital anomaly, all delivered at a single urban hospital. While we may be criticized for capturing maternal but not paternal country of birth, there remains a very high degree of ethnic concordance among Canadian couples. For example, about 6% of all married couples in Toronto are of different ethnic backgrounds, and in just 1.3% does each partner belong to a different visible minority group.[15,20] In approximately one third of our study participants, maternal country of birth was not captured. This parallels other research on ethnicity and health, which is often a sensitive topic,[21,22] and in our case, the decision to record this information was left to the discretion of a woman's caregiver.

In creating these birth weight centiles we did not consider the adequacy of maternal nutrition during pregnancy, the mother's duration of residence in Canada,[23] or the effect of maternal height, body mass index, or recognized placental disease on fetal growth. However, we did adjust for maternal age, duration of residence in Canada, maternal diabetes mellitus, and cigarette smoking in our multivariable models (Table 2). We did not define the ethnic composition of the group of Canadian-born women; including women of Asian ancestry among the latter would likely have attenuated our risk estimates. At least two studies observed small differences in the weights of neonates of native-born versus immigrant-born women of East Asian[8] and South Asian[19] ancestry. Although our dataset was limited to infants between 35 and 41 weeks' gestation, 95% of all singleton infants in Canada are born within this gestational period.[6] Accordingly, the external relevance of these data should be understood within this context and the above limitations.

Our birth weight centiles closely resemble those reported in other Canadian studies (Table 4). For example, our 50th centile birth weights for term male and female infants of Canadian-born mothers were within 36 g (1%) and 5 g (0.14%) of those described in a large national sample of Canadian newborns.[6] Similarly, among East Asian and South Asian males, our measures closely resembled those of a single hospital in Vancouver, British Columbia.[10]

In classifying participants as "East Asian" and "South Asian," we and others potentially overlook the appreciable differences that exist between the different contributing countries. At the same time, birth weight differences between East and South Asians suggest that they should not be aggregated into a single "Asian" group. For example,

Table 4. Birth weight centiles for male and female infants born at 40 weeks' gestation, comparing the current study with those of other studies

			Region of birth of newborn or of newborn's parent(s)					
			Male newborn weight centiles (grams)			Female newborn weight centiles (grams)		
First author	Study setting; period	Weight centile	Canada	East Asia	South Asia	Canada	East Asia	South Asia
Kamer[6]	All of Canada, excluding Ontario; 1994–1996	3rd	2829*	—	—	2722*	—	—
		10th	3076*	—	—	2955*	—	—
		50th	3613*	—	—	3470*	—	—
Janssen[10]	Single Vancouver Hospital; 2000–2003	3rd†	2868	2814	2654	2724	2649	2598
		10th	—	—	—	—	—	—
		50th‡	3688	3500	3452	3640	3373	3376
Ray	Single Toronto Hospital; 2002–2007	3rd	2891	2791	2724	2730	2731	2612
		10th	3120	2993	2924	2959	2925	2813
		50th	3649	3461	3391	3475	3371	3286

*Reflects all Canadian newborns (excluding Ontario)

†2 SD below the mean birth weight

‡Mean birth weight

—Not applicable

East Asian males and females weight 67 g and 119 g more than South Asian males and females at the 3rd centile birth weight, respectively (Table 4). At the 50th centile, the corresponding differences were 70 g and 85 g.

Some argue that observed differences in birth weight between white neonates and black neonates is a result of some pathological, rather than physiological, process.[18] While the current study was not equipped to address this hypothesis, we are concerned about applying this notion to Asian infants (Table 4). Among nearly 350 000 Ontario women in early pregnancy, those of Asian ancestry weighed almost 11 kg less than white women[12]; why should the weight of their newborn offspring not parallel this difference? In the absence of evidence that women of Asian ancestry exhibit greater abnormalities of either placental blood flow on Doppler ultrasonography, or of placental villous trees and vessels on microscopy, it should not be inferred that differences in birthweight between Asian and white infants are due to some pathological process.[11] Taking this approach may prevent unwarranted investigation of an otherwise healthy child[2,5] and the inherent stress it can place on new parents.[7]

We urge others to collect information about maternal and paternal ethnicity. This could be used to generate proper birth weight curves for ethnic groups, both considered and not considered in this study. Very preterm infants should also be included, along with broad measures of perinatal health.[24]

