ALLIANCE FOR INNOVATION ON MATERNAL HEALTH AIM

CMQCC California Maternal Quality Care Collaborative

Perinatal Quality Collaboratives: State and National Successes

Supported by:
California Dept. of Public Health
California Health Care Foundation
Centers for Disease Control (CDC)
Merck for Mothers Project
Yellow Chair Foundation

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National Implementation Director, AIM
Clinical Professor of Obstetrics and Gynecology, Stanford University

Agenda

- Challenges of Maternal Mortality and Morbidity
- “Moving the Dial”--Keys for Success at Scale
- Special Value of PQCs and Networking
- Health Equity Considerations

Disclaimers

- Dr. Main has no conflicts of interest
- No brand name products will be discussed

Reduction of Maternal Mortality is one of the Greatest Public Health Success Stories of the Last Century

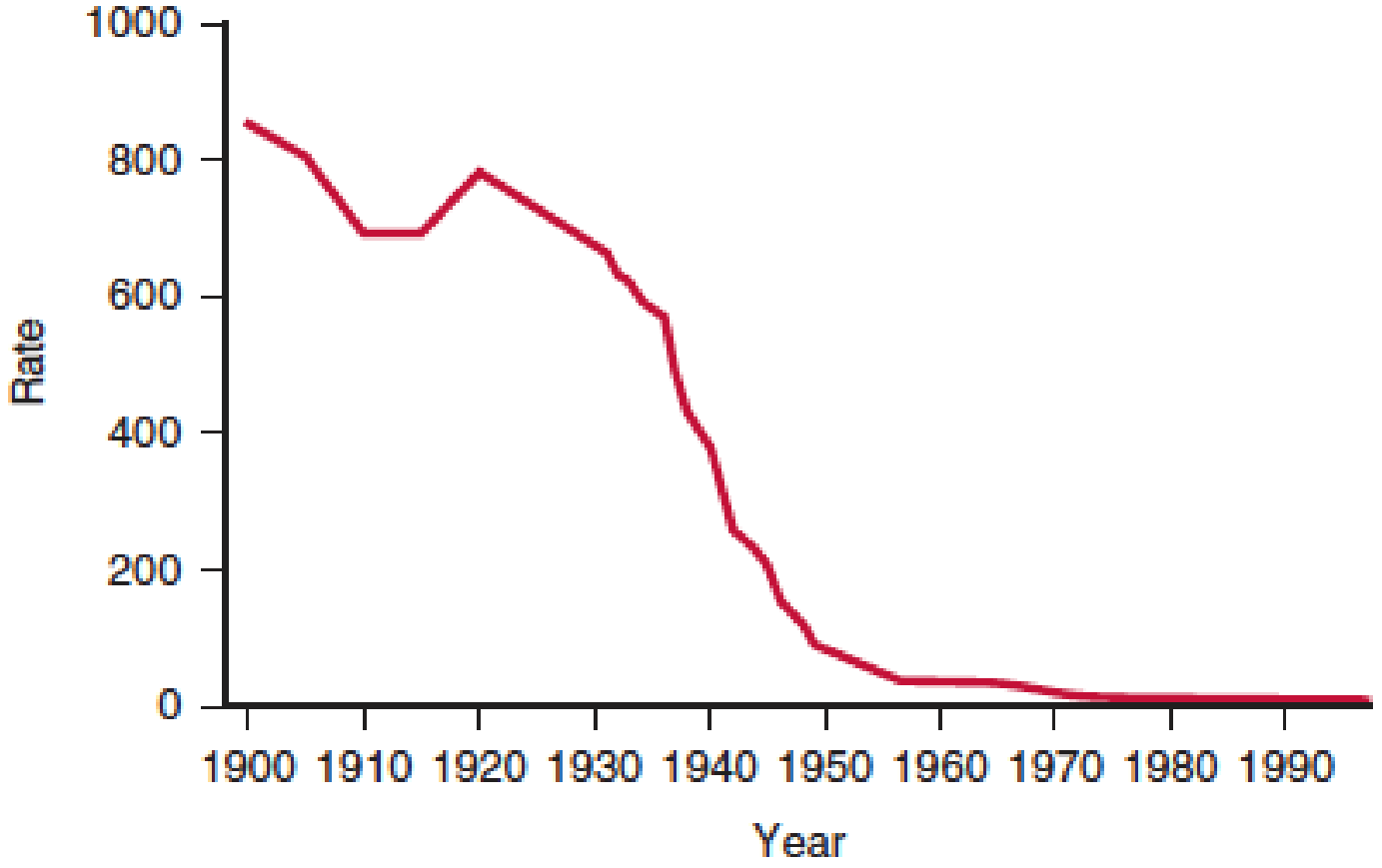
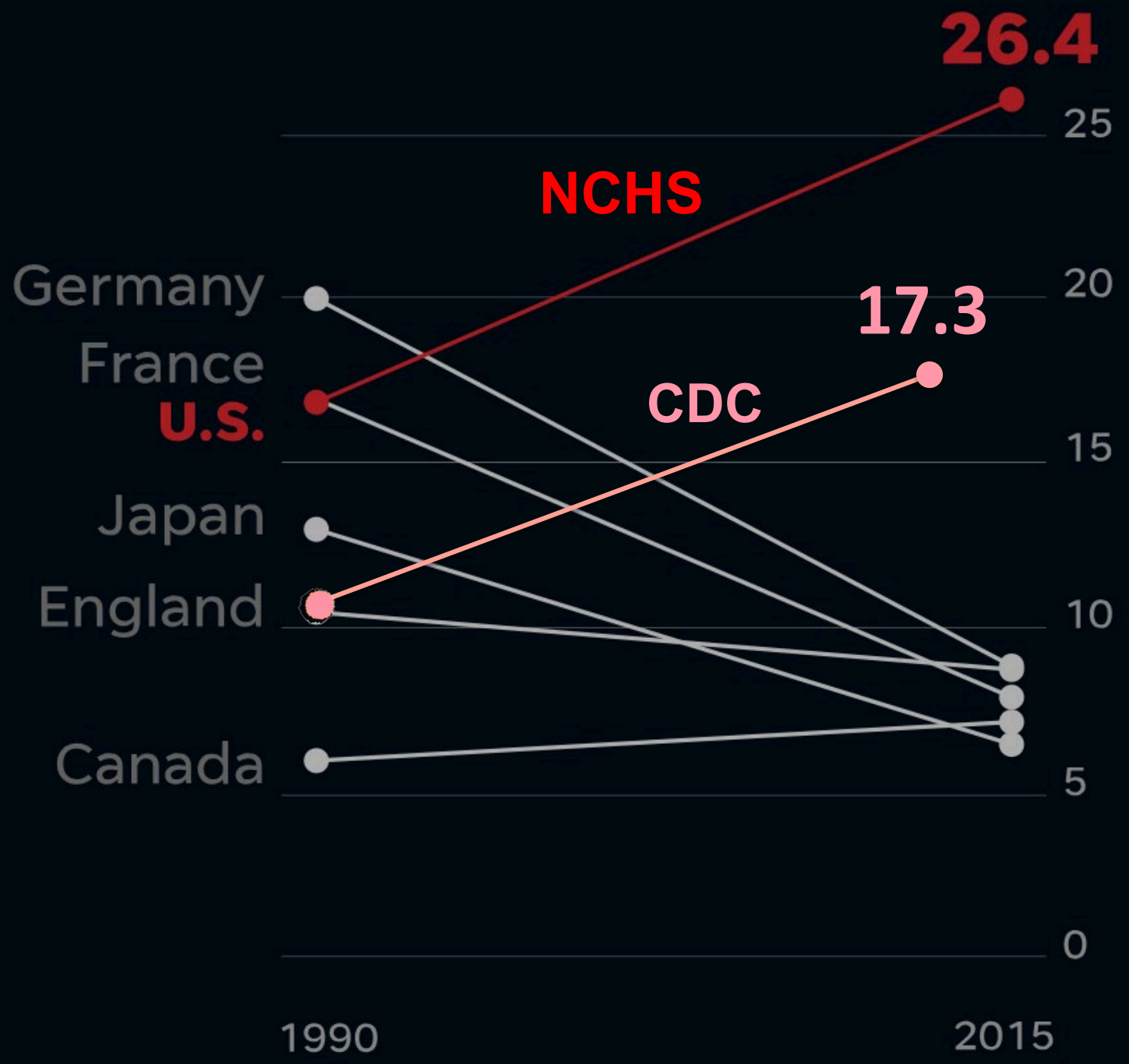


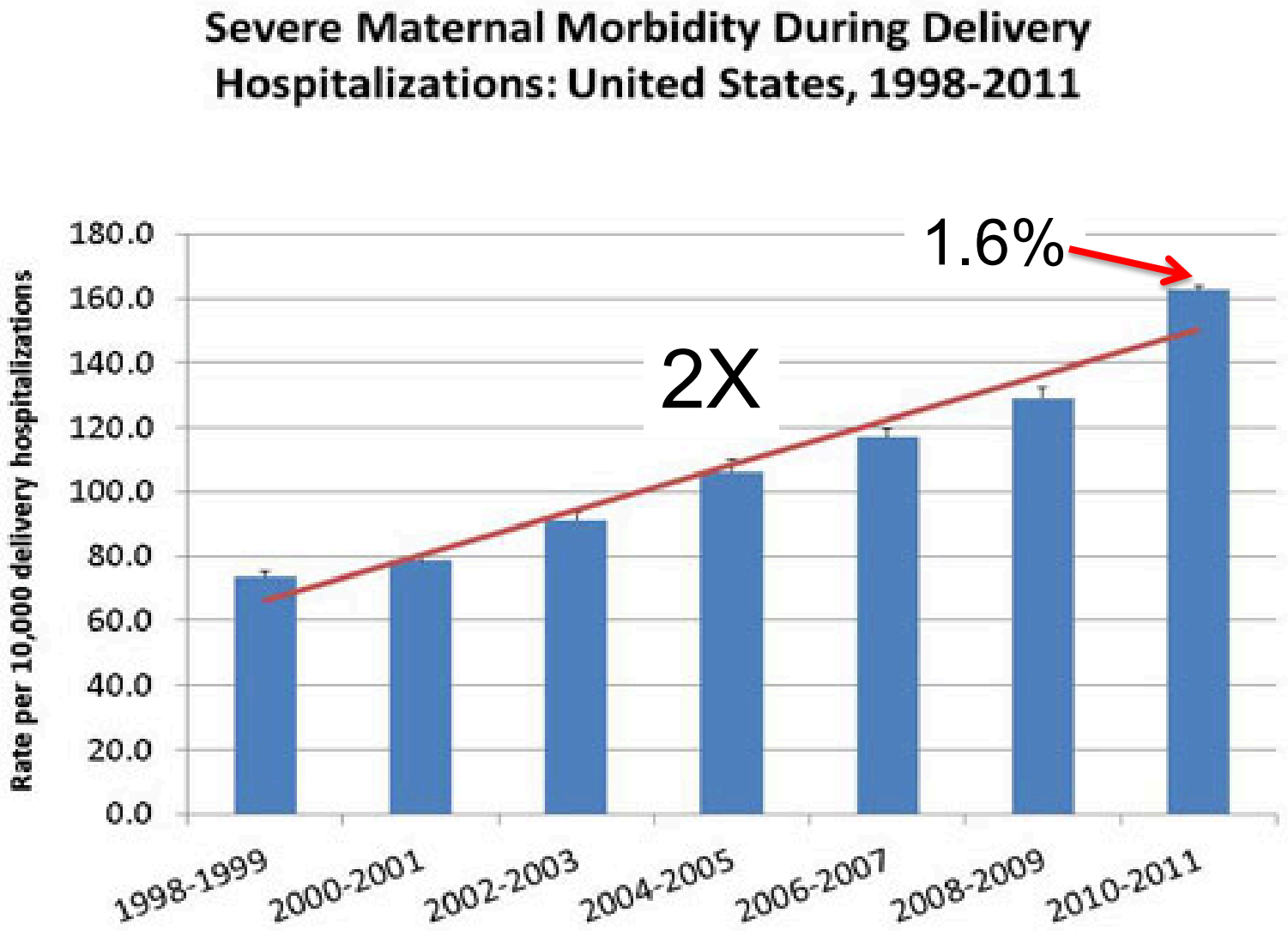
Figure 50-1 U.S. maternal mortality rate, 1900 to 1997. Rate is the number of deaths per 100,000 live births. *(From Centers for Disease Control and Prevention: Healthier mothers and babies,* MMWR Morb Mortal Wkly Rep *48:849–857, 1999.)*

In the last 15 years,
US has seen rises in:

