



## Canadian Aboriginal (Cree) infants have high fetal growth

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### Introduction

Birth weight, length and head circumference are used to screen for high-risk newborns. Attention has been focused predominantly at infants having low birth weight (LBW, <2500 g). Considering secular trends toward increasing birth weight in developed countries, more attention may need to be directed toward infants with high birth weight (HBW, >4000g). HBW infants are termed macrosomic. Macrosomia carries increased risk of birth trauma for the infant such as shoulder dystocia, clavicular fracture, and brachial plexus injury. In the United States and in Canada, approximately 10% of term births exceed 4000 g. The prevalence of HBW in Canadian Aboriginal (North American Indian) populations is 12 – 37% for reasons that may be genetic and/or could in part reflect high rates of maternal obesity and gestational diabetes. In the Cree population of northern Quebec, greater than 1 in 3 babies weigh >4000 g at birth.

### Objectives

- Describe anthropometrics in Cree newborns and compare anthropometric data with reference data from Canada and Iceland. Iceland was chosen as a reference population because of the reported high weight of newborns in that country.
- Evaluate if conventional low and high birth weight cutoffs identify Cree neonates who had operative delivery and with health risks.

### Method

- Data were obtained from medical charts for singleton Cree births for the years 1994 – 2000.
- Birth weight data was categorized as follows:
  - <2500 g
  - 2500 – 3150 g (10<sup>th</sup> %ile of the distribution of Cree birth weights)
  - 3150 g – 4000 g
  - 4000 g – 4525 g (90<sup>th</sup> %ile of the distribution of Cree birth weight)
  - >4525 g
- Rates of C-section delivery, birth injury and 5-minute APGAR score <7 were considered within each birth weight category.

### Results

- Of Cree births, 2.4% were LBW and 36.2% were HBW.
- The weight, length and head circumference of newborns (Figure 1) at all gestational ages exceeded those of newborns from Iceland and Canada.
- When the ratio of Cree term birth data was compared to Icelandic data, the Cree birth weight ratio was greater than length and head circumference ratios (Figure 2).
- C-section delivery and low APGAR scores were most prevalent in infants weighing <2500 g (Table 1).
- Infants weighing >4525 g had a greater risk for birth injury and C-section delivery than infants weighing 4000 – 4525 g (Table 1).

Figure 1 Results (Continued)

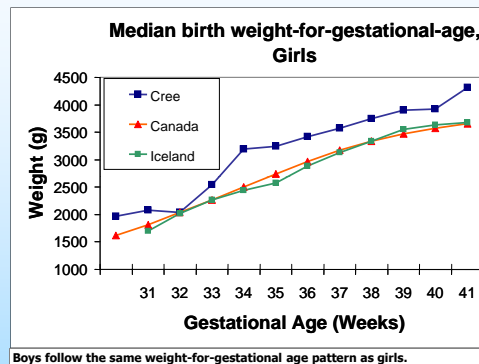
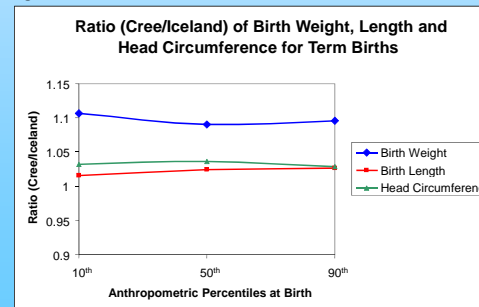


Figure 2



### Results (Continued)

Birth weight (g)	n	C-section delivery		Birth injury <sup>1</sup>		5-minute APGAR <7	
		n	%	n	%	n	%
<2500	46	39.1	50	8	36	13.9	
2500 - <3150	152	17	154	1.3	143	0.7	
3150-4000	1136	13.2	1111	1.8	1111	0.9	
>4000 - 4525	555	15.5	554	5.6	533	1.5	
>4525	205	24.9	207	15	200	1	
Total	2095	15.8	2076	4.2	2023	1.3	
P value among weight categories (χ <sup>2</sup> )		<0.001		NA <sup>2</sup>		<0.001	

1 Birth injuries include one or more of shoulder dystocia, clavicular fracture, brachial plexus injury, humeral fracture.  
2 Could not be computed

### Discussion

- Cree infants have high birth weight, length and head circumference.
- Operative Delivery**
- The C-section rate of 15.5% for infants weighing 4000 – 4525 g was low considering a C-section rates of 28.8 – 36% for macrosomic deliveries in the general population.
  - The C-section rate of 24.9% for infants weighing >4525 g was moderate considering reported rates of 36% for delivery of infants >4500g.
- Health concerns of high birth weight**
- In this population, we found limited evidence that babies between the conventional HBW cutoff (4000g) and 4525g were at elevated risk for operative delivery, birth injuries or low APGAR scores.
  - The rate of birth injuries (15.0%) was elevated for infants with weights exceeding 4525 g; the 5.6% rate for infants weighing 4000 – 4525 g was not unusually high.

### Conclusion

The conventional high birth weight cutoff of 4000 g for screening of high-risk infants may not be appropriate in all populations.

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