Information has emerged that SGA is more concordant with perinatal mortality when ethnic-specific standards are used for among East Asians and South Asians.[11] The same may be true for postnatal growth.[25] Further elucidation is required to determine whether a newborn of Asian ancestry has a different neurodevelopmental course when he or she is labelled as SGA according to an ethnicity-specific weight chart, rather than according to a traditional chart derived from neonates of white European ancestry. Similarly, this may focus the research on the relationship between intrauterine growth restriction/SGA and the onset in childhood and later adulthood of hypertension, type 2 diabetes mellitus, and cardiovascular disease.[26–28]

Kramer and colleagues generated much-needed contemporary birth weight curves.[6] To the best of our knowledge, these curves have yet to be incorporated into widespread clinical practice, but we believe they should be. First, they are based on a very large, highly representative sample of Canadian newborns, while the commonly used Usher curves were derived in the late 1950s from a sample of 300 Caucasian infants born at a single centre.[5] Over the ensuing four decades, Canada has become ethnically diverse, and

the birth weight of its newborns has increased.[29] Moreover, the Kramer curves provide a full range of sex-specific birth weight centiles not available within the unisex Usher curves.[6] As an adjunct, special birth weight curves should be considered for newborns of immigrants of EastAsian and South Asian descent. We hope this will allow most newborns to be characterized correctly as appropriate or small for gestational age. Regardless, newborn weight should be considered in conjunction with a broad assessment of neonatal well-being.[24]

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Appendix 1A.

Liveborn male singleton infant birth weight centiles by gestational age, according to maternal region of birth, crude data (not for clinical use)

		Gestational age (completed weeks)						
Maternal region of birth	Weight centile (grams)	35 (n = 37)	36 (n = 57)	37 (n = 196)	38 (n = 630)	39 (n = 776)	40 (n = 737)	41 (n = 386)
Canada (n = 1225)								
	3rd	1717	2027	2297	2610	2711	2796	3038
	10th	2153	2400	2575	2784	2970	3130	3334
	50th	2615	2896	3049	3312	3498	3631	3785
	75th	3034	3026	3317	3602	3770	3948	4072
	90th	3465	3440	3684	3876	4090	4220	4310
	97th	3138	3182	4528	3735	3872	4008	3980
East Asia (n = 815)								
	3rd	2050	1913	2215	2492	2602	2848	2875
	10th	2050	2320	2435	2776	2880	3014	3150
	50th	2515	2645	3080	3258	3351	3500	3695
	75th	2764	2909	3266	3545	3575	3676	3885
	90th	3125	3145	3675	3765	3800	3906	4256
	97th	3170	4032	4200	4100	4194	4281	4740
South Asia (n = 368)								
	3rd	2155	2543	2230	2560	2539	2728	2786
	10th	2155	2543	2455	2716	2670	2835	3095
	50th	2340	2714	2951	3068	3196	3378	3540
	75th	2525	3102	3549	3412	3432	3686	3770
	90th	2525	3436	3906	3662	3752	3928	4032
	97th	2525	3436	4095	4338	3878	4175	4144

Appendix 1B

Liveborn female singleton infant birth weight centiles by gestational age, according to maternal region of birth, crude data (not for clinical use)

Maternal region of birth	Weight centile (grams)	Gestational age (completed weeks) 35 (n = 26)	36 (n = 62)	37 (n = 159)	38 (n = 559)	39 (n = 791)	40 (n = 732)	41 (n = 357)
Canada (n = 1137)								
	3rd	2273	1959	2185	2400	2610	2737	2876
	10th	2410	2079	2478	2625	2825	3000	3122
	50th	2565	2685	2831	3190	3384	3470	3577
	75th	2840	2765	3175	3450	3667	3760	3823
	90th	2850	3152	3558	3728	3875	3966	4000
	97th	3096	4115	4408	4052	4350	4358	4498
East Asia (n = 750)								
	3rd	1855	2078	2445	2405	2625	2704	2839
	10th	1855	2081	2497	2561	2759	2935	3024
	50th	2182	2761	2913	3070	3260	3380	3447
	75th	2371	3275	3075	3308	3556	3590	3715
	90th	2896	3610	3183	3617	3760	3825	3900
	97th	2896	4400	3246	3810	3976	4140	4162
South Asia (n = 385)								
	3rd	2325	1831	1650	2320	2611	2631	2625
	10th	2325	1831	2396	2521	2815	2797	2850
	50th	2910	2495	3012	2983	3244	3277	3392
	75th	3138	3075	3284	3308	3470	3593	3734
	90th	3138	3182	3520	3560	3710	3850	3928
	97th	3138	3182	4528	3735	3872	4008	3980