Maternal Mortality:
Up 50-70%



Trends in Severe Maternal Morbidity in the United States: 1998-2011



Most recent US rates of SMM are 1.9-2.0%

cdc.gov

Search: severe maternal morbidity

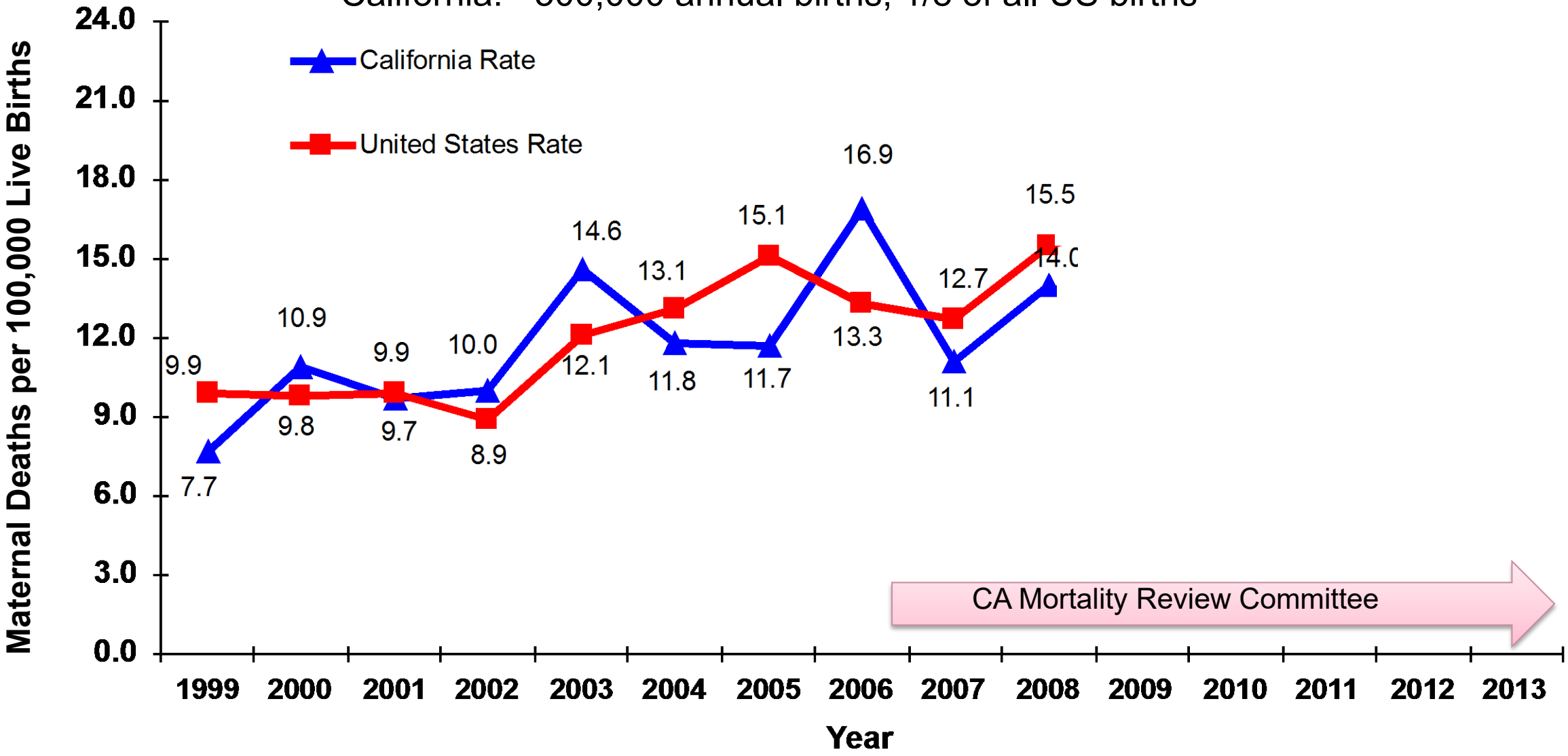
Maternal Mortality and Severe Morbidity

Approximate distributions, compiled from multiple studies

Cause	Mortality (1-2 per 10,000)
VTE	~10%
Infection	10-15%
Hemorrhage	10-15%
Preeclampsia	10-15%
Cardiac Disease	25-30%

Maternal Mortality Rate, California and United States; 1999-2013

California: ~500,000 annual births, 1/8 of all US births



Original Research

Obstetrics & Gynecology April 2015

Pregnancy-Related Mortality in California

Causes, Characteristics, and Improvement Opportunities

Elliott K. Main, MD, Christy L. McCain, MPH, Christine H. Morton, PhD, Susan Holtby, MPH, and Elizabeth S. Lawton, MHS

- Pregnancy-related mortality should not be considered a single clinical entity.
- The five leading causes exhibit different characteristics, degrees of preventability, and contributing factors, with the greatest improvement opportunities identified for hemorrhage and preeclampsia.

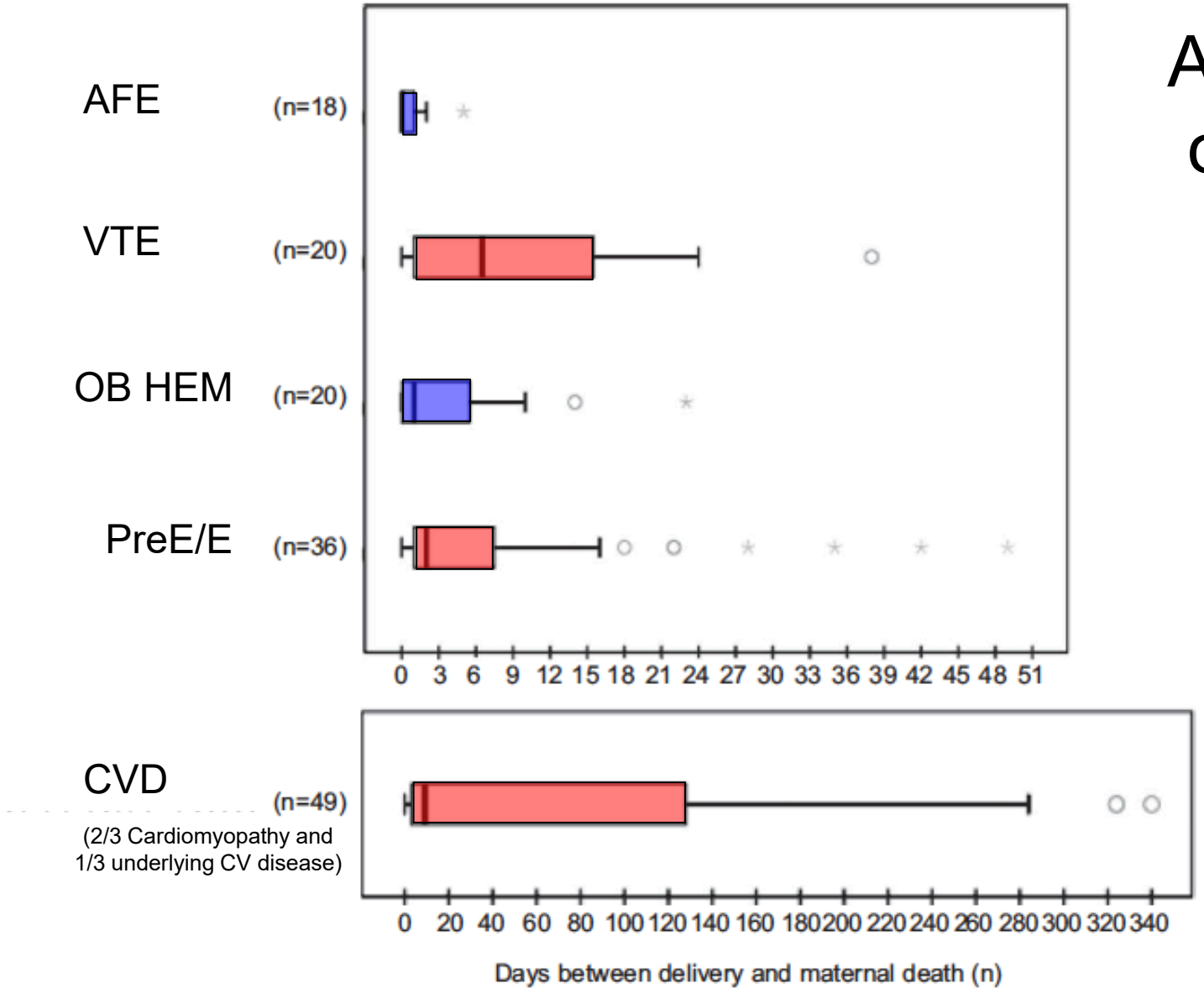
CDPH California Department of PublicHealth

Maternal, Child Adolescent Health CA Dept of Public Health

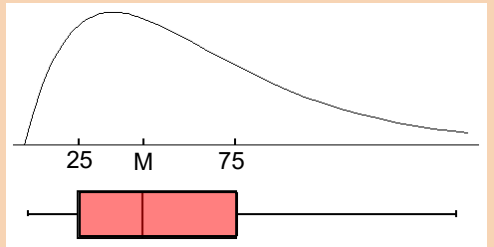
Public Health Institute

CMQCC California Maternal Quality Care Collaborative

Timing of Death Among Major Causes of Maternal Mortality



Box and Whiskers for a Skewed Distribution (Mean, 25th, 75%tiles)



Main et al. Pregnancy-Related Mortality in California. Obstet Gynecol 2015

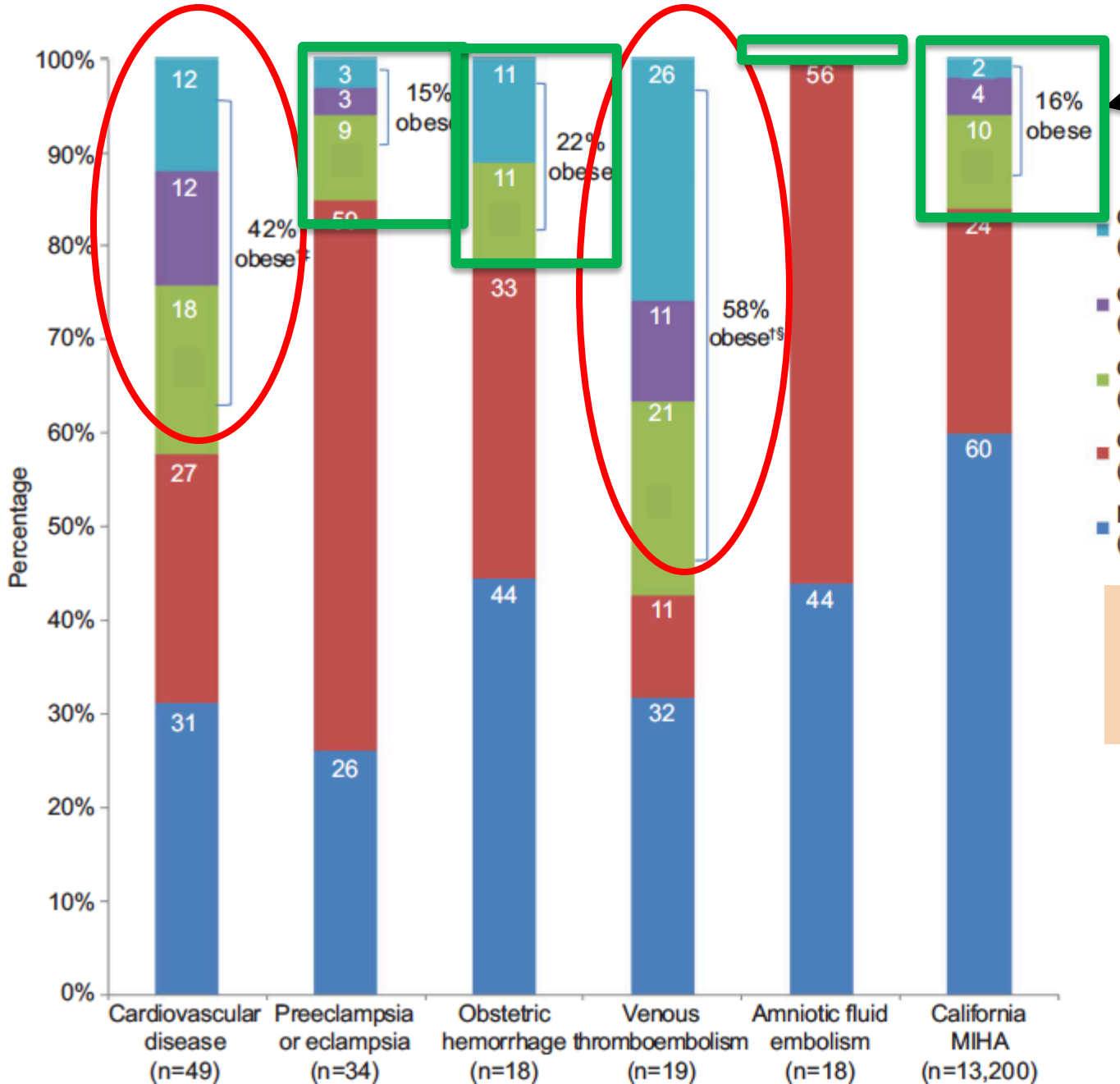
What states aren't doing to save new mothers' lives

The U.S. maternal death rate is among the highest in the developed world. Eighteen states haven't studied these deaths and others tend to blame moms.

Laura Ungar, USA TODAY
2:19 p.m. PDT Sep. 20, 2018

Pre-pregnancy BMI Among Major Causes of Death

CMQCC



All women giving birth in CA (2002-2005)

- Obese III (BMI ≥40.0)
- Obese II (BMI 35.0–39.9)
- Obese I (BMI 30.0–34.9)
- Overweight (BMI 25.0–29.9)
- Normal and underweight (BMI <25.0)

Only two causes had high rates of obesity

Main et al. Pregnancy-Related Mortality in California. Obstet Gynecol 2015

Assessments of Preventability

Cause of Death	North Carolina "Preventable" (CDC)	California "Good or strong chance to alter the outcome"	United Kingdom "Substandard care that had a major contribution"
Hemorrhage	93%	70%	44%
Preeclampsia	60%	60%	64%
Sepsis / Infection	43%	50%	46%
DVT / VTE	17%	50%	33%
Cardiomyopathy	22%	29%	25%
AFE	0%	0%	15%

Key Provider QI Opportunities: Hemorrhage and Preeclampsia

- California Pregnancy Associated Mortality Reviews
  - Missed triggers/risk factors: abnormal vital signs, pain, altered mental [illegible] patients
  - Underutilizatio[illegible]nts—did not have a plan!
  - Difficulties getting physician to the bedside
  - "Location of care" issues involving Postpartum, ED and PACU
- University of Illinois Regional Perinatal Network
  - Failure to ident[illegible]
  - Incomplete or i[illegible]

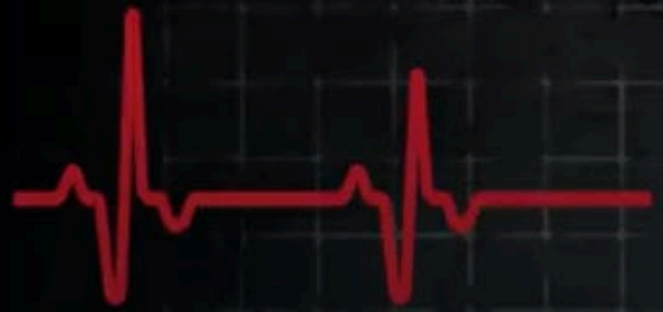
Present in >95% of cases

Present in >90% of cases

CDPH/CMQCC/PHI. The California Pregnancy-Associated Mortality Review (CA-PAMR): Report from 2002 and 2003 Maternal Death Reviews. 2011 (available at: CMQCC.org)
Geller SE etal. The continuum of maternal morbidity and mortality: Factors associated with severity. Am J Obstet Gynecol 2004; 191: 939-44.

