

CD

## Summary

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## WHY ARE MOTHERS DYING IN OREGON?

*“Everyone always wants to say that it’s just about access to care and it’s just about insurance, but that alone doesn’t explain it.”*

– Dr. Elizabeth Howell on Serena Williams’ near-death childbirth experience. New York Times, 2018

The death of a mother during pregnancy or childbirth is a tragic event that leaves a lasting impact on a family. In the United States, approximately 700 women die from pregnancy-related complications annually; the Centers for Disease Control and Prevention (CDC) estimates roughly 60% are preventable.<sup>1</sup> The United States’ pregnancy-related mortality ratio (PRMR) is higher than that of other industrialized nations at 17.2 deaths per 100,000 live births during 2011–2015. The U.S. is the only industrialized nation where this ratio is increasing — along with a continually widening disparity by race/ethnicity; black women experience 3–4 times greater risk of pregnancy-related death than white women.<sup>2</sup> For each pregnancy-related death, approximately 50 mothers suffer from severe maternal morbidity—complications from pregnancy, labor, and delivery that bring the mother close to death.<sup>3</sup> As Serena Williams’ story shows, access to care alone is not the problem.

To address the issue of maternal mortality and severe morbidity, the CDC has been building capacity to start maternal mortality review committees (MMRCs), with the goal of understanding pathways leading to death or severe maternal morbidity and stimulating preventive action. Oregon has now joined 40 other states and jurisdictions in having an MMRC and will start by reviewing 2018 deaths.<sup>4</sup> This *CD Summary* includes resources for providers and healthcare officials,

a review of national and state data, and a discussion of recent legislation specific to the formation of Oregon’s MMRC.

### THE NUMBERS

While calculated differently from the U.S. PRMR, Oregon’s maternal death rate, measured by Oregon Vital Statistics as the number of maternal deaths per 100,000 live births, is typically at or below the overall U.S. rate. However, this may underestimate the true number of maternal deaths in Oregon since it only includes specific cause of death codes and/or an indication of pregnancy via a checkbox on death certificates. In response, the Oregon Health Authority (OHA) utilized an expanded case-finding method to identify all pregnancy-associated deaths since 2016. The process linked death certificates of all reproductive age women with certificates of live births or stillbirths taking place within a year prior to the woman’s death. This process aims to identify all “pregnancy-associated deaths”, i.e. the death of a woman while pregnant or within one year of pregnancy, *regardless of the cause*.

In 2018, when the state vital statistics’ reporting method noted

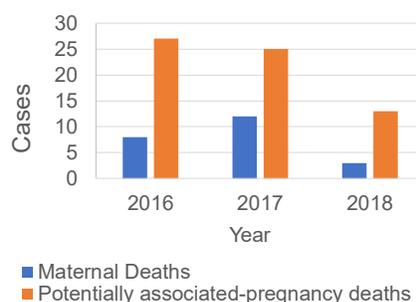
three maternal deaths, the expanded case-finding method found 13 potentially pregnancy-associated deaths (Figure). Only through case investigation can we determine which deaths were pregnancy-associated but not causally related to pregnancy and which were pregnancy-related (i.e. from a pregnancy complication, a chain of events initiated by pregnancy, or the aggravation of an unrelated condition by the physiologic effects of pregnancy). Similarly, whether a particular death was preventable can only be determined through case investigation. Both categories of deaths will be analyzed by the Oregon MMRC with the goal of identifying actionable steps for prevention of future deaths.

### THE CAUSES

Pregnancy-related deaths are a subset of pregnancy-associated deaths. Pregnancy-associated deaths can occur during pregnancy, at delivery, or up to one year postpartum. Causes of death differ based upon the time period between pregnancy and death. In the U.S. from 2011–2015, approximately one-third of pregnancy-related deaths occurred during pregnancy, one-third within one week after delivery, and one-third from one week to one year postpartum.<sup>2</sup>

Overall, “other cardiovascular conditions” and “other non-cardiovascular medical conditions” caused the most pregnancy-related deaths in the United States (Table, verso).<sup>2</sup> On the day of delivery, the leading cause of death was obstetric emergencies, such as hemorrhage and amniotic fluid embolisms. The week following delivery, hemorrhage, hypertensive disorders of pregnancy, and infections were the most common causes of death. Between 6 weeks and 1 year postpartum, the leading cause of death was cardiomyopathy.

