

# Pregnancy outcomes for California women with sickle cell disease

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## BACKGROUND AND OBJECTIVES

- Women with sickle cell disease (SCD) have significantly increased rates of adverse pregnancy, delivery and perinatal outcomes. Documented adverse outcomes for mothers and babies include low birth weight and death.
- Pregnancy can exacerbate complications of SCD such as pain episodes and increased risk of infection and anemia, even in women who suffered few symptoms before pregnancy.
- SCD-related complications also include heart, kidney, or lung disease and other co-morbidities that can affect pregnancy outcomes.
- Mortality rates for pregnant women with SCD in the U.S. have been found to be almost six times higher than in the general population.
- We sought to analyze California's SCD surveillance and hospitalization data to compare the pregnancy outcomes of women with SCD with outcomes in the general population and among Black women.

## METHODS

- The California Sickle Cell Data Collection (SCDC) Program uses population-based surveillance methodology to identify and describe health outcomes for all persons living with sickle cell disease in California.
- A cohort of those with SCD living in the state during 2004-2008 was identified using newborn screening data, clinical case reports, and administrative data such as Medicaid claims and hospital discharge records – this effort was part of the Registry and Surveillance System in Hemoglobinopathies (RuSH) program, a CDC/NHLBI/State cooperative agreement.
- Similar cohorts of all California women except those known to have SCD and all California Black women except those known to have SCD were created for comparison.
- Hospitalizations for 2004-2014 (11 years of data) were tracked for all women in the cohort who were between the ages of 15 and 45 years of age.
- Hospitalizations among women with SCD that included delivery ICD 9 codes (V27.X) were identified and rates of cesarean birth, maternal mortality, and stillbirths during these delivery inpatient stays are described.
- For comparison, the rates of these outcomes among all women and among all Black women living in California admitted to the hospital with delivery ICD 9 codes during 2004-2014 were also calculated. Risk ratios indicate the risk of outcome for women with SCD compared to the group identified in the histogram.

## DISCLOSURES

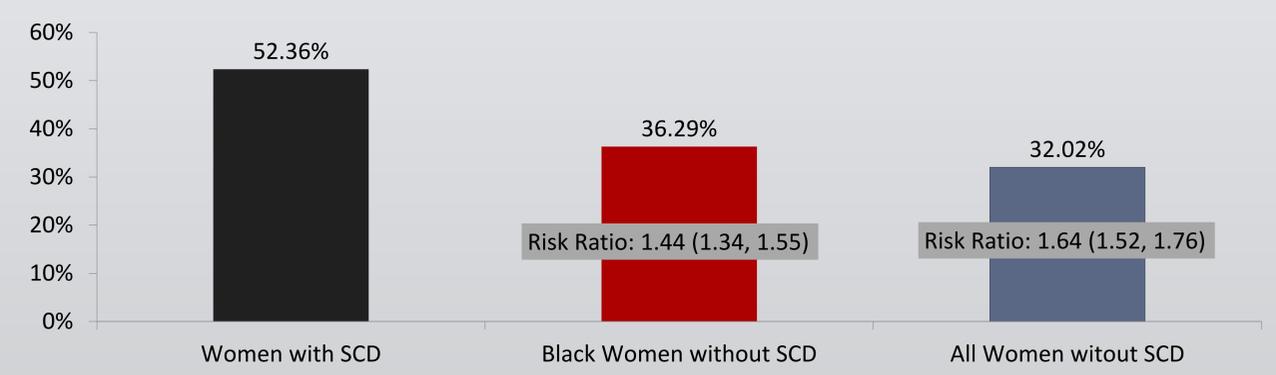
This work and the Sickle Cell Data Collection Program are supported by funding from the CDC Foundation, Pfizer and Biogen, Inc.

## RESULTS

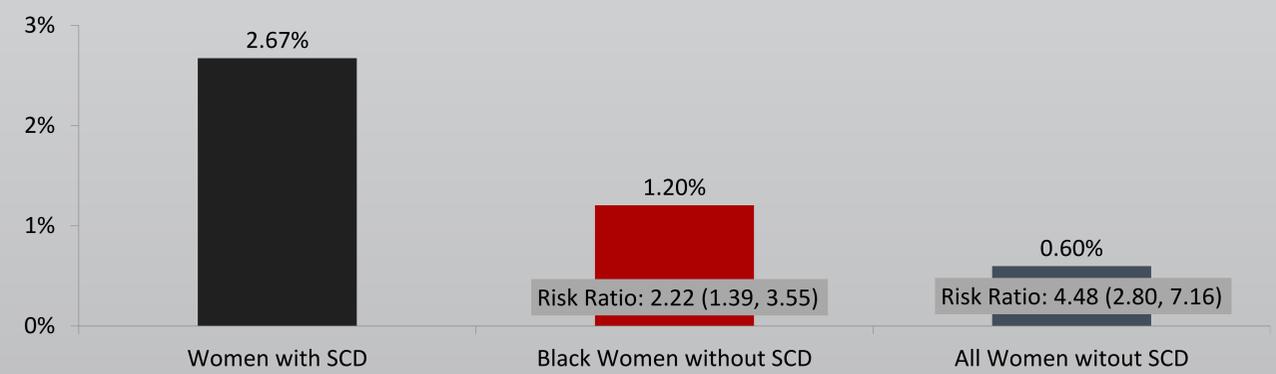
**Table 1: Characteristics of CA Women with Delivery ICD 9 Codes, 2004-2014**

	Eligible Women (Identified 2004-2008)	With Delivery Codes	# Deliveries	Mean Age at Delivery (years)	Median Age at Delivery (years)
Women with SCD	1,829	441	636	26.14	26
Black Women, no SCD	207,386	123,870	202,284	27.05	26
All Women, no SCD	2,522,382	1,756,617	2,829,039	28.79	29

**Figure 1: Proportion of CA Deliveries by Cesarean Section Surgery, 2004-2014**



**Figure 2: Proportion of CA Deliveries Resulting in Stillborn Infant, 2004-2014**



**Figure 3: Proportion of CA Deliveries Resulting in Maternal Death, 2004-2014**



## CONCLUSIONS

- Adverse birth outcomes are higher among California women with SCD compared to the general population and to other Black women.
- The maternal death rate among women with sickle cell disease is notably higher than a previous report.
- Further surveillance and investigation into prevention of the most severe pregnancy outcomes among women with SCD is warranted.
- The state's population based surveillance system can identify hospital utilization patterns and pregnancy outcomes among all women with SCD in the state, not limited to those in the care of a hematologist or SCD expert.

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