Obstetric Hemorrhage and Preeclampsia: Summary

- Most common **preventable** causes of maternal mortality
- Far and away the most common causes of Severe Maternal Morbidity
- High rates of provider "quality improvement opportunities"



Hospitals know how to protect mothers. They just aren't doing it.

Alison Young, USA TODAY
1:54 p.m. PDT July 27, 2018

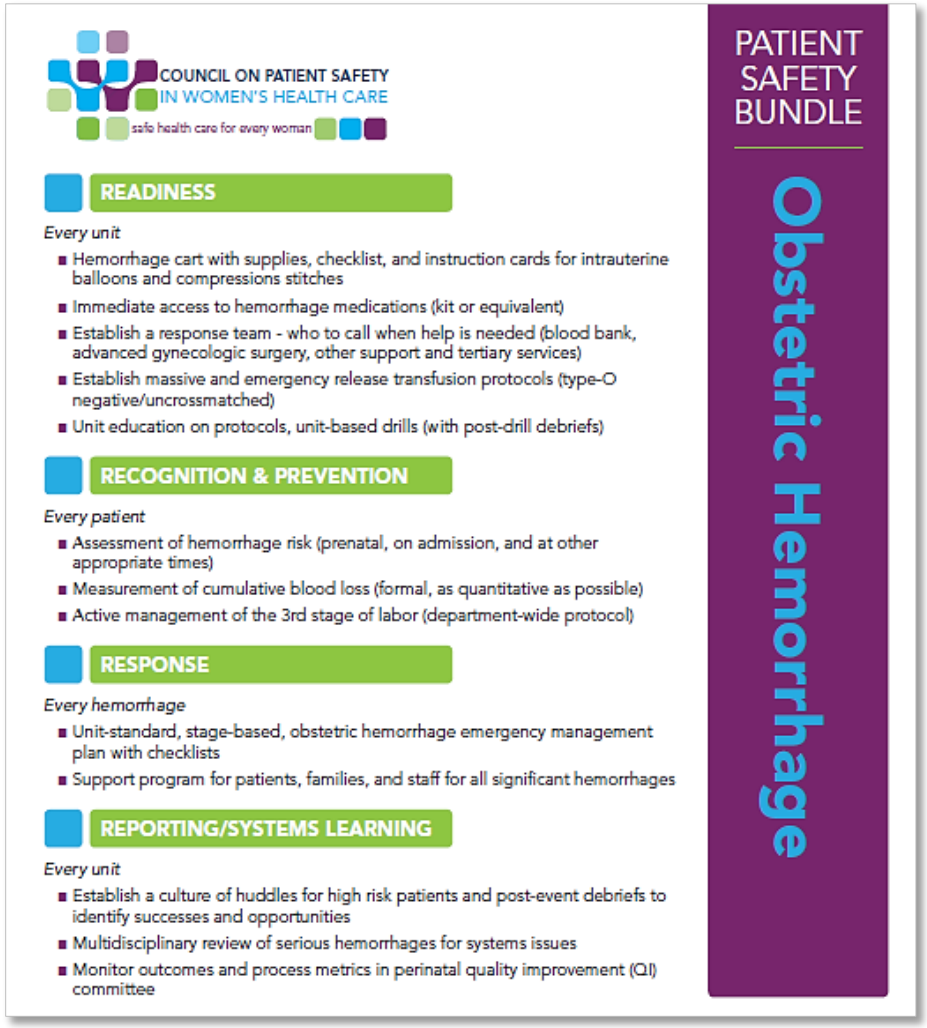
Maternal Safety Bundles

What are they?

- "Checklist" of items and practices for every birthing site
- Not a national protocol !!
- Facilities will modify content based on local resources

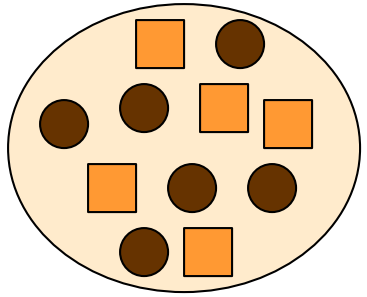
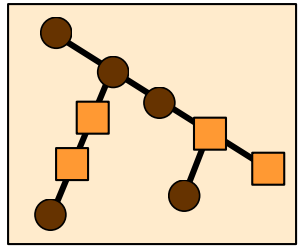
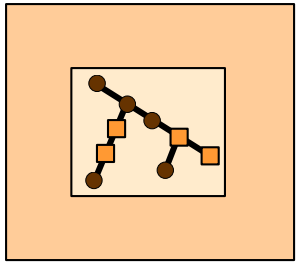
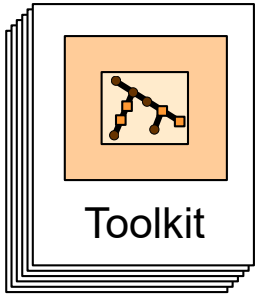
Uniform Structure:

- **R**eadiness
  - Every unit—prepare and educate
- **R**ecognition & Prevention
  - Every patient—before event
- **R**esponse
  - Every Event—team approach
- **R**eporting/Systems Learning
  - Every unit—systems improvement



Available (with resource links) at:
safehealthcareforeverywoman.org

Improvement Tools: What are the Differences?

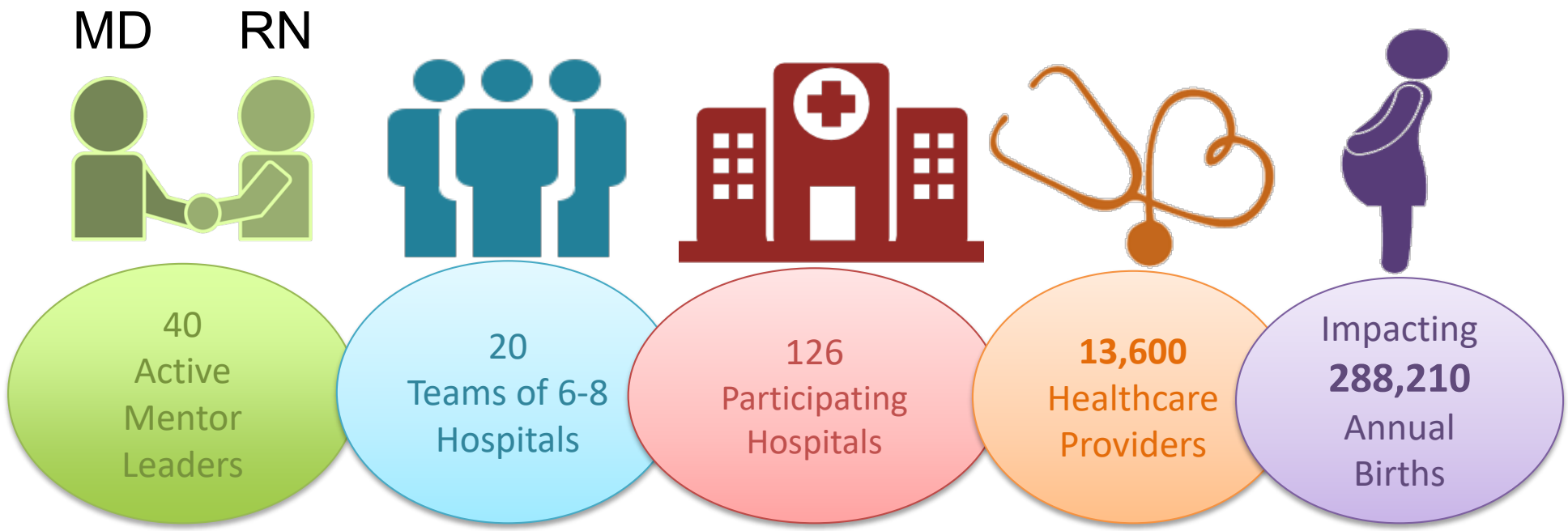
Medications/ Procedures	Protocol/ Guideline	Safety Bundle	QI Toolkit
			
"Soup"	"Directions"	"Support Services"	"How-To Guide"
● Meds: Oxy, Ergo, Prost, TXA, Blood ■ Procs: D&C, Balloon, B-Lynch, IR, NASG, Hyst	A start, but not nearly enough to lead change by itself	1. **Make it easy** Hem Cart, Order sets, Posters 2. **Communications** Risk Assess, QBL, Situation Awareness 3. **Teamwork** Drills, Broad Engage. 4. **System Learning** Debriefs, Case Reviews	Implementation resources, advice, examples

Supported by Merck for Mothers

CMQCC

QI Implementation Model

Modified IHI Breakthrough Series Learning Collaborative with addition of Mentors



CMQCC
California Maternal Quality Care Collaborative

GOAL: *is to ensure that 100% of hospitals with maternity services in California are ready to respond to the two most common obstetric emergencies by implementing patient safety bundles for postpartum hemorrhage and preeclampsia.*

Reduction in Severe Maternal Morbidity From HEM With a Large (99) Hospital Quality Collaborative (>300,000 patients)

California Hospitals with CMQCC Rapid-Cycle Maternal Data Center	Hospitals (N)	**Baseline SMM-HEM Rate (per 100 HEM cases)**	**Post Intervention SMM-HEM Rate (per 100 HEM cases)**	**Percent Reduction in SMM-HEM**	Significance (p value)
Hospitals in CMQCC CPMS Collaborative*	99	**22.7**	**18.0**	**20.8%**	<0.0001
---Without Prior HEM Collaborative Experience*	74	**22.7**	**19.2**	**15.4%**	<0.0001
---With Prior HEM Collaborative Experience*	25	**22.7**	**16.2**	**28.6%**	<0.0001
Comparison Group: Hospitals not in Collaborative and no prior CMQCC HEM Collaborative Experience	48	**28.6**	**28.2**	**1.2%**	0.7713

Main EK, Cape V, Abreo A, Vasher J, Woods A, Carpenter A, Gould JB. Reduction of severe maternal morbidity from hemorrhage using a state perinatal quality collaborative. Am J Obstet Gynecol. March 2017

CA-PAMR Final Cause of Death Among Preeclampsia Cases, (n=25)

Final Cause of Death	Number	%	Rate/100,000
Stroke	16	64.0%	1.0
Hemorrhagic	*14*	*(87.5%)*	
Thrombotic	*2*	*(12.5%)*	
Hepatic (liver) Failure	4	16.0%	.25
Cardiac Failure	2	8.0%	
Hemorrhage/DIC	1	4.0%	
Multi-organ failure	1	4.0%	
ARDS	1	4.0%	

Preventing Stroke from Preeclampsia

Blood Pressure Comparisons: Baseline and Pre-stroke

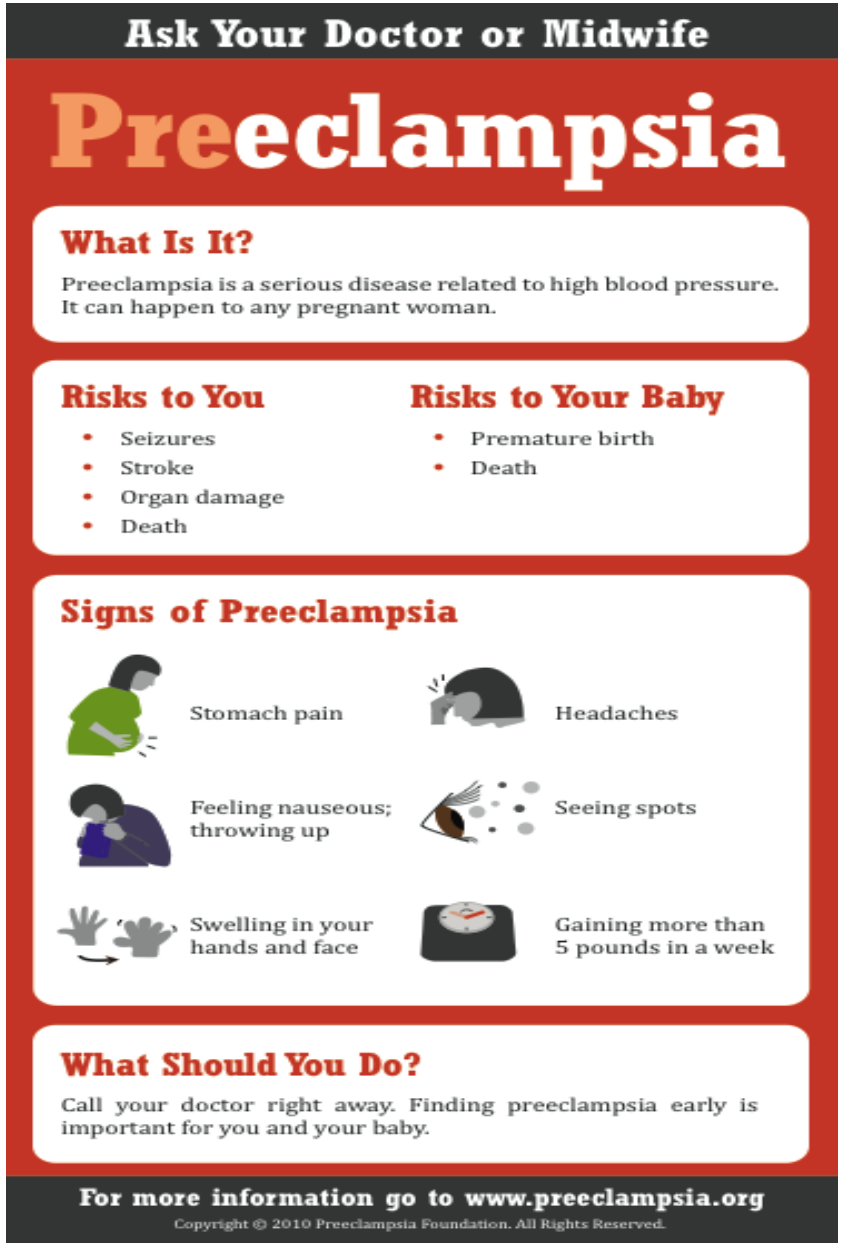
Measure	Pregnancy Baseline (mm Hg)	Pre-stroke (mm Hg)
Mean systolic BP	110.9 ± 10.7 (n=25)	175.4 ± 9.7 (n=24)
Systolic BP range	90-136	159-198
Systolic BP % ≥ 160	0	95.8 (n=27/28)
Mean diastolic BP	67.4 ± 6.5 (n=25)	98.0 ± 9.0 (n=24)
Diastolic BP range	58-80	81-113
Diastolic BP % ≥ 110	0	12.5 (n=3)
Diastolic BP 5 ≥ 105	0	20.8 (n=5)

