



PRAMS

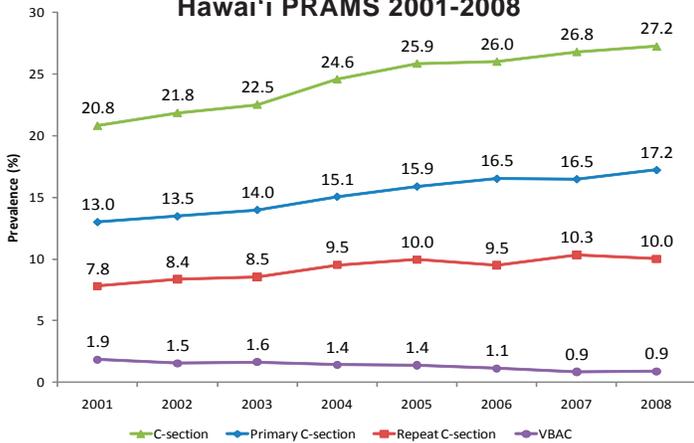
Pregnancy Risk Assessment Monitoring System

Cesarean Delivery Fact Sheet

Cesarean Delivery

A cesarean delivery is the most common surgical procedure done in the United States with more than one million of these major operations occurring each year.¹ Cesarean deliveries are indicated for both maternal and fetal reasons including unstable coronary artery disease, non-reassuring fetal status, placenta previa, and cephalopelvic disproportion.¹ Cesarean deliveries result in higher costs, longer hospitalizations, and may increase risks of short and long term morbidity, compared to a normal vaginal delivery.¹ Indications for a cesarean delivery has come under scrutiny due to rising trends.¹ The National Healthy People 2010 objectives were to reduce the rate of primary cesarean deliveries in low risk first time mothers to 15% and 63% for low risk mothers with a prior cesarean delivery.²

Trends in Cesarean Delivery (Primary, Repeat), and Vaginal Birth After Cesarean Section, Hawai'i PRAMS 2001-2008



Source: Resident Birth Certificates, Office of Health Status Monitoring, Hawai'i State Department of Health; calculations by the Family Health Services Division

Trends in Cesarean Delivery

There has been a significant rise in cesarean deliveries in Hawai'i, accounting for 27.2% of all births in 2008 compared to 20.8% in 2001. The rising trend occurs in both primary and repeat cesarean deliveries. There has been a consequent decline in vaginal deliveries including those vaginal births after a cesarean (VBAC) delivery. In 2008, 63% of the 5,300 cesarean deliveries were primary.

Data Highlights

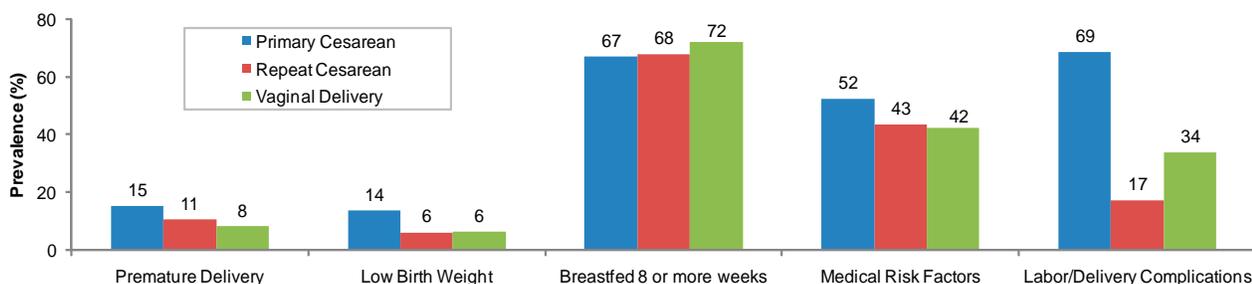
- In 2008, 27.2% of all births were a cesarean delivery, (17.2% were primary and 10.0% were repeat)
- Women more likely to have a cesarean delivery were Other Asian, Korean, White, and, Japanese, aged 35 years and older, a higher education, an intended pregnancy, obese women, gaining greater than ideal weight, and lived in Maui or Hawai'i County
- Pregnancies with medical risk factors were more likely to result in a cesarean delivery
- Pregnancies with complications of labor and/or delivery were more likely to result in a primary cesarean delivery
- Infants born in a primary cesarean were more likely to be premature, low birth weight, and less likely to have initiated breastfeeding
- Infants born in a repeat cesarean were more likely to be premature

