Connie Mitchell, MD, MPH

Dr. Mitchell's career has spanned the spectrum from the highest acuity intervention to health policy for primary prevention. She is board certified in Emergency Medicine and from 1989-2005 she was a faculty member at the University of California Davis with a joint appointment in Emergency Medicine and Pediatrics. Her academic focus was on the precursors to intentional injury and more effective strategies for prevention and intervention in family violence. She is the Editor-in-Chief of the textbook Intimate Partner Violence: A Health-Based Perspective published by Oxford University Press which was honored in 2010 with the American Medical Writers Association award for best medical textbook of the year. After earning a Master's Degree in Public Health, she transitioned to the California Department of Public Health to become the Branch Chief for Policy in Maternal, Child and Adolescent Health overseeing maternal and infant health programs. She helped start the California Pregnancy Associated Mortality Review and was the principle author of the state's first report on maternal mortality. Dr. Mitchell now serves as the Deputy Director of the Center for Family Health and oversees the Maternal, Child and Adolescent Health Division, WIC and the Genetic Disease Screening Program. In 2014 she was awarded the California Department of Public Health Award for Outstanding Achievement in Public Health and in 2019 the federal Vince Hutchins Award for leadership of effective partnerships in maternal, child and adolescent health.

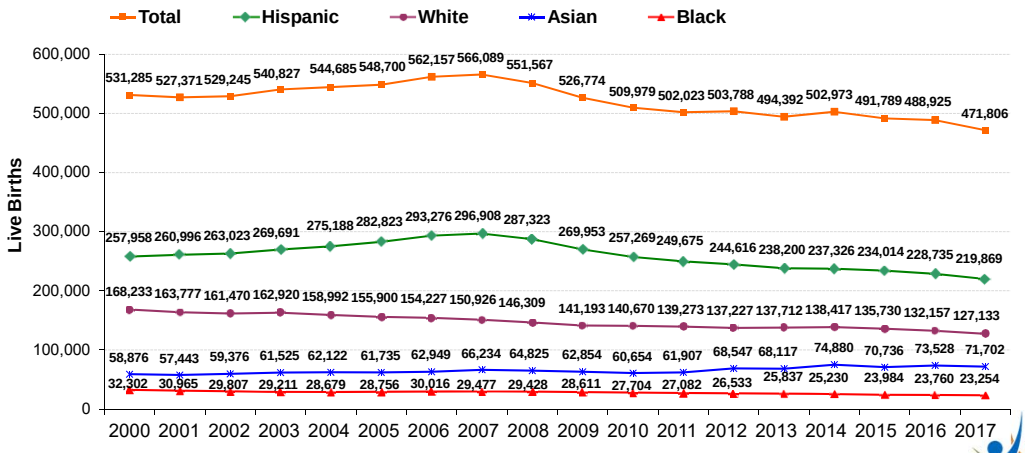
California Maternal Mortality and Morbidity

Connie Mitchell, MD, MPH
Deputy Director, Center for Family Health
California Department of Public Health