Adapted from Martin JN, Thigpen BD, Moore RC, Rose CH, Cushman J, May. Stroke and Severe Preeclampsia and Eclampsia: A Paradigm Shift Focusing on Systolic Blood Pressure, OG 2005;105-246.

“Treat the Damn Blood Pressure!”

Controlling blood pressure
is the key intervention
to prevent deaths due to stroke
in women with preeclampsia.

Over the last decade, the UK has focused QI efforts on aggressive treatment of both systolic and diastolic blood pressure and has demonstrated a reduction in deaths.



1. Discharge Education

   This and many other patient education materials in English and Spanish can be ordered from www.preeclampsia.org/market-place

2. Early PP Monitoring and Follow-up

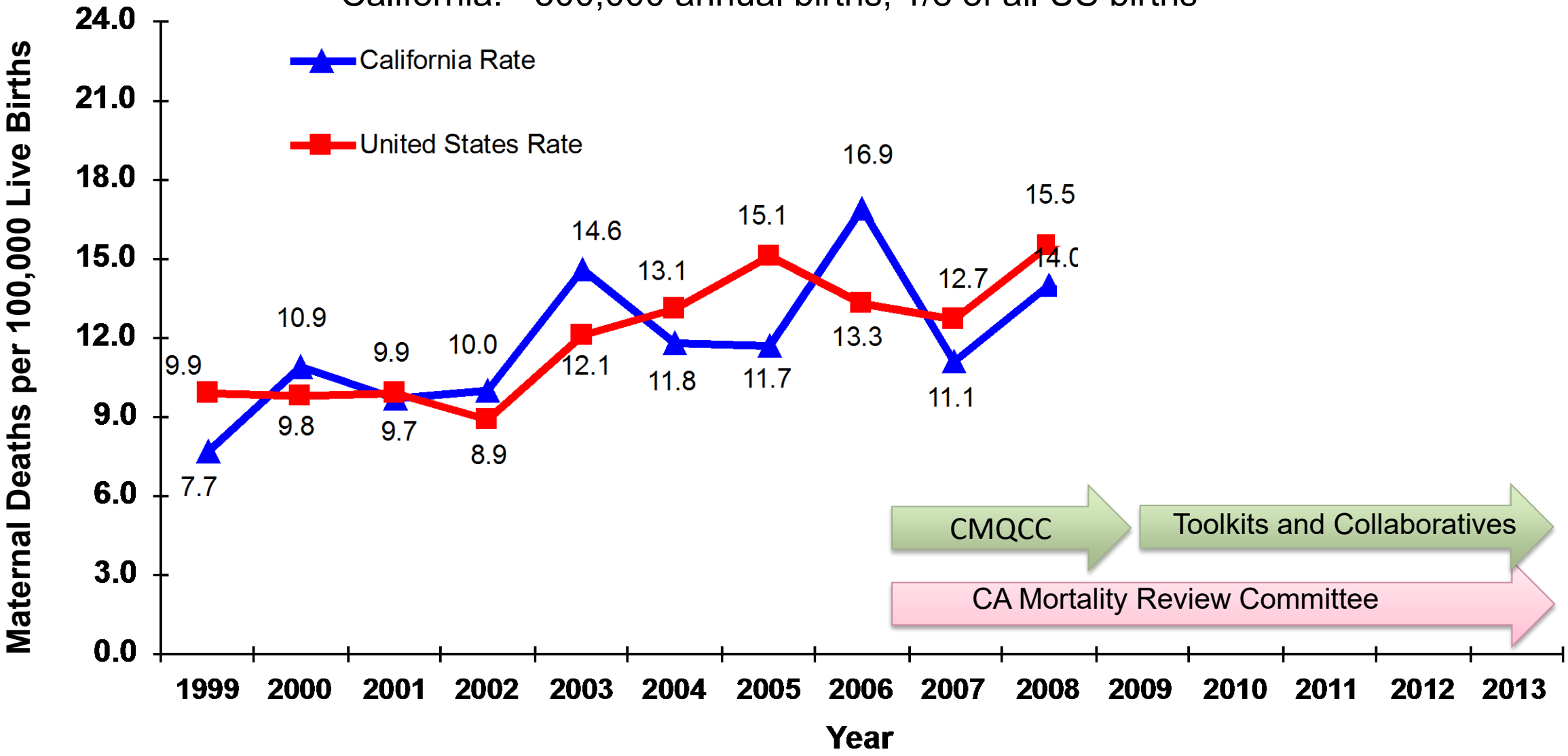
3. Listen to the patient!!

Preeclampsia Collaborative Success

- **Dignity Health: Early treatment of severe HTN decreases SMM and eclampsia (Shields, *AJOG* 2017)**
  - Adoption of CMQCC toolkit at 23 hospitals
  - Focused on early recognition and treatment of sBP, MgS04, PP follow up
  - Eclampsia decreased by 43%, SMM decreased by 29%
  - Intensive monitoring of HTN treatment metrics necessary to cause change (in practice and outcome)
- **Illinois (ILPQC): Treatment of Severe Hypertension**
  - 102 Participating hospitals:
  - Timely treatment (<60min) rose from 14% to 71%
  - SMM among HTN patients fell from 15% to 9% (42% fall)

Maternal Mortality Rate, California and United States; 1999-2013

California: ~500,000 annual births, 1/8 of all US births



Key Steps for Improving Care “At Scale”

- Linking public health surveillance to actions
- Mobilizing a broad range of public and private partners
- Developing a rapid-cycle Maternal Data Center to support and sustain QI projects
- Implementing a series of data-driven large-scale quality improvement projects

Main etal: Health Affairs 2018; 37:1484-93

CMQCC's Key Stakeholders/ Partners

State Agencies

- CA Department of Public Health, MCAH
- Regional Perinatal Programs of California (RPPC)
- DHCS: Medi-Cal
- Office of Vital Records
- Office of Statewide Health Planning and Development (OSHPD)
- Covered California

Membership Associations

- Hospital Quality Institute (HQI)/ California Hospital Association (CHA)
- Pacific Business Group on Health (PBGH)
- Integrated Healthcare Association (IHA)

Key Medical and Nursing Leaders

- UC, Kaiser (N&S), Sutter, Sharp, Dignity Health, Scripps, Providence, Public hospitals

Professional Groups (California sections of national organizations)

- American College of Obstetrics and Gynecology (ACOG)
- Association of Women's Health, Obstetric and Neonatal Nurses (AWHONN)
- American College of Nurse Midwives (ACNM)
- American Academy of Family Physicians (AAFP)

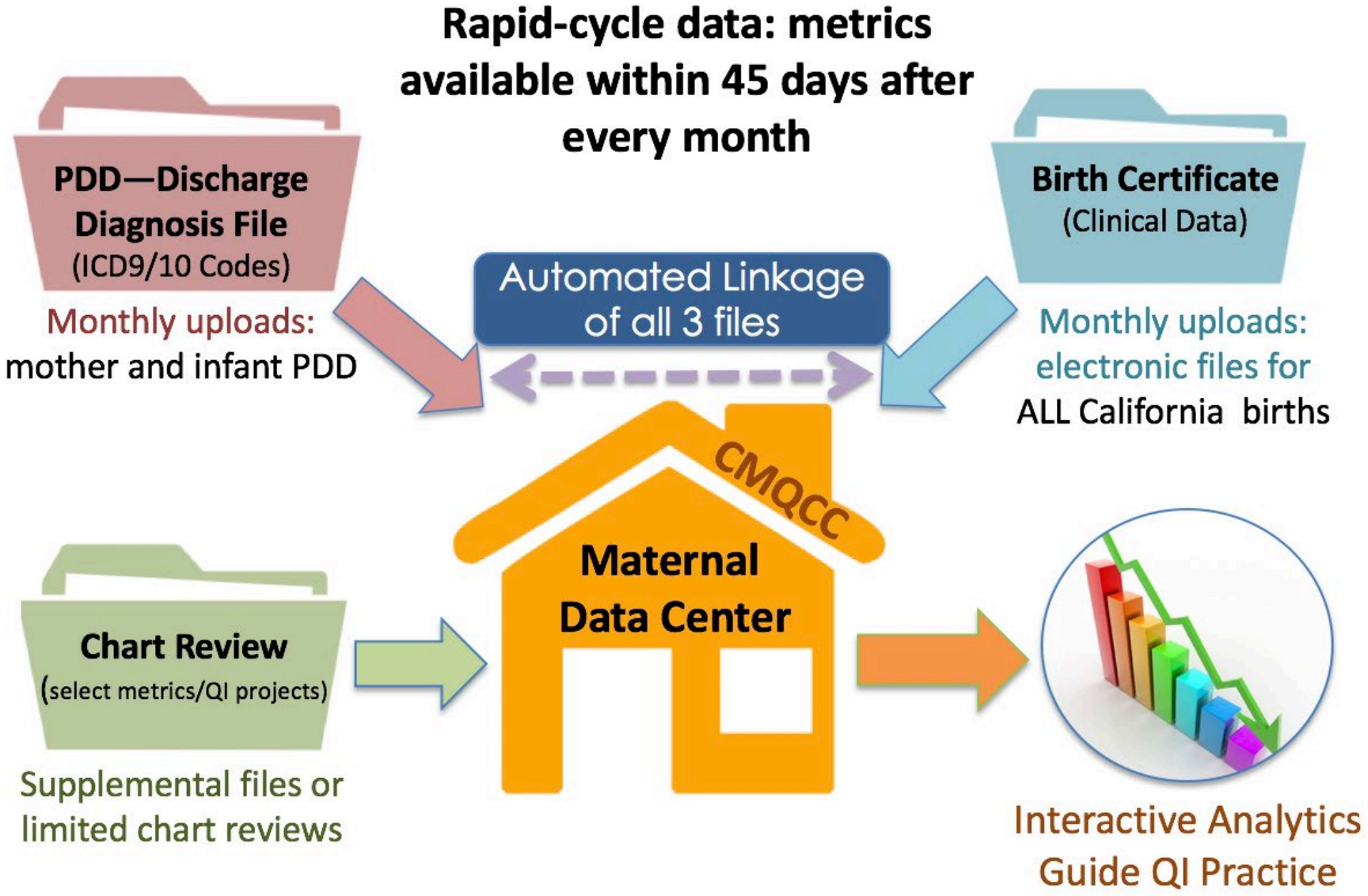
Public and Consumer Groups

- Consumers' Union
- March of Dimes (MOD)
- California HealthCare Foundation (CHCF)
- Cal Hospital Compare
- Amniotic Fluid Embolism Foundation

