

Identifying small-for-gestational age newborns with ethnicity-specific growth distributions

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Small-for-gestational age



Should we expect these newborns to be the same size?



Boys, weight (g)

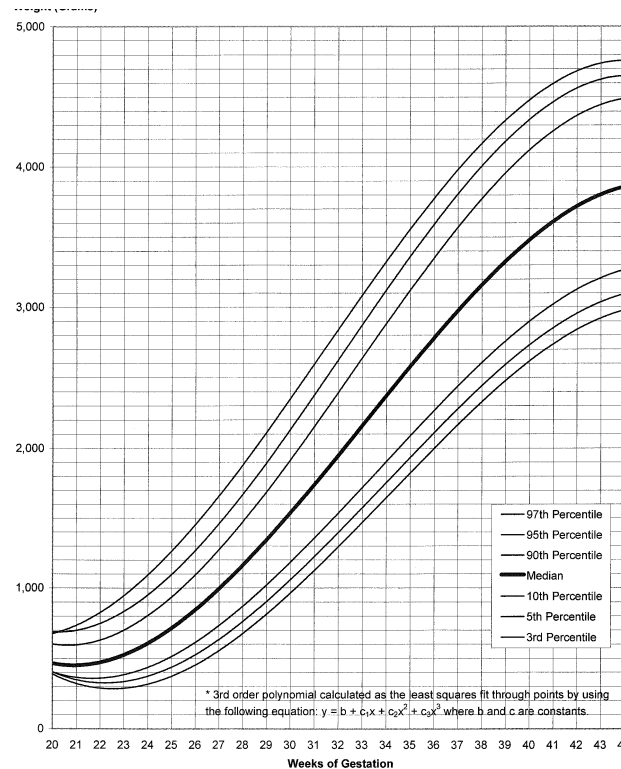
Gestational age (weeks)	White	Chinese	South Asian
37	3336.4	3119.0	3060.0
38	3359.4	3209.5	3201.8
39	3586.0	3359.0	3361.2
40	3687.6	3500.4	3452.5
41	3877.1	3724.1	3674.7

Girls, weight (g)

Gestational age (weeks)	White	Chinese	South Asian
37	3050.7	3048.4	2956.8
38	3293.5	3190.2	3118.4
39	3455.8	3271.0	3311.7
40	3639.5	3373.3	3376.1
41	3696.8	3451.0	3411.4

Population-based centiles

Standard percentiles for full population



Do population-based charts predict adverse outcomes as well as ethnicity-specific distributions?

Previous research in small BC population (n=2,489)

SGA group	aOR Composite outcome	aOR Extended length of stay
Not SGA	1.00 (ref)	1.00 (ref)
SGA-Kieran's population based	0.88 (0.48, 1.64)	2.91 (1.69, 4.98)
SGA-Janssen's ethnicity specific	1.49 (0.82, 2.70)	2.40 (1.29,4.44)

Composite outcome: 1 min Apgar <7, infection, hypoglycaemia, hypothermia, admission to special care nursery

Objective

- Examine whether ethnicity-specific growth distributions are:
 - Useful in a non BC population
 - Predictive of adverse outcomes in a large population



Study population

- 100,463 term singleton infants born in Washington State between 2006 and 2008
- Born to healthy mothers