California Medical Board
November 8, 2019; San Diego, CA

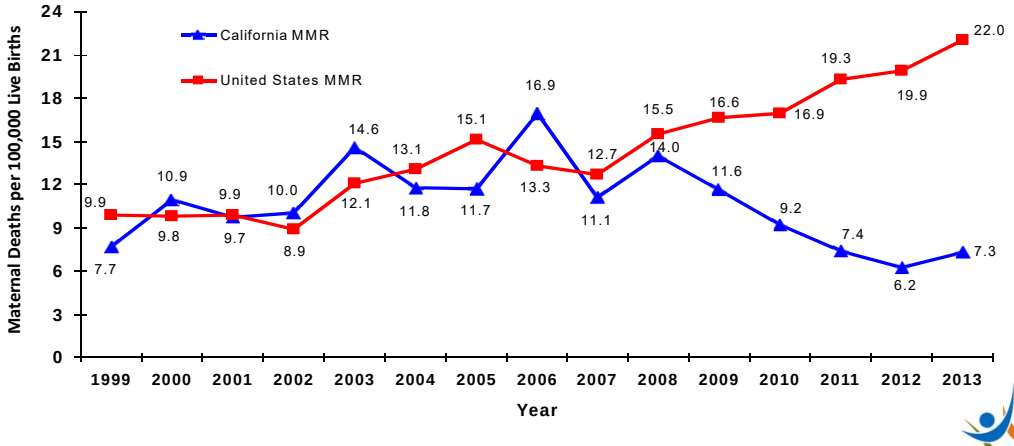
California by the Numbers

Births in California, 2000-2017



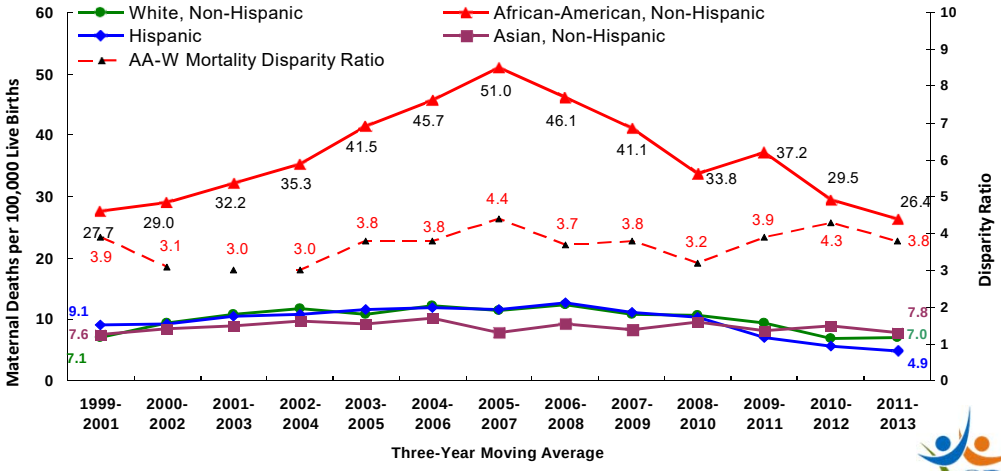
SOURCE: California Birth Statistical Master Files, 2000-2017. Figure includes California resident live births; White, Asian, and Black exclude Hispanic ethnicity.

Maternal Mortality Ratios, California and United States, 1999-2013



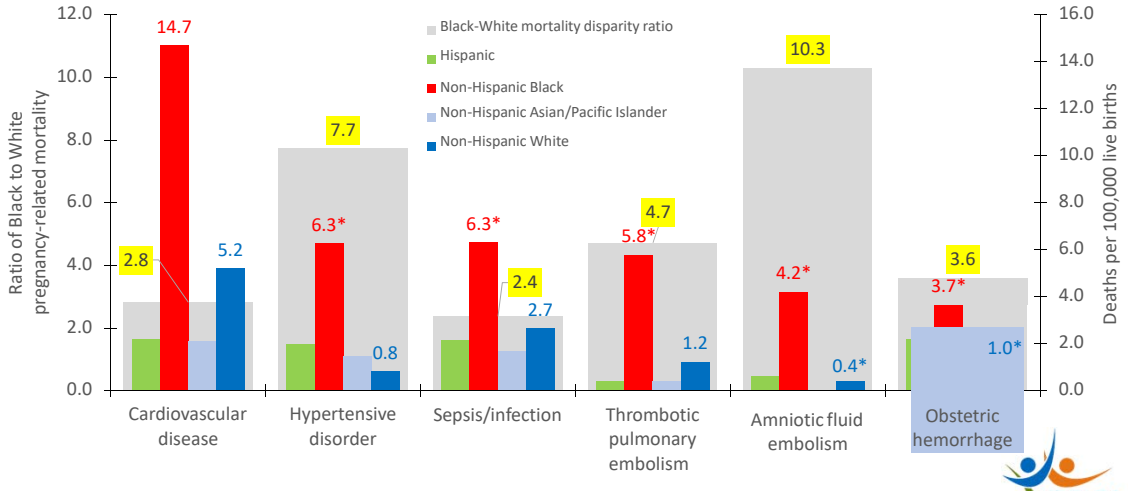
SOURCE: State of California, Department of Public Health, California Birth and Death Statistical Master Files, 1999-2013. Maternal mortality for California (deaths ≤ 42 days postpartum) was calculated using ICD-10 cause of death classification (codes A34, O00-O95,O98-O99). United States data and HP2020 Objective use the same codes. U.S. maternal mortality data is published by the National Center for Health Statistics (NCHS) through 2007 only. U.S. maternal mortality rates from 2008 through 2013 were calculated using CDC Wonder Online Database, accessed at http://wonder.cdc.gov on March 11, 2015. Produced by California Department of Public Health, Center for Family Health, Maternal, Child and Adolescent Health Division, May, 2015.