Perinatal Risks and Outcomes by Delivery Method

The rate of premature delivery (defined as <37 weeks) was 15% for primary and 11% for repeat cesarean delivery, compared to 8% for a vaginal delivery. Low birthweight infants were higher for a primary cesarean (14%) and a repeat cesarean delivery (6%) compared to a vaginal (6%) delivery. Breastfeeding 8 or more weeks was less common among mothers who had a primary or repeat cesarean delivery, compared to a vaginal delivery.

Medical risks factors in pregnancy reported on the birth certificate such as cardiac disease, diabetes, hypertension, acute chronic lung disease and other conditions, may be associated with an increased rate of cesarean delivery. In Hawai'i, the rate of delivery with a medical risk factor was 52% among primary cesarean delivery, 43% in repeat cesarean delivery, and 42% in a vaginal delivery. Complications of labor and/or delivery reflected on the birth certificate include premature rupture membrane, abruption placenta, placenta previa, seizures during labor, prolonged labor may also lead to cesarean delivery. The rate of deliveries with a labor/delivery complication was 69% for a primary cesarean delivery, 17% for a repeat cesarean delivery and 34% for a vaginal delivery.

Perinatal Risks and Outcomes by Delivery Method, Hawai'i PRAMS 2004-2008



Maternal Characteristics Related to Cesarean Delivery

Hawai'i PRAMS data show that over a quarter (25.7%) of live births are from a primary or repeat cesarean delivery. A cesarean delivery was more common among other Asian, Korean, Filipino, White and Japanese women. Mothers 35 years of age or older, college graduates, overweight or obese prior to pregnancy, and gained more than ideal weight during pregnancy were more likely to have a cesarean delivery. More cesarean deliveries occurred to residents outside of Honolulu County. Rates of primary cesarean delivery were highest among other Asian and Korean race mothers, those that were obese prior to getting pregnant, those that gained greater than ideal weight during pregnancy, and those that lived in Maui or Hawai'i County. Rates of repeat cesarean delivery was particularly high among those 35 years of age and older, and those that lived in Kauai, Maui or Hawai'i County.

"I was not allowed the option to have a natural birth. Just because I had a previous C-section. It should be my right to choose, unless baby was in danger which she was not."

"I personally think more mothers should give birth naturally and that c-sections were not so readily given out. Labor is good for babies and is an awesome experience for a mother to go through."

Discussion

--Hawai'i PRAMS Participants

The decision to have a cesarean delivery is complex and is indicated when there are medical risk factors or complications during labor that can affect the health of either the mother or the infant. It could also be a personal preference by either the provider or the women, often termed an elective cesarean or a "cesarean on demand."¹ It is unclear what the long term risks are to both the mother and the newborn infant and how much elective cesarean deliveries are contributing to the overall increase in the overall rates of cesarean deliveries. Therefore, more research is needed to evaluate these and other potential reasons. Hawai'i PRAMS will be implementing additional questions in future surveys that may lend insight into reasons why a cesarean delivery was done from the woman's perspective. Obesity and medical risk factors such as diabetes are associated with cesarean delivery therefore it is important to monitor rates in light of national increases in these conditions.

Among those with a previous cesarean, a VBAC as a delivery option is only possible when the appropriate resources are in place during active labor which includes an obstetrician, operating room, and anesthesia staff. Some hospitals may not have resources at all times limiting the possibility for a VBAC. Further consideration of hospital resources and impact on mode of delivery is needed.

Health care providers should discuss different modes of delivery early on in the pregnancy and during preconception care, particularly in women who have had a previous cesarean delivery. Optimizing perinatal outcomes for both mother and infant should guide decision making.

References

- Gabbe SG, Niebyl JR, Simpson JL, eds. *Gabbe Obstetrics: Normal and Problem Pregnancies*. 5th ed. New York, NY: Churchill Livingstone Inc; 2007:945-1004.
- U.S Dept of Health and Human Services, Healthy People 2010. *Understanding and Improving Health and Objectives for Improving Health*. 2000.