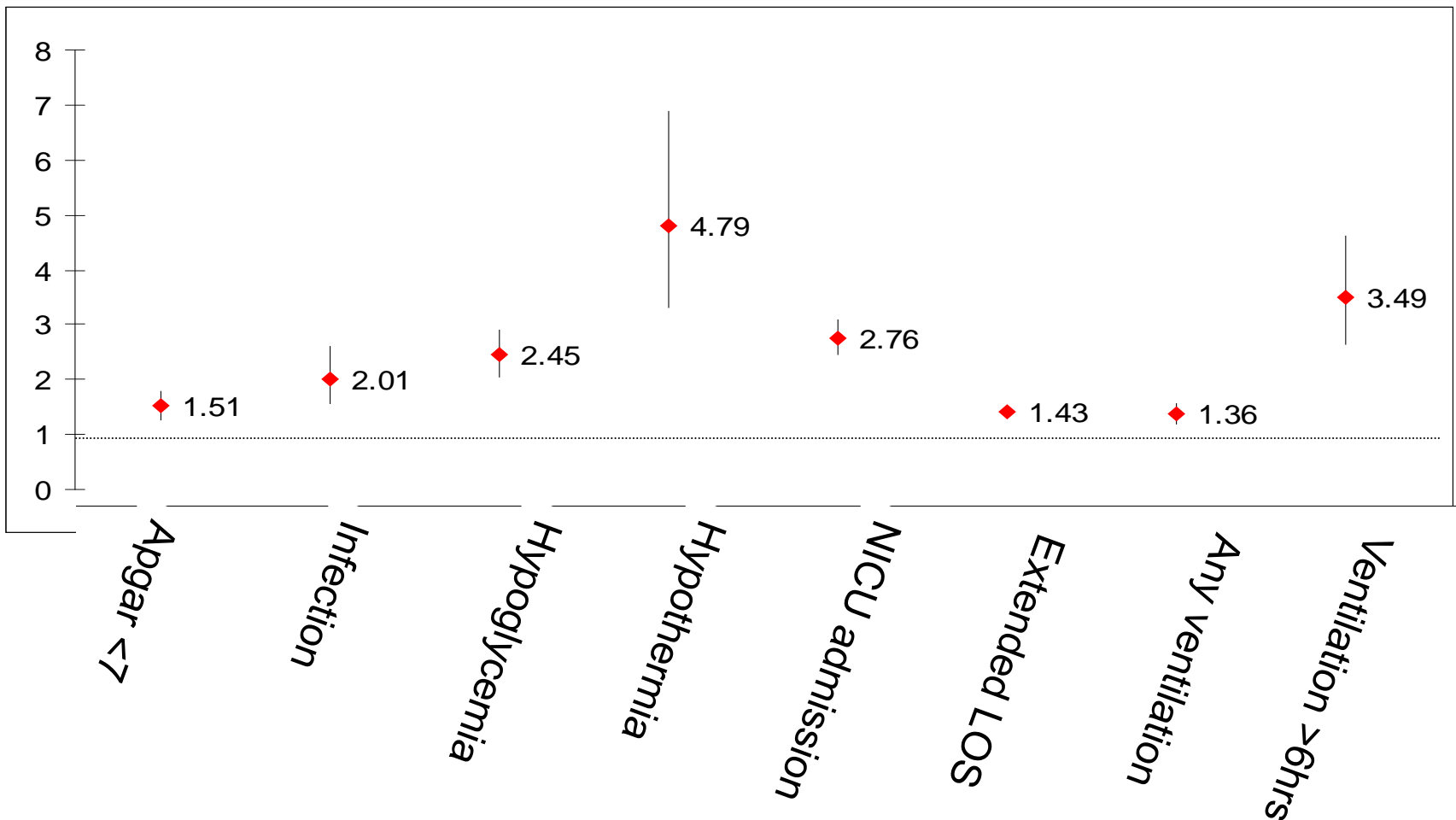
Methods

- Classified infants as:
 - Not SGA n=93,689
 - SGA according to Janssen's ethnicity specific distributions n=2,277 (SGA-J)
 - SGA according to Kieran population chart n=6,774 (SGA-K)
 - SGA only according to Kieran population chart n=4,497 (SGA-K-only)
 - n=2,277 also SGA-J