Maternal Mortality Ratios by Race/Ethnicity California Residents, 1999-2013



SOURCE: State of California, Department of Public Health, California Birth and Death Statistical Master Files, 1999-2013. Maternal mortality rates for California (deaths ≤ 42 days postpartum) were calculated using ICD-10 cause of death classification (codes A34, O00-O95,O98-O99). Produced by California Department of Public Health, Center for Family Health, Maternal, Child and Adolescent Health Division, May, 2015.

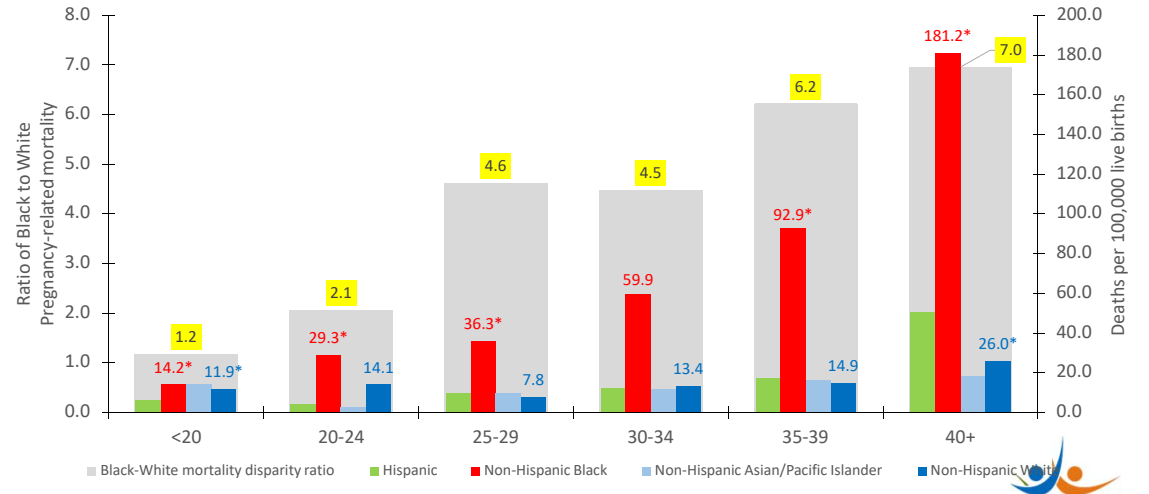
Pregnancy-related mortality by race/ethnicity and cause of death, 2008-2014



Pregnancy-related mortality ratio = Number of pregnancy-related deaths / 100,000 live births

SOURCE: California Department of Public Health, Birth and Death Statistical Master Files, 2008-2014. Pregnancy-related deaths (deaths ≤ 365 days postpartum) were determined by review committee. *** Ratio maybe unreliable, numerator<20 deaths.**

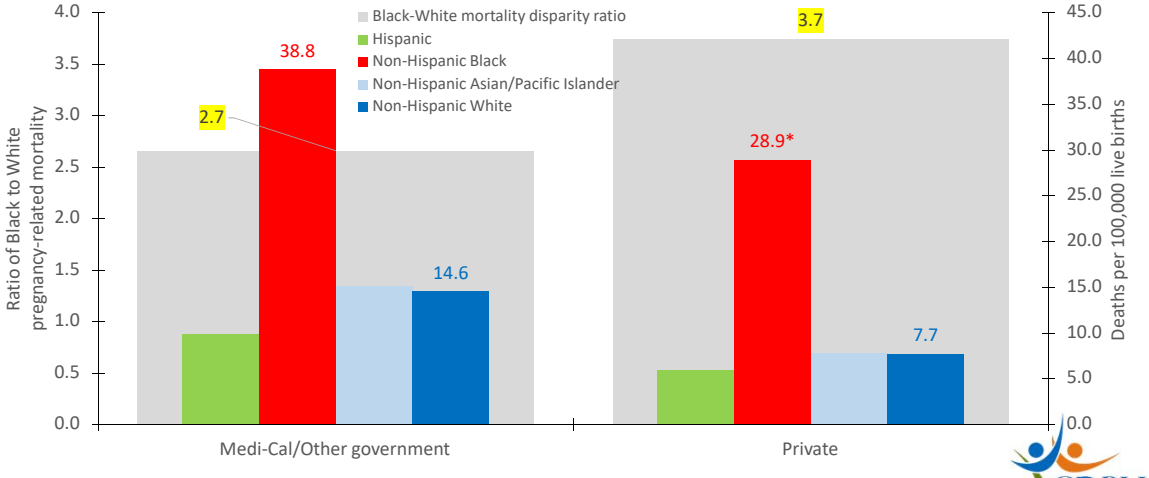
Pregnancy-related Mortality Ratios by Race/Ethnicity and Age California Residents, 2008-2014