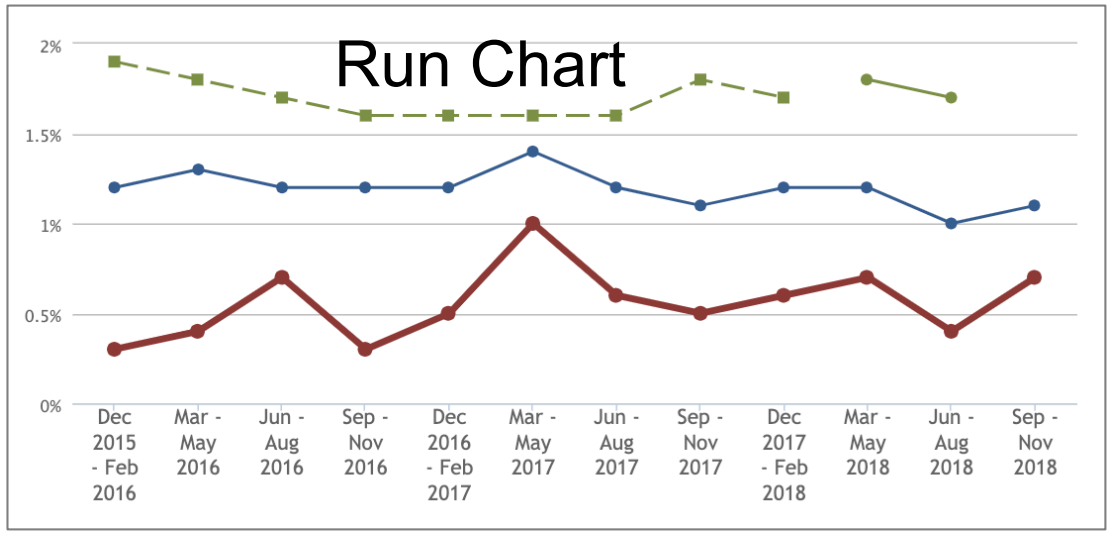
Health Plans

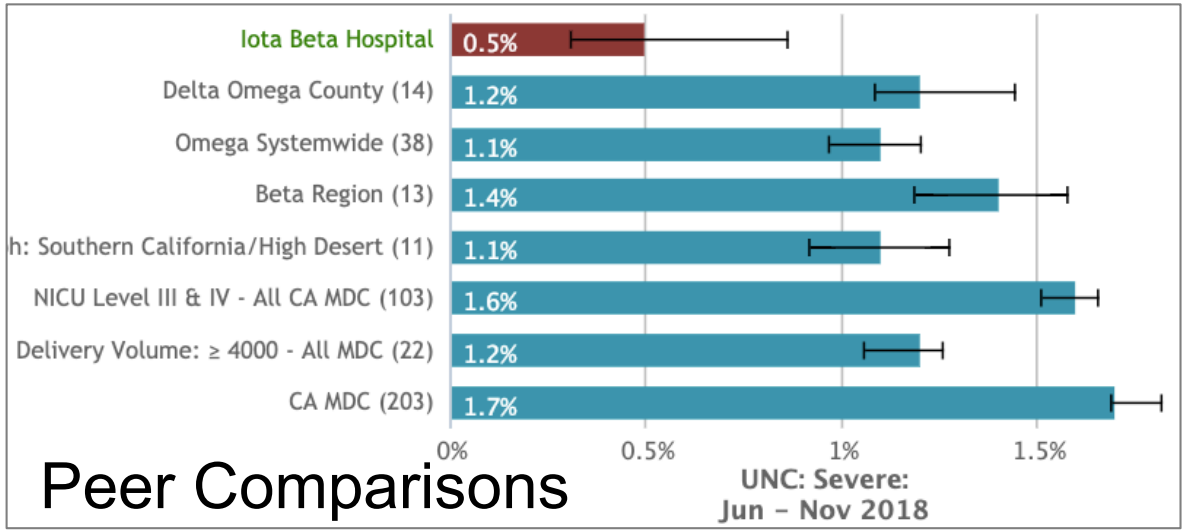
- Commercial and Managed Medi-Cal Plans

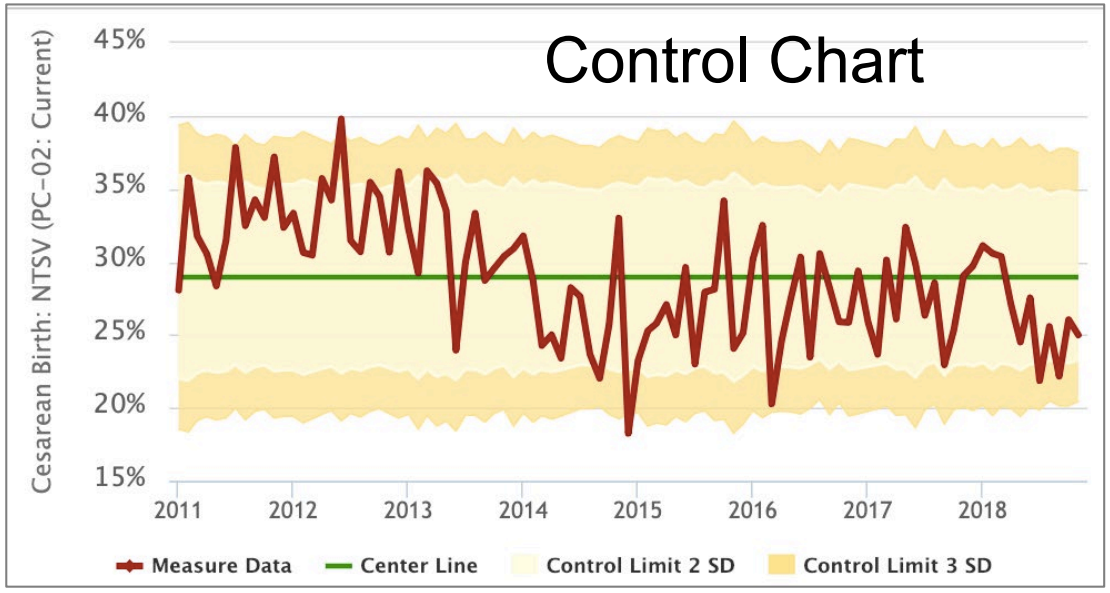
CMQCC Maternal Data Center

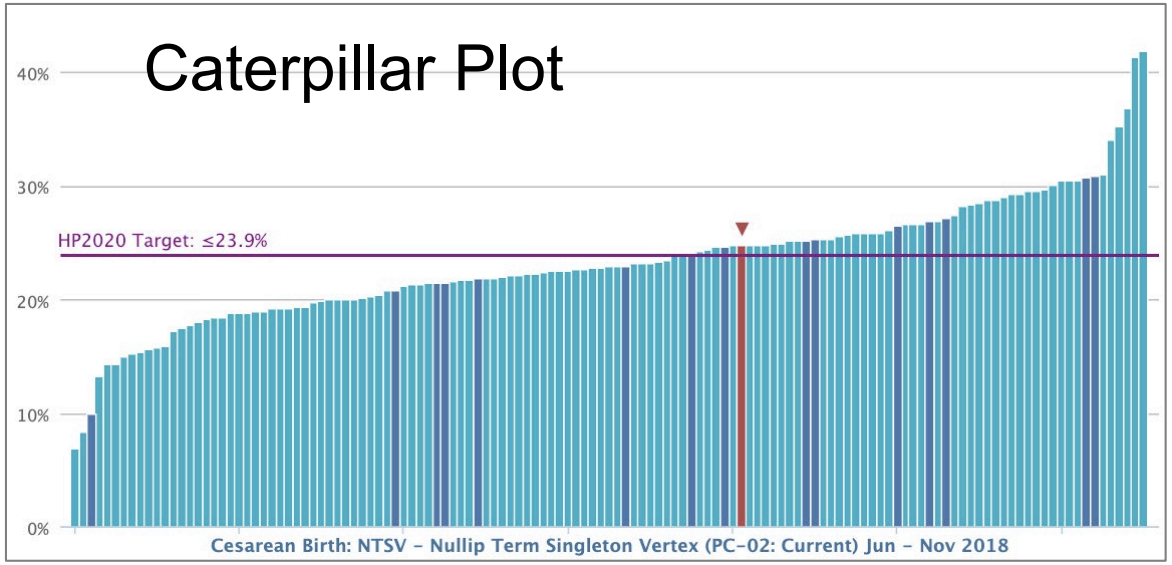


Using Rapid-Cycle Data to Drive QI: Examples









California Quality Improvement Projects

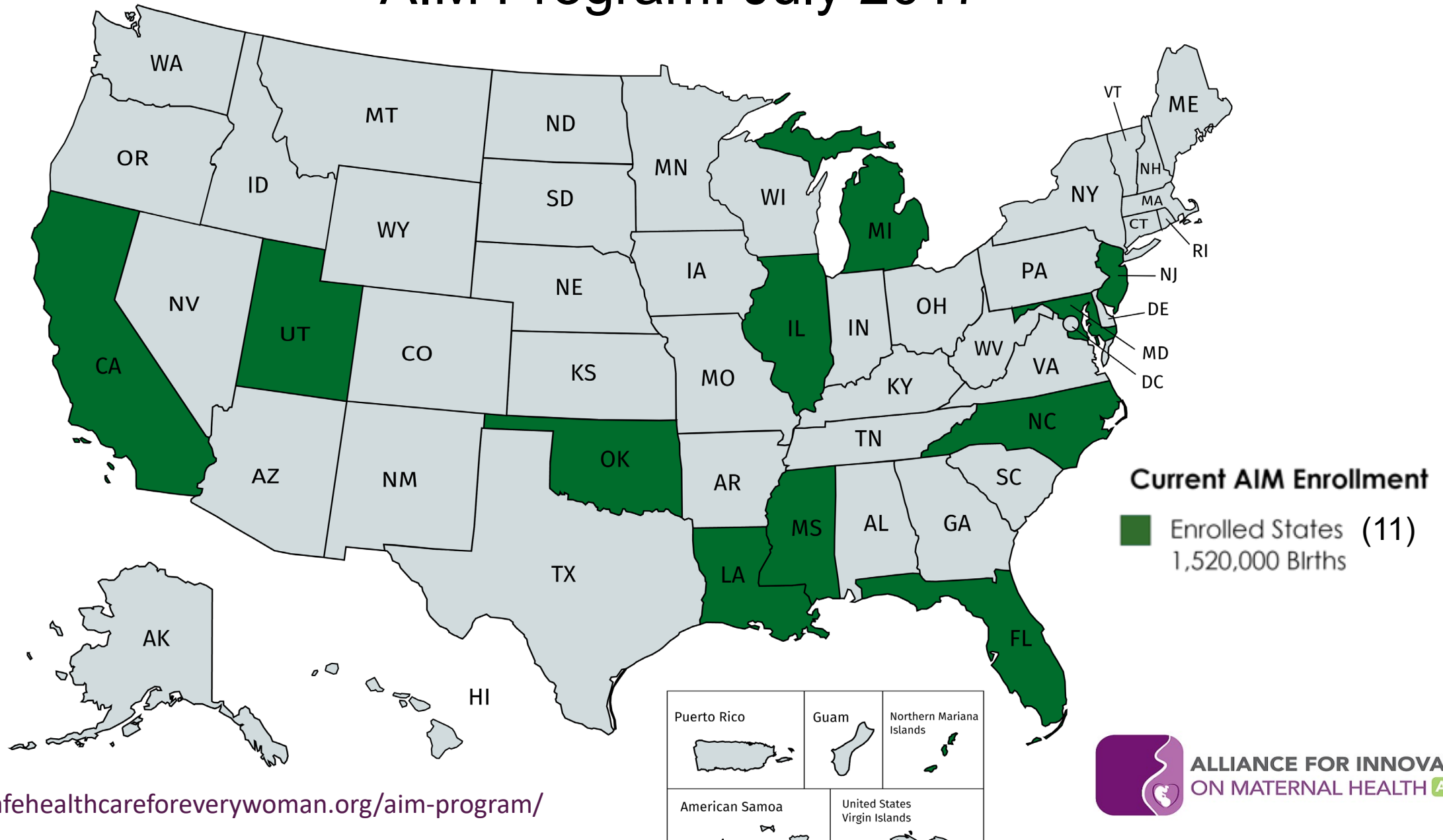
Years	Projects
2006	California Pregnancy-Associated Mortality Review established
2008	CMQCC/CDPH OB **Hemorrhage** Task Force
2009-10	CMQCC **Hemorrhage** QI collaboratives I and II
2010-11	CMQCC/CDPH **Preeclampsia** Task Force and QI collaborative
2011	Release of CDPH **Maternal Mortality** report and education campaign
2011-14	HEN/CMQCC/CHA-HQI QI collaborative focused on **Hemorrhage** and **Preeclampsia**
2015-16	CMQCC/Merck for Mothers QI collaborative for Reduction of **Hemorrhage** and **Hypertension** severe morbidity
2016-19	CMQCC QI collaboratives (3 cohorts) for Supporting Vaginal Birth and Reducing **Primary Cesarean Delivery**

ALLIANCE FOR INNOVATION ON MATERNAL HEALTH AIM

AIM is a Collaborative of Collaboratives

- Engagement of national organizations
- Developing educational and QI resources
- Facilitating sharing of ideas and materials
- Collaborative learning
- Benchmarking
- Group impact