Cesarean Delivery by Maternal Characteristics, Hawai'i PRAMS 2004-2008

	Primary Cesarean % (95% CI)*	Repeat Cesarean % (95% CI)
Race/Ethnicity		
White	17.6 (16.0-19.4)	8.9 (7.7-10.3)
Black	15.2 (10.7-21.1)	5.9 (3.3-10.4)
Hispanic	14.4 (9.6-21.1)	9.5 (5.8-15.1)
Hawaiian	13.2 (11.8-14.8)	10.8 (9.6-12.3)
Samoan	8.4 (5.5-12.6)	9.2 (6.1-13.5)
Other Pacific Islander	15.1 (11.8-19.1)	11.1 (8.3-14.7)
Filipino	17.3 (15.6-19.0)	11.3 (9.9-12.8)
Japanese	16.2 (14.1-18.5)	10.0 (8.4-11.9)
Chinese	15.6 (13.7-17.8)	6.8 (5.5-8.3)
Korean	18.5 (15.5-22.0)	10.8 (8.5-13.8)
Other Asian	24.3 (18.4-31.4)	7.3 (4.1-12.4)
Maternal Age		
under 20 years	14.1 (12.2-16.2)	1.8 (1.3-2.6)
20-24 years	12.6 (11.6-13.7)	5.8 (5.1-6.6)
25-34 years	13.4 (12.7-14.2)	9.7 (9.1-10.4)
35 and greater	17.6 (16.2-19.0)	15.6 (14.2-17.0)
Maternal Education		
< High School	13.0 (11.2-15.0)	8.4 (7.0-10.1)
High School	12.7 (11.9-13.6)	9.0 (8.3-9.7)
Some College	14.9 (13.8-16.1)	9.1 (8.3-10.1)
College Graduate	15.6 (14.5-16.7)	9.5 (8.6-10.5)
Marital Status		
Married	13.5 (12.8-14.2)	9.8 (9.3-10.4)
Unmarried	15.0 (14.0-16.0)	7.7 (7.0-8.4)
Prenatal Insurance Coverage		
Private Insurance	14.7 (14.0-15.4)	9.2 (8.7-9.8)
Medicaid/QUEST	12.6 (11.6-13.7)	8.9 (8.1-9.9)
None	14.5 (11.2-18.6)	8.7 (6.0-12.5)
Pre-Pregnancy Weight Status		
Underweight	11.7 (9.8-13.9)	5.2 (3.9-6.8)
Normal	13.2 (12.5-14.0)	7.2 (6.7-7.8)
Overweight	14.2 (13.0-15.5)	11.1 (10.0-12.2)
Obese	17.0 (15.4-18.7)	14.7 (13.3-16.3)
Weight Gain During Pregnancy		
Less Than Ideal	11.5 (10.4-12.7)	8.5 (7.5-9.6)
Ideal	12.9 (11.9-13.9)	9.2 (8.4-10.0)
Greater Than Ideal	16.1 (15.2-17.1)	9.0 (8.2-9.7)
County of residence		
Hawai'i	15.7 (14.3-17.2)	12.8 (11.4-14.2)
Honolulu	13.1 (12.4-13.7)	7.6 (7.1-8.1)
Maui	17.8 (16.2-19.5)	13.0 (11.6-14.5)
Kauai	15.1 (12.9-17.6)	13.7 (11.5-16.1)
Overall	15.7 (15.0-16.5)	10.0 (9.4-10.6)

*note 95% CI refers to the 95% confidence interval around estimate.

About the Data

The **Hawai'i Pregnancy Risk Assessment Monitoring System (PRAMS)** is a self-reported survey of recent mothers conducted by mail with telephone follow-up. It is designed to monitor the health and experiences of women before, during, and just after pregnancy. Every year, about 2,000 women who deliver a live infant are randomly selected to participate.

Birth Certificates are collected for every birth in Hawai'i (~18,500 per year) by the Department of Health's Office of Health Status Monitoring. Data from the full population of resident births in Hawai'i were used to determine the annual rates and type of cesarean delivery since 2001.

Suggested Citation

Balihe P, Hayes D, Fuddy L. "Cesarean Delivery Fact Sheet." Honolulu, HI: Hawai'i Department of Health, Family Health Services Division; December 2010.

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