Pregnancy-related mortality ratio = Number of pregnancy-related deaths / 100,000 live births

SOURCE: California Department of Public Health, Birth and Death Statistical Master Files, 2008-2014. Pregnancy-related deaths (deaths ≤ 365 days postpartum) were determined by review committee. *** Ratio may be unreliable, numerator<20 deaths.**

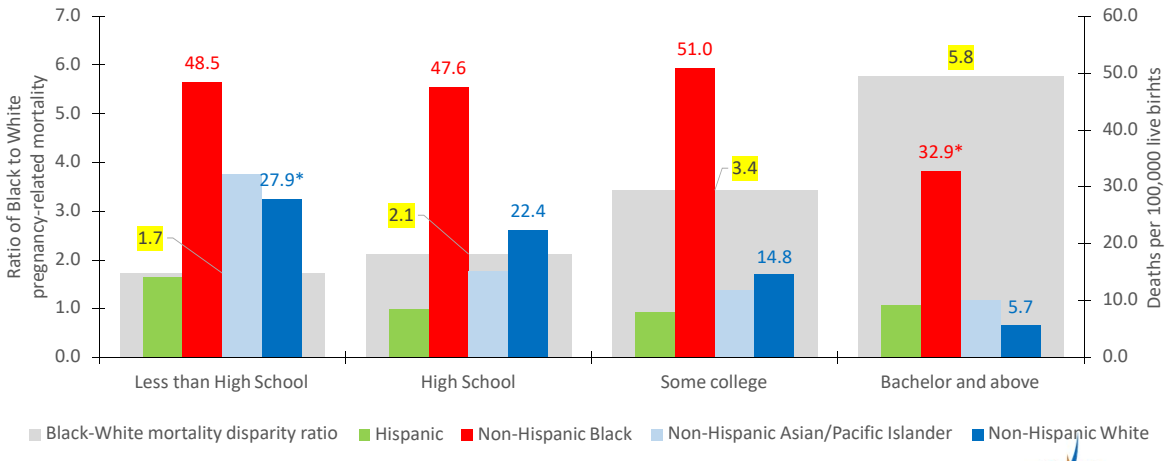
Pregnancy-related Mortality Ratios by Race/Ethnicity and Payer, California Residents, 2008-2014



Pregnancy-related mortality ratio = Number of pregnancy-related deaths / 100,000 live births

SOURCE: California Department of Public Health, Birth and Death Statistical Master Files, 2008-2014. Pregnancy-related deaths (deaths ≤ 365 days postpartum) were determined by review committee. *** Ratio maybe unreliable, numerator<20 deaths.**

Pregnancy-related Mortality Ratios by Race/Ethnicity and Education, California Residents, 2008-2014



Pregnancy-related mortality ratio = Number of pregnancy-related deaths / 100,000 live births

SOURCE: California Department of Public Health, Birth and Death Statistical Master Files, 2008-2014. Pregnancy-related deaths (deaths ≤ 365 days postpartum) were determined by review committee. * Ratio maybe unreliable, numerator<20 deaths.

CA-PAMR Project Team

- **California Department of Public Health**
  - Project Home, Funder, Public Health Authority
  - Vital records, epidemiology tools and resources
- **Public Health Institute**
  - Procure investigative reports
  - Abstract medical records
  - Data management and analysis
- **CA Maternity Quality Care Collaborative**
  - Committee management
  - Engage maternity care providers
  - Quality Improvement Interventions
- **Expert Review Committee**

In-depth Reviews of Obstetric/Medical Deaths in 2002-2007

- Identified pregnancy-related deaths more accurately vs. ICD-10 codes on death certificates (DC) only
  - *Only 77% of deaths correctly coded as obstetric deaths (O-codes) on death certificates*
- Revealed Cardiovascular Disease as leading cause of death
  - *Many CVD deaths occurred in late postpartum (> 42 days)*
- Confirmed racial disparities persist
  - *Deaths 3-4x higher among African-Americans*
- Uncovered possible contributing factors that led to pregnancy-related deaths
  - *41% of deaths had good to strong chance of preventability*
- Informed recommendations and translational activities
  - *Toolkits, learning collaboratives, regional care coordinators, provider education, stakeholder engagement, public education*