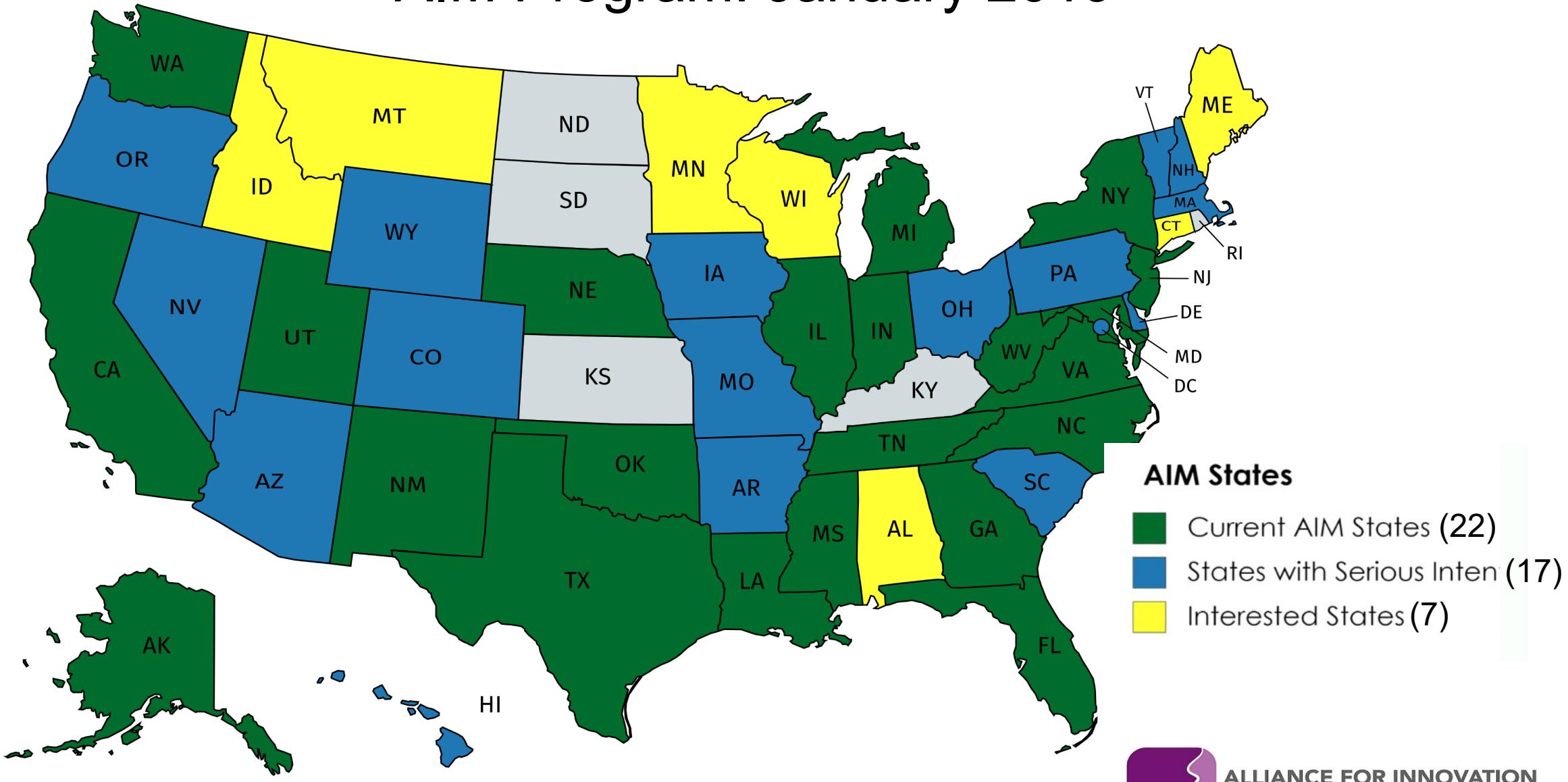
AIM Program: July 2017



https://safehealthcareforeverywoman.org/aim-program/

ALLIANCE FOR INNOVATION ON MATERNAL HEALTH AIM

AIM Program: January 2019



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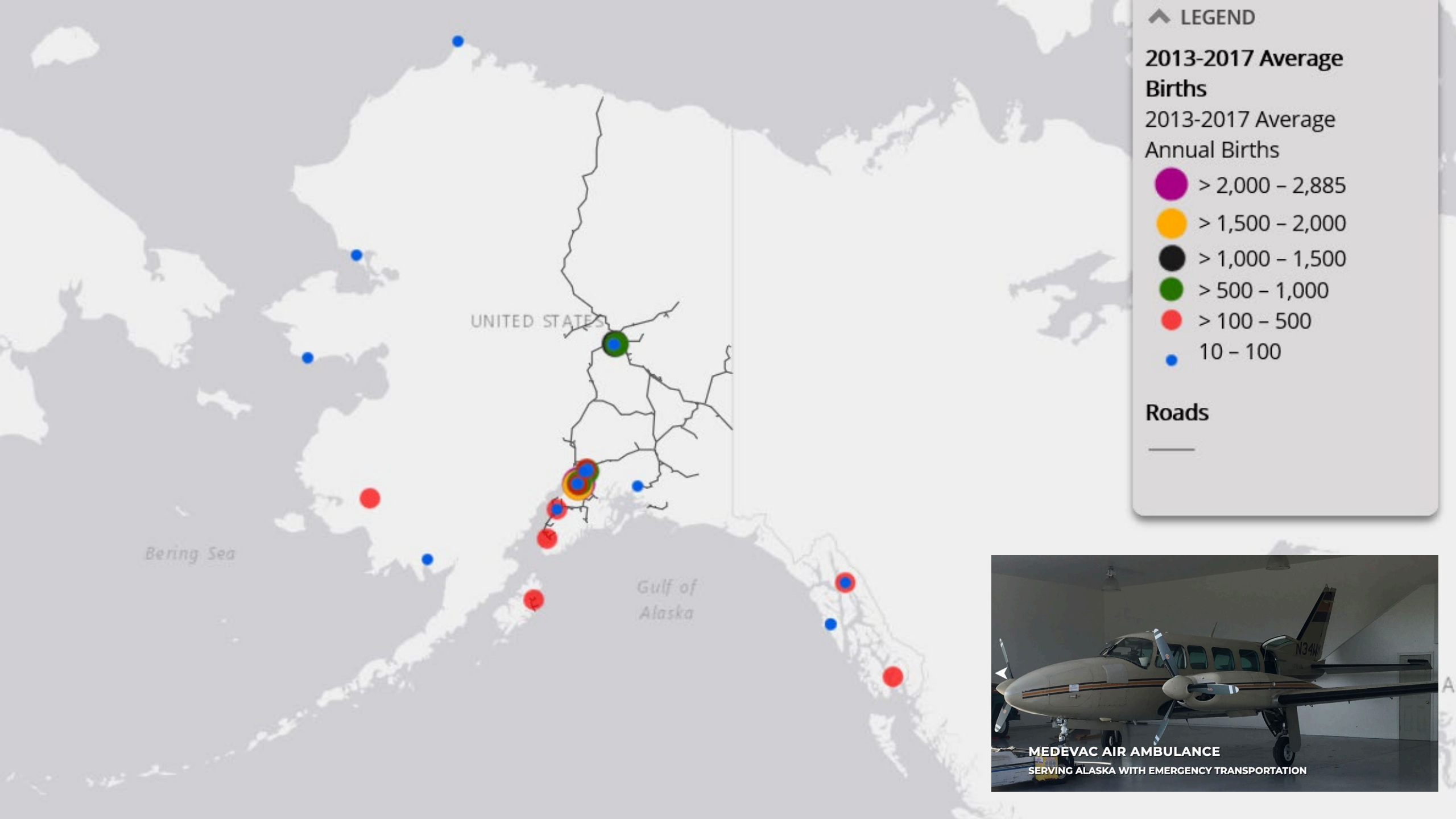

UNITED STATES
Bering Sea
Gulf of Alaska
LEGEND
2013-2017 Average Births
2013-2017 Average Annual Births
> 2,000 – 2,885
> 1,500 – 2,000
> 1,000 – 1,500
> 500 – 1,000
> 100 – 500
10 – 100
Roads
MEDEVAC AIR AMBULANCE
SERVING ALASKA WITH EMERGENCY TRANSPORTATION

Coordinating Center (2017-)

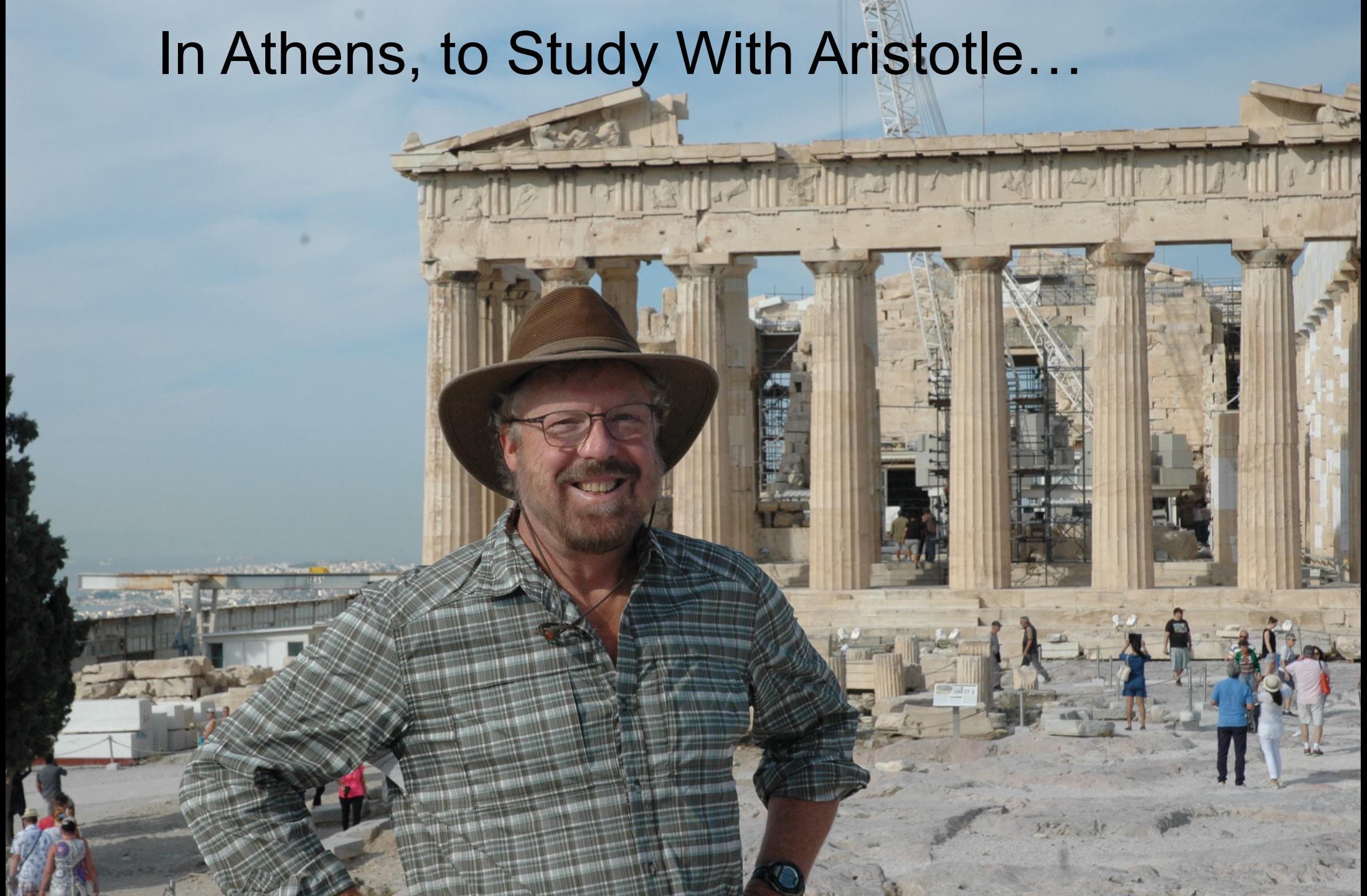
- Provide resources and expertise to nationwide state-based PQCs with the goal of deepening and accelerating improvement efforts for maternal and infant health outcomes.
- 13 state PQC grantees
- 2nd annual meeting
- AIM is a formal partner

Change Happens Locally

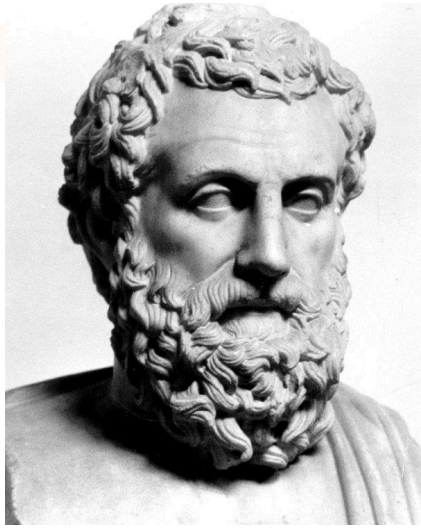
Bundles, Toolkits, Collaboratives…

But How Do I Convince People To Change?

In Athens, to Study With Aristotle…



How to Be Persuasive



- Aristotle's: 3 Frames for Every Argument

  Logos is an appeal to logic: "statistics show few deaths", "greater teamwork", "reduced complications"

  Ethos is an appeal to ethics: "patients deserve the best care", "safety must come first", "we strive for patient-centered care"

  Pathos is an appeal to emotion: patient stories are critical, "it could have happened to any of us", "we will all be patients"

- Vast majority of us went into our profession to help people
- Also good idea to share "WIIFM" with everyone

The Last Person You'd Expect to Die in Childbirth

ProPublica, May 16, 2017

Nina Martin

Like 33

The death of a neonatal nurse in the hospital where she worked illustrates a profound disparity: The healthcare system focuses on babies but often ignores their mothers.

If Americans Love Moms, Why Do We Let Them Die?