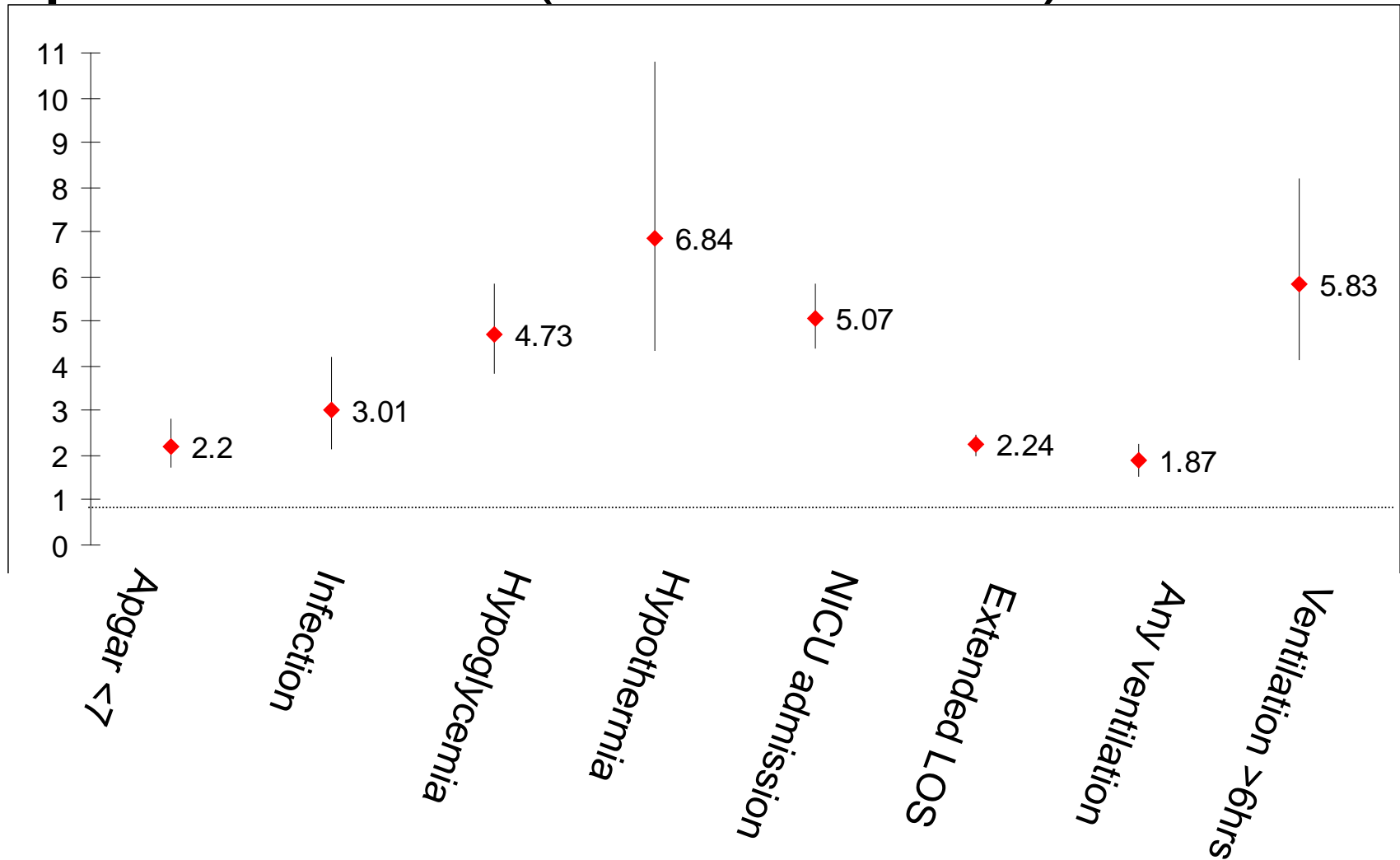
Outcomes

- Apgar score <7 at 5 min
- Admission to NICU
- Ventilation required post delivery
- Ventilation required for more than 6 hours post delivery
- Extended length of hospital stay (≥ 3 days vaginal birth and ≥ 4 days for cesarean)
- Hypothermia (ICD-9 778.3)
- Hypoglycemia (ICD-9 775.6)
- Infection (ICD-9 771)