Quality Improvement Opportunities for Obstetric/Medical Deaths in 2002-2007

Common Themes

- Timely diagnosis and standardized, evidence-based management of specific clinical conditions
- Recognition and response to clinical triggers (i.e., warning signs) in clinical status
- Coordination of care issues
- Optimal resuscitation of pregnant women, and earlier consideration of cesarean birth during resuscitation
- Access to care, including timely referrals to, and the availability of, medical consultants or subspecialist care
- Maximizing the health of women before and during pregnancy, and postpartum

California Toolkits to Transform Maternity Care

NEW Toolkits

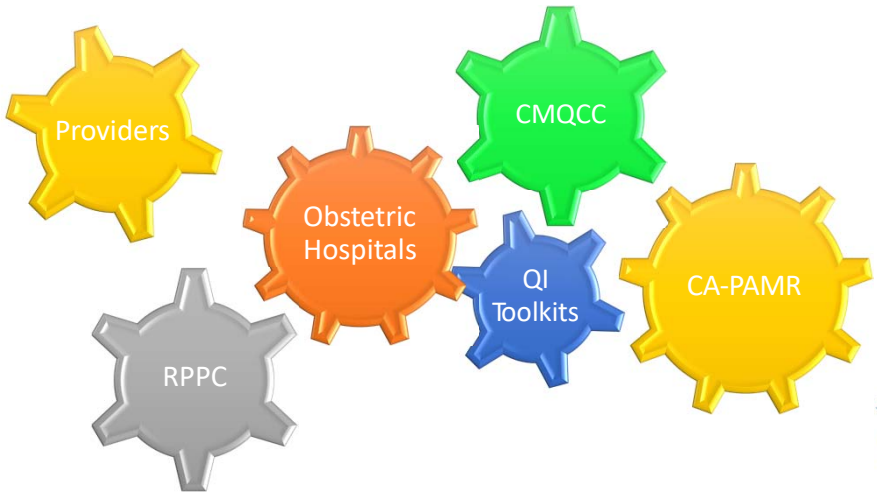
- Venous Thromboembolism* Toolkit (2018)
- Cardiovascular Disease Toolkit* (2017)

Other Toolkits

- Supporting Vaginal Birth Toolkit** (2016)
- OB Hemorrhage Toolkit (ver. 2.0, 2015)*
- Preeclampsia Toolkit (2014)*
- Ending Early Elective Deliveries Toolkit (2010)***

The Toolkit series were developed by CMQCC with funding provided by *California Department of Public Health, federal Title V MCH block grant funds; **the California Health Care Foundation; ***The March of Dimes

Multiple moving pieces to reduce MMR



Decline in California Maternal Mortality Ratios

Decline likely reflects the collective impact of many activities, including:

- CDPH surveillance and reporting bring heightened awareness to the issue
- Findings from case review inform quality improvement toolkits full of resources to assist hospitals and providers
- CMQCC provides consultation, learning collaboratives and maternal data center for more real time feedback
- Regional Perinatal Programs of California provide additional support
- Strong engagement of maternity care providers and hospitals to do QI projects in consultation with the California Maternal Quality Care Collaborative (CMQCC)
- Heightened attention and activity by
  - Federal public health partners: CDC Division of Reproductive Health, HRSA Maternal and Child Health Bureau
  - Medical professional organizations: ACOG, The Joint Commission, SMFM, AWHONN
  - Advocacy organizations (MOD, Moms 2020) and media

CA-PAMR Resources

Website:

https://www.cdph.ca.gov/Programs/CFH/DMCAH/Pages/PAMR.aspx

Or search:

"California Pregnancy-Associated Mortality Review (CA-PAMR)"

Website contains:

- Project description, background and methods
- Key findings from latest review of obstetric deaths
- Links to **Reports** and **Toolkits**