Nicholas Kristof JULY 29, 2017

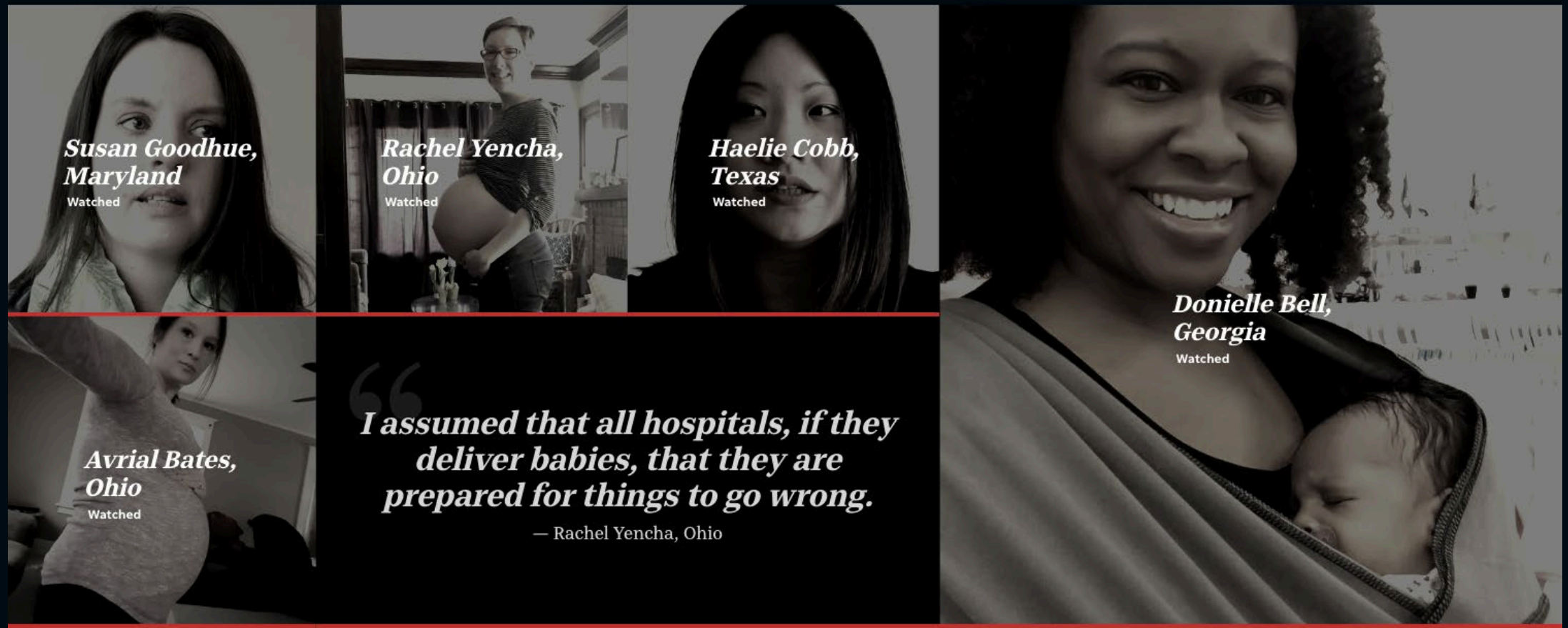
Kendria Washington gets an ultrasound from Dr. Lisa Hollier at the Center for Children and Women in Houston. In Texas, women die from pregnancy at a rate almost unrivaled in the industrialized world.

Google: USA Today Maternal Mortality

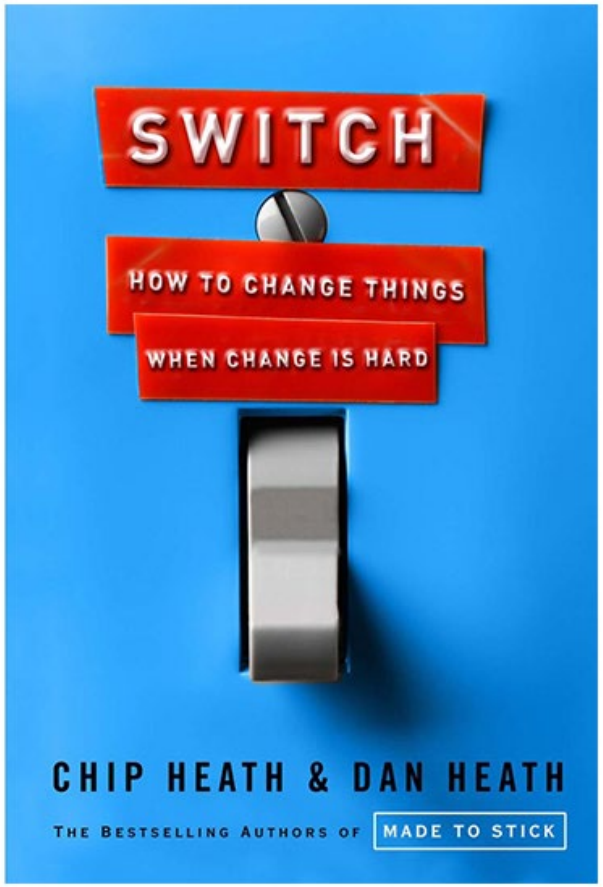
‘I am one of the 50,000’

Every year, 50,000 women in the U.S. suffer injuries or severe complications related to childbirth. Many are lucky to survive. They want you to hear their stories.

USA TODAY Investigations



Two Key References for Leading Change

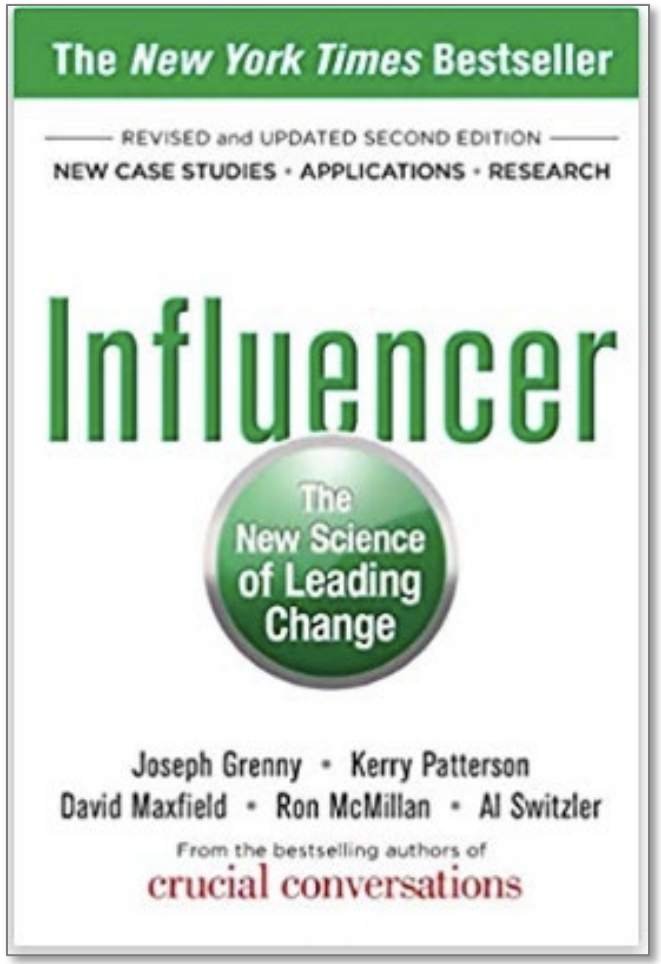


- Everyone has two parts: **the emotional side--the Elephant and the rational side--the Rider,** have to appeal to both
- Rider has a terrible weakness- the Rider loves to contemplate and analyze, and, making matters worse, his **analysis is almost always directed at problems rather than at bright spots**.

Switch: Rider and the Elephant

- What may look like laziness is often exhaustion. Trying to persuade the Elephant is exhausting for both.
- When change works, it's because leaders are speaking to the Elephant as well as to the Rider.

Two Key References for Leading Change



The Influencer Change Model is about changing behaviors by changing motivation and ability across personal, social, and structural dimensions

Six Sources of Influence

	Motivation	Ability
Personal	1 Make the Undesirable Desirable	2 Over Invest in Skill Building
Social	3 Harness Peer Pressure	4 Find Strength in Numbers
Structural	5 Design Rewards and Demand Accountability	6 Change the Environment

All Washed Up! – YouTube Video

https://www.youtube.com/watch?v=osUwukXSd0k

(or just google: “all washed up video”)

Fourteen-year-old scientist Hyrum Grenny cracks the code on how to get kids to wash their hands, and in doing so teaches us the principles of the Influencer Model. (It is adorable)

Best 6 minutes of QI education you will ever get!

CMQCC

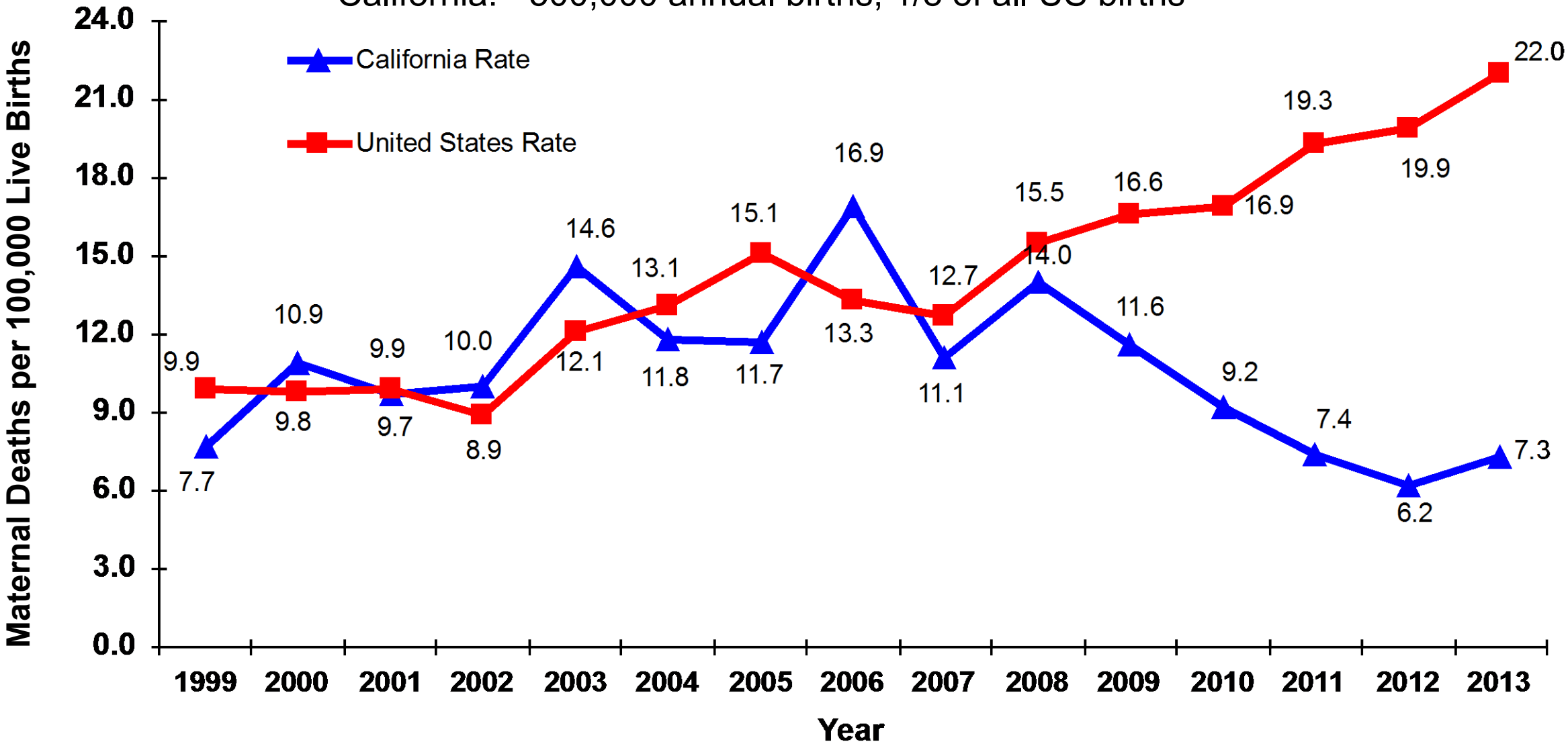
OB QI Academy

CMQCC Leads:
Terri Deeds, RN, MSN
Melissa Rosenstein, MD, MS

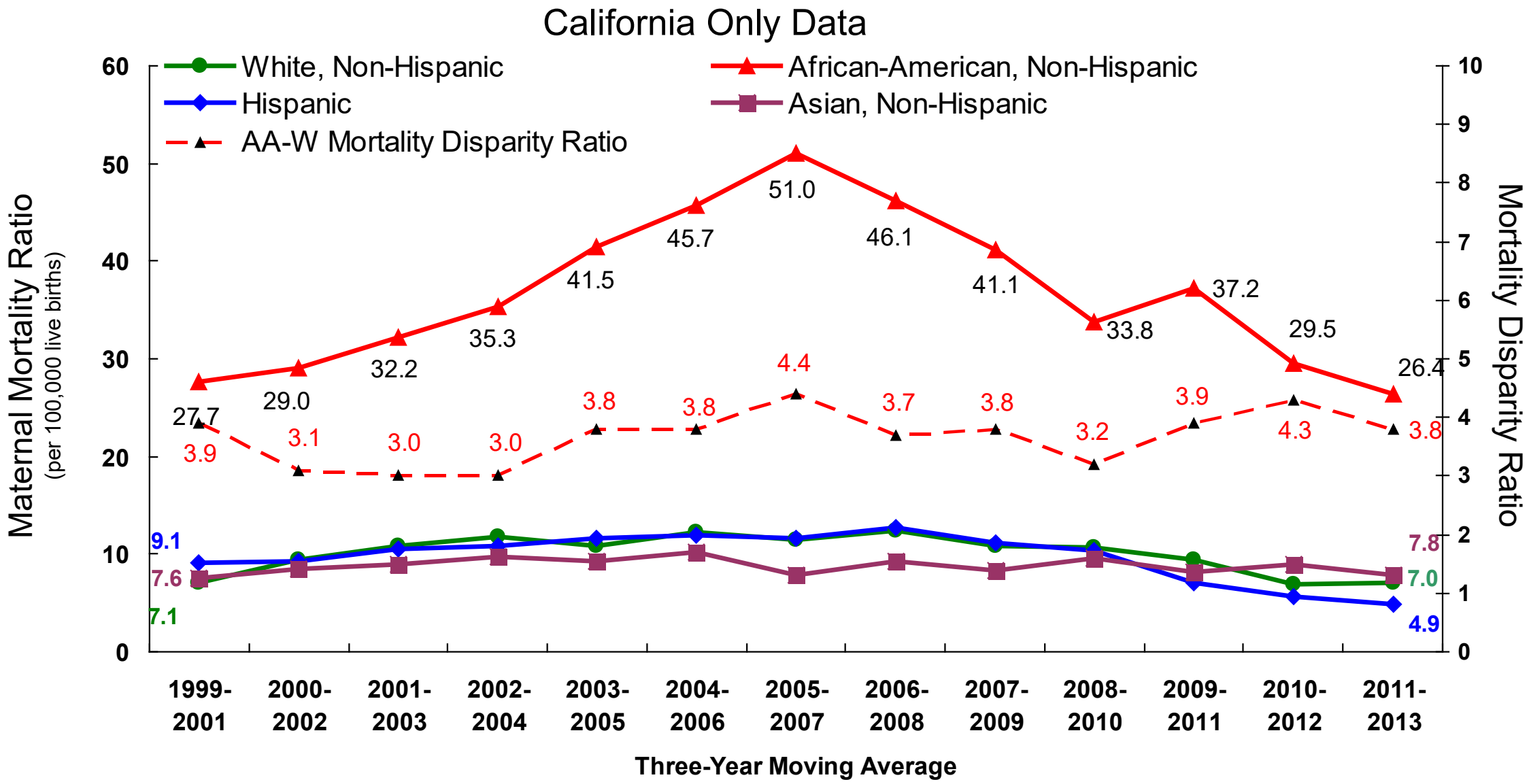
- **Goal:** facilitate the development of OB QI leaders
- Learning QI concepts and applying to QI project
- Year long program (one full day–then monthly calls)
- Hospital multi-disciplinary teams
- New cohort every 6 months
- CEU/MOC credit for participation in the program