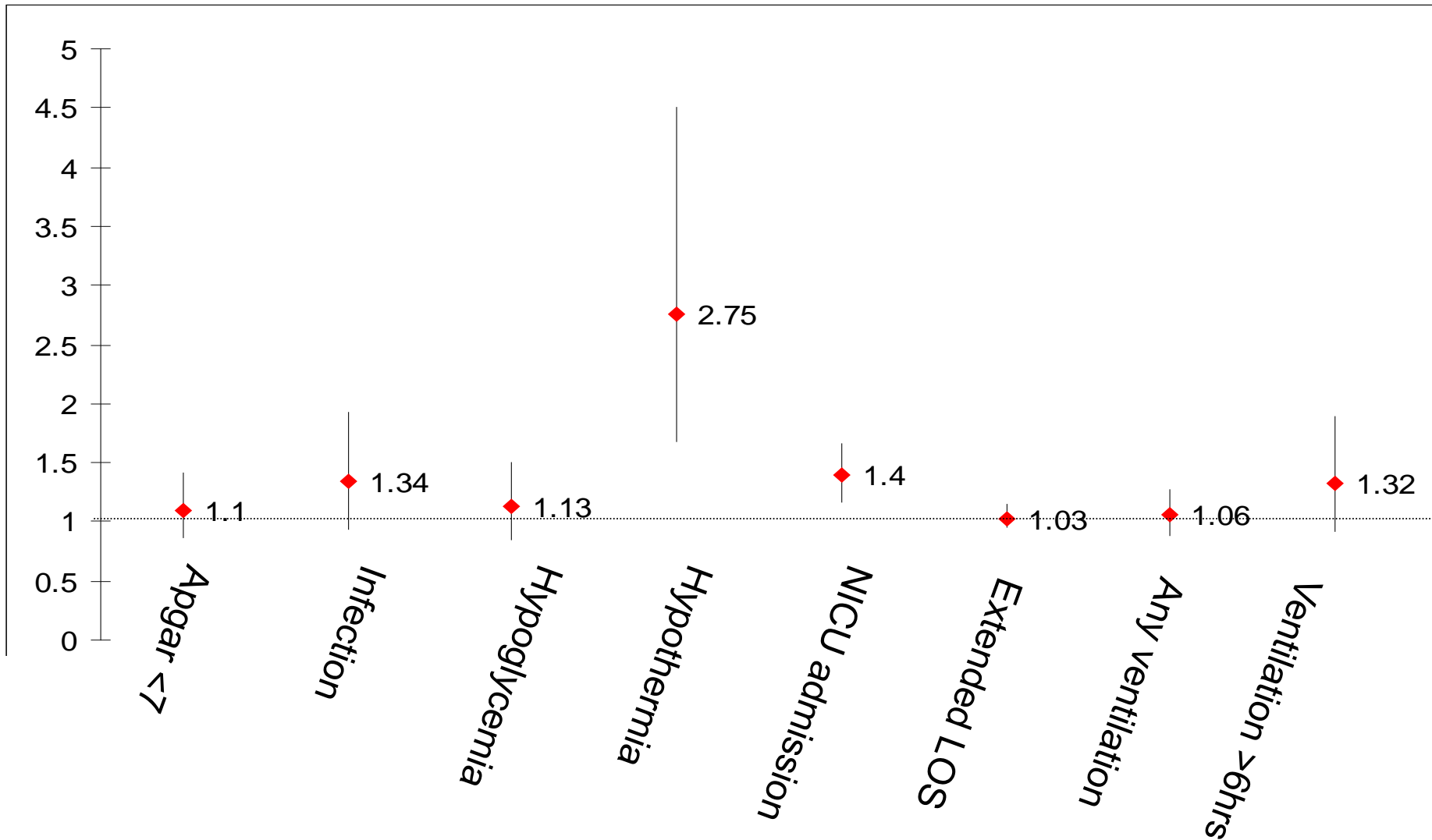
aORs for Kieran population-based identification of SGA (ref=not SGA)



aORs for Janssen's ethnicity-specific SGA (ref=not SGA)



aORs for SGA-K-only (ref=not SGA)



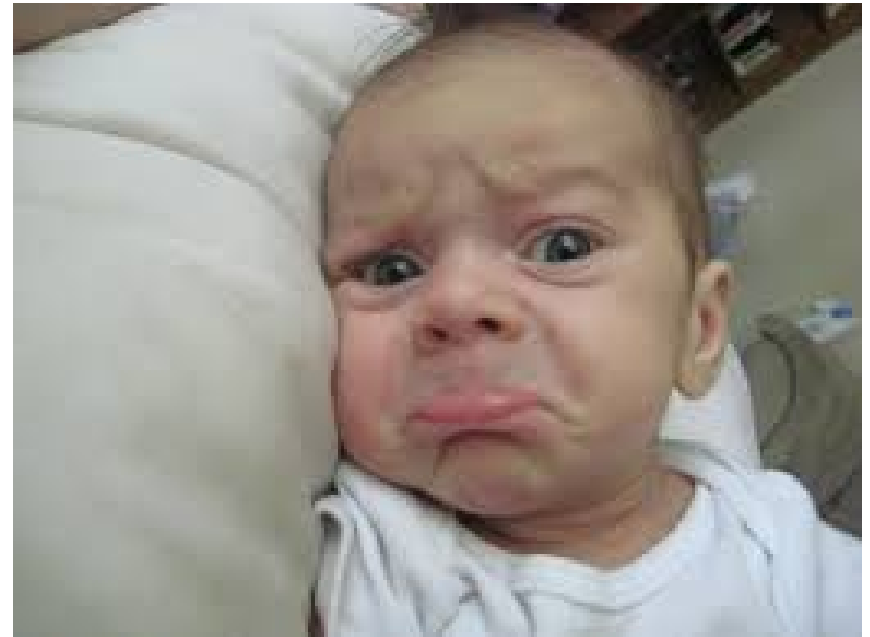


Summary

- Ethnicity-specific distribution more accurately identified newborns at risk for short-term morbidity
- Population-based distribution appears to misclassify constitutionally small but healthy infants as SGA

Conclusion

- Ethnicity-specific distributions have the potential to:
 - Prevent unnecessary resource use
 - Prevent parental anxiety



Acknowledgments

- Dr. Patti Janssen