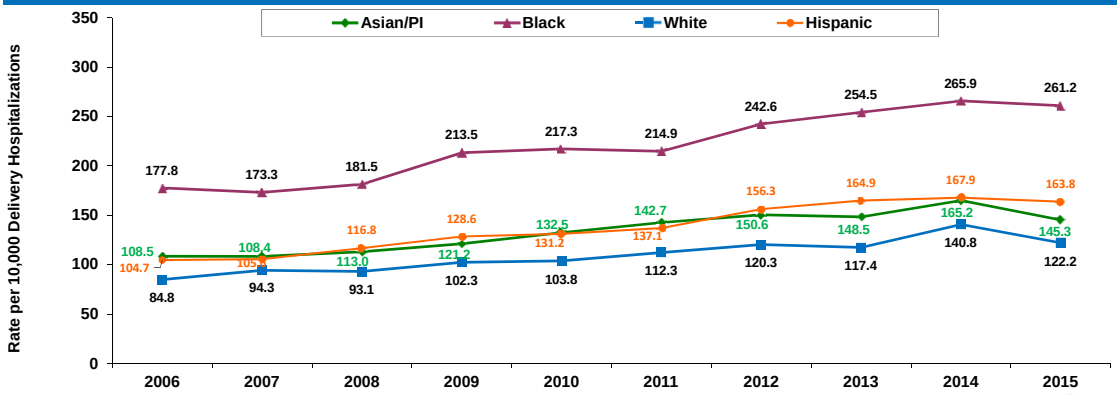
California Department of PublicHealth

"For Every Woman Who Dies In Childbirth In The U.S., 70 More Come Close

OURCE: Lost Mothers: Maternal Mortality in the U.S. (2018, May 10). *National Public Radio (NPR).*

Retrieved from https://www.npr.org/series/543928389/lost-mothers

Severe Maternal Morbidity among Resident California Women Hospitalized for Labor and Delivery: 2006-2015



Numerator: number of women with a severe maternal morbidity diagnosis. Reference: Callaghan WM, Creanga AA, Kuklina EV. Severe Maternal Morbidity Among Delivery and Postpartum Hospitalizations in the United States. Obstet Gynecol. 2012 Nov;0:1-8.

Denominator: number of women with a labor/delivery diagnosis. Reference: Kuklina E.V., Whiteman M.K. & Hillis S.D., et al. (2008). An enhanced method for identifying obstetric deliveries. Matern Child Health J., 12(4):469-77.

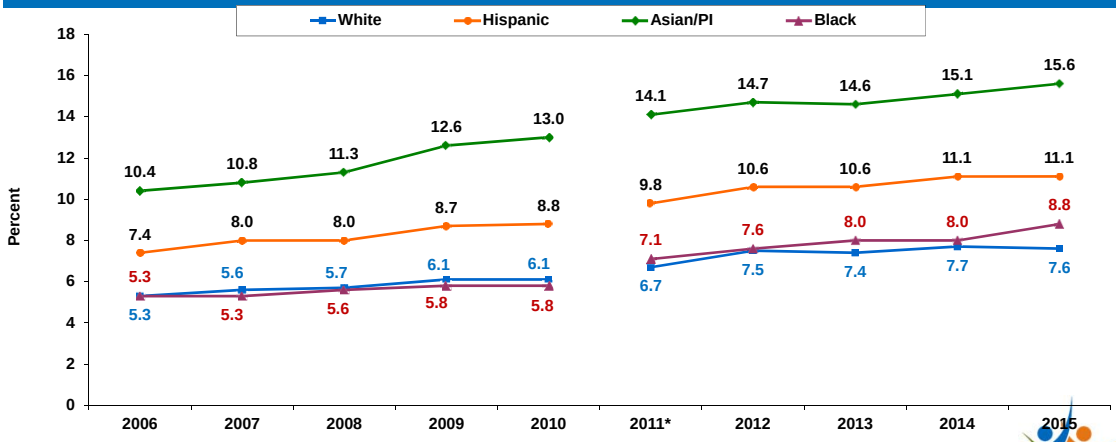
Data Source: 2006-2015 Patient Discharge Data, Office of Statewide Health Planning and Development

Notes: 2015 data are reported for January through September 2015 due to coding changes from ICD-9-CM to ICD-10-CM/PCS, which began 10/1/2015. Also, on January 1, 2015, OSHPD began requiring use an expanded set of codes for disposition of patient (field name = disp) that conforms to national standards as given by the National Uniform Billing Committee (NUBC).