Maternal Mortality Rate, California and United States; 1999-2013

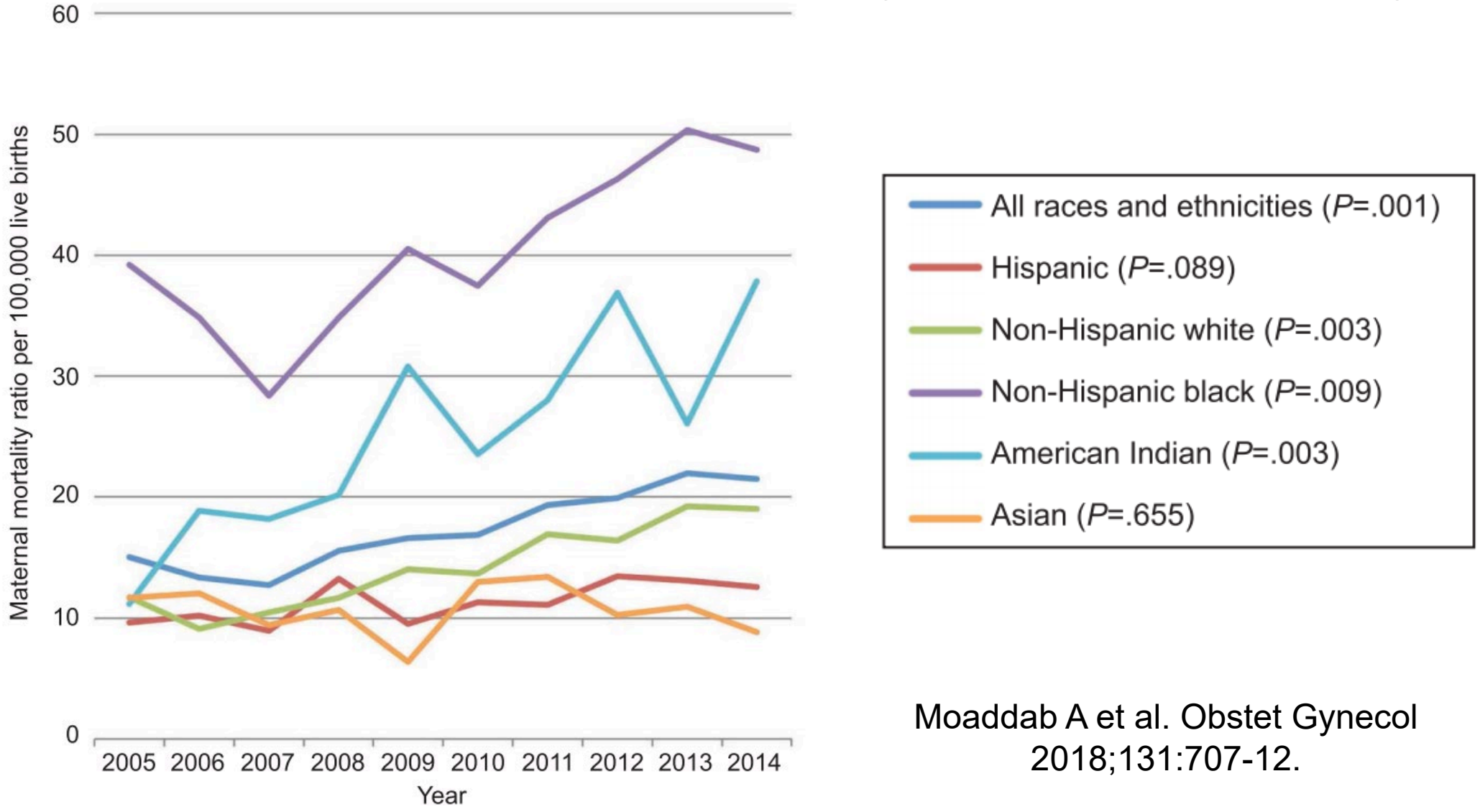
California: ~500,000 annual births, 1/8 of all US births



Maternal Mortality Rate, By Race/Ethnicity Three–Year Moving Averages; 1999-2013



U.S. Maternal Mortality by Race/Ethnicity



Moaddab A et al. Obstet Gynecol 2018;131:707-12.

Why do Black Women do so much worse?

Usual explanation by doctors and nurses is that black women have more obesity, more hypertension, more diabetes, and more social disadvantages…

What If We Looked At B:W Disparity In SMM <u>Only</u> Among College Graduates?

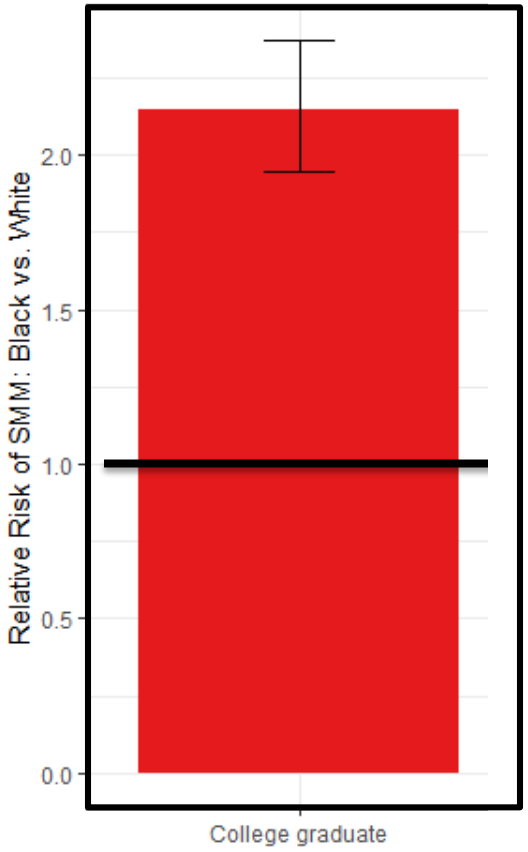
And adjusted for age, BMI and other clinical and demographic risk factors…

Black-White disparity in SMM is highest among college graduates (**2.2x higher than whites**)

Looking At Absolute Rates:

- SMM rate in Black women with college degrees: **2.4%**
- SMM rate in White women without high school diplomas: **1.6%**

California linked data: 2010-2015



Educational Attainment

LOST MOTHERS

Nothing Protects Black Women From Dying in Pregnancy and Childbirth

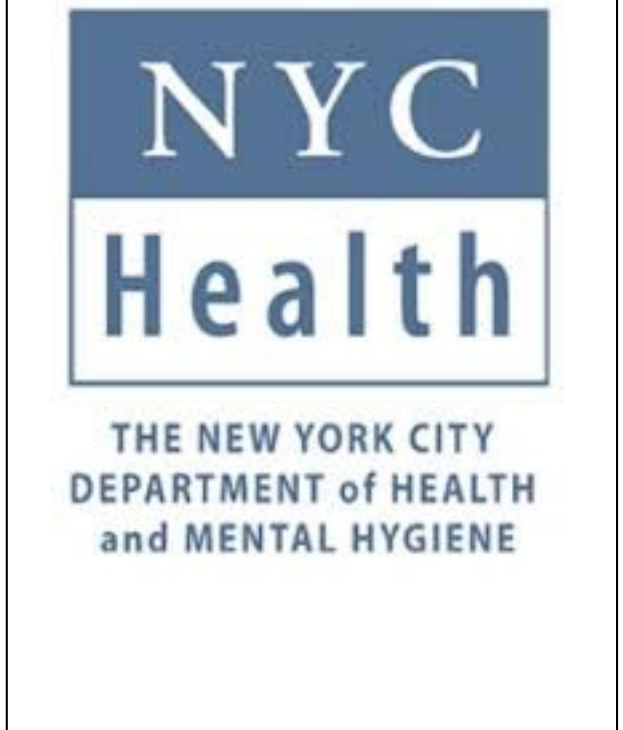
Not education. Not income. Not even being an expert on racial disparities in health care.

by **Nina Martin**, ProPublica, and **Renee Montagne**, NPR News, Dec. 7, 2017, 8 a.m. EST

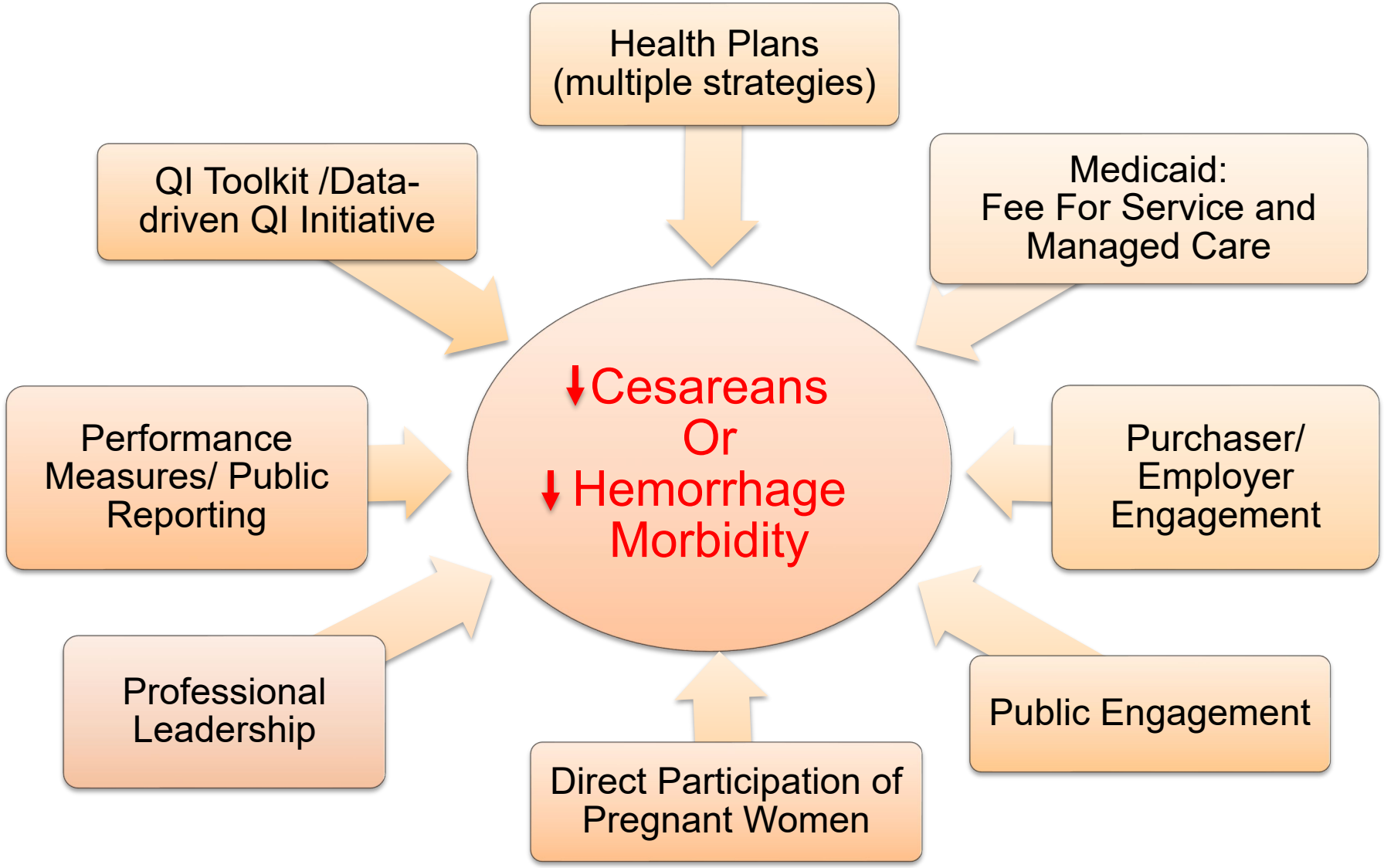
Soleil Irving "just lights up a room when she smiles," Wanda Irving, her grandmother, says. (Sheila Pree Bright for ProPublica)

Lt. Comdr. Shalon Irving PhD

Health Equity: What to Do? What are the Action Steps?



Collaborative Action : Collective Impact



Multiple Leverage Points are much more effective than one or two alone

Thanks to the CMQCC Team

Visit CMQCC:
CMQCC.org

Visit AIM:
SafeHealthCare For EveryWoman.org

ALLIANCE FOR INNOVATION ON MATERNAL HEALTH AIM

Thanks to the AIM Team

Visit AIM: SafeHealthCare For EveryWoman.org

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