Prepared by the Epidemiology, Surveillance and Federal Reporting, Maternal, Child and Adolescent Health Division, Center for Family Health

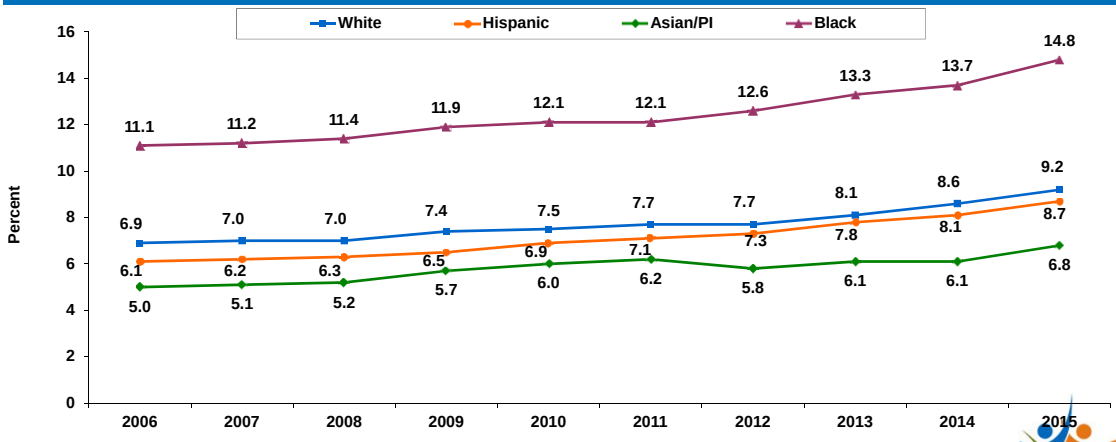
CDPH California Department of PublicHealth

Percent of Resident California Women by Race/Ethnicity Hospitalized for Labor and Delivery with a Diagnosis of Diabetes: 2006-2015



Numerator: number of women with a diagnosis of diabetes (ICD9-CM codes 648.8, 250, 648.0)
Denominator: number of women with a labor/delivery diagnosis†
*The recommendations for diagnosing GDM were revised starting January 2011.
†Kuklina E.V., Whiteman M.K. & Hillis S.D., et al. (2008). An enhanced method for identifying obstetric deliveries. Matern Child Health J., 12(4):469-77.
Hispanic includes all those who were of Hispanic ethnicity, regardless of race.
Data Source: 1998-2015 Patient Discharge Data, Office of Statewide Health Planning and Development
Prepared by: Center for Family Health / Maternal, Child and Adolescent Health Program / Epidemiology, Assessment and Program Development

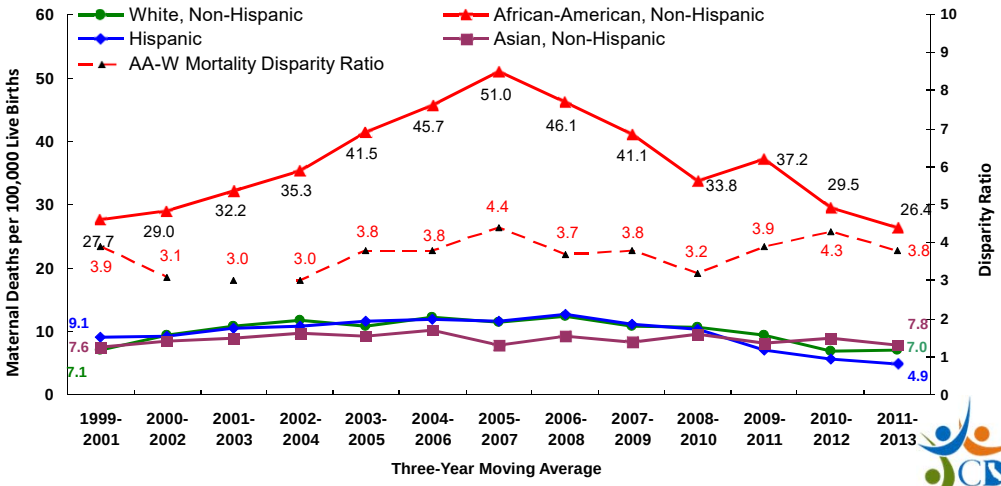
Percent of Resident California Women by Race/Ethnicity Hospitalized for Labor and Delivery with a Diagnosis of Hypertension: 2006-2015



Numerator: number of women with a diagnosis of hypertension (ICD9-CM codes 401, 642.0-642.7, 642.9)
Denominator: number of women with a labor/delivery diagnosis*
*Kuklina E.V., Whiteman M.K. & Hillis S.D., et al. (2008). An enhanced method for identifying obstetric deliveries. Matern Child Health J., 12(4):469-77.
Hispanic includes all those who were of Hispanic ethnicity, regardless of race.
Data Source: 2006-2015 Patient Discharge Data, Office of Statewide Health Planning and Development
Prepared by: Center for Family Health / Maternal, Child and Adolescent Health Program / Epidemiology, Assessment and Program Development

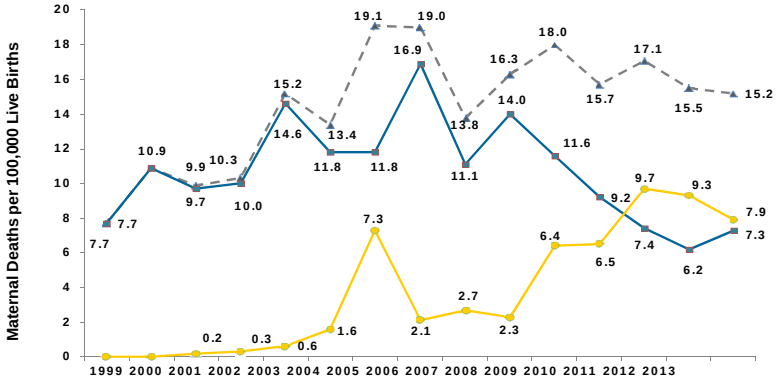
DRAFT

Maternal Mortality Ratios by Race/Ethnicity California Residents, 1999-2013



SOURCE: State of California, Department of Public Health, California Birth and Death Statistical Master Files, 1999-2013. Maternal mortality rates for California (deaths ≤ 42 days postpartum) were calculated using ICD-10 cause of death classification (codes A34, O00-O95,O98-O99). Produced by California Department of Public Health, Center for Family Health, Maternal, Child and Adolescent Health Division, May, 2015.

Maternal Mortality Ratios by Timing of Death California Residents, 1999-2013



SOURCE: State of California, Department of Public Health, California Birth and Death Statistical Master Files, 1999-2013. Maternal mortality for California 'early' mortality rate (deaths ≤ 42 days postpartum) was calculated using ICD-10 cause of death classification (codes A34, O00-O95,O98-O99). 'Late' mortality rate (43-365 days postpartum) was calculated with ICD-10 code O96. The total rate is the combination of all ICD-10 codes listed. Produced by California Department of Public Health, Center for Family Health, Maternal, Child and Adolescent Health Division, May, 2016.

Maternal Health Efforts

Continue surveillance efforts

- CA Pregnancy Associated Mortality Review (CMQCC and PHI)
- CA Maternal Morbidity Trends (UCLA)
- Maternal Infant Health Assessment (UCSFH)
- Teen Birth Rates

Maximize health prior to pregnancy

- Reduce smoking
- Improve fitness through increased activity and improved nutrition
- Promote healthy relationships
- Reduce teen birth rates
- ACE screens and referrals
- Address social determinants of health
- Decrease STDs
- Increase vaccination rates
- Diabetes prevention

Improve birth outcomes for moms

- Develop systems of regionalized maternity care (RPPC)
- Promote maternity care quality improvement (Toolkits and Sweet Success)
- Home visiting for vulnerable pregnant women
- Additional support for Black pregnant women (BIH and PEI)
- Adolescent Family Life Program
- Substance Use care

Address post partum needs of women

- Home Visiting Programs
- Post partum visits and interconception care
- Increase interbirth interval
- Breastfeeding support
- Screen for postpartum depression

How can the CMB help?

- Influence improved care by individual healthcare providers
  - Promote life course theory: maximize the health of girls and women of reproductive age
  - Ensure prevention care in pregnancy (oral health, vaccinations, mental health, ACE screening, substance abuse screening, depression screening)
  - Develop and evaluate Implicit bias training
  - Encourage referrals to WIC, social services, home visiting
  - Value based incentives based on perinatal outcomes
- Support advancement of systems of maternity healthcare
  - Support regionalized maternity care (disaster outreach, inter-hospital transport agreements)
  - Monitor quality of maternity care and support maternity QI efforts
  - Increase partnership between hospital and community (local birthing centers, doula care, transportation and childcare,