**Figure. Comparison between number of maternal deaths and potentially pregnancy-associated deaths, Oregon, 2016–2018.**



## CONTRIBUTING FACTORS

Data from MMRCs from across the country have detailed contributing factors to pregnancy-related deaths in their states. These include system-level factors (inadequate access to care, systemic racism and discrimination), community factors (unstable housing, intimate partner violence), health facility factors (limited experience with obstetric emergencies) and patient factors (lack of knowledge of warning signs).<sup>2</sup>

## PREVENTION STRATEGIES

In order to prevent and reduce deaths associated with pregnancy, intervention must happen at multiple stages, not just the period of pregnancy through one year postpartum. This requires connections to upstream causes including evaluating social determinants of health and implementing effective strategies for prevention. The California Pregnancy-Associated Mortality Review Collaborative formed in 2006. California has experienced a steady decline in maternal mortality, from 14 per 100,000 live births in 2008 to 7.3 per 100,000 live births in 2013. They focused on key components that included translating findings into specific quality improvement initiatives to improve maternal care.<sup>5</sup> Although these initiatives focus on hospital-system factors, California's next steps, including addressing social determinants of health, can further decrease mortality.

## OREGON'S NEW MMRC LAW

During the 2018 legislative session, [House Bill 4133](#) established the Oregon MMRC. The multidisciplinary committee, made up of 15 Governor-appointed members, includes a variety of stakeholders with different areas of expertise. Under OHA direction, the committee is charged with the study and review of information relating to the incidence of maternal mortality and severe maternal morbidity, including examination of whether social determinants of health are contributing factors. Grouped findings will be widely shared with policymakers, health care systems, including behavioral health, healthcare professionals, social services and the general public. The ultimate goals of the MMRC are to inform public health policy, stimulate action and identify associated social determinants of

health to characterize, intervene and reduce maternal mortality and morbidity in Oregon. Reducing pregnancy-associated deaths requires learning from each death as well as improving women's health by reducing social inequities across the life span and ensuring quality care for pregnant and postpartum women.<sup>2</sup>

## WHAT CAN YOU DO?

While conducting case reviews, OHA staff may call on providers to send information in order to facilitate case determinations. Throughout the preconception, pregnancy, and postpartum periods, providers and patients can work together to optimally manage chronic health conditions by helping patients understand their central role in managing chronic conditions. Healthcare providers can communicate with patients about relevant warning signs during pregnancy and in the postpartum period through one year and use tools such as the electronic health record to flag these warning signs for intervention. Improving patient education materials, offering home support services, and instituting provider practice strategies for coordinating with mental health and substance use services can help address patient-level contributing factors. To help address some of these factors and link all families to needed services, Oregon is phasing in universally offered home visiting. Health systems and hospitals can promote prevention practices by training non-obstetric providers, including those in emergency departments, to elicit information about pregnancy within the past year in patients to provide information that can help reduce missed or delayed diagnoses. At end of the day, even one maternal death is one too many.

## FOR MORE INFORMATION

- Oregon Health Authority Maternal Mortality Review Committee: [www.oregon.gov/oha/PH/HEALTHY-PEOPLEFAMILIES/DATAREPORTS/Pages/Maternal-Mortality-Morbidity-Review-Committee.aspx](http://www.oregon.gov/oha/PH/HEALTHY-PEOPLEFAMILIES/DATAREPORTS/Pages/Maternal-Mortality-Morbidity-Review-Committee.aspx)
- Association of Maternal and Child Health Programs (AMCHP) Review to Action: <https://reviewtoaction.org/>
- American Academy of Family Physicians: Fitness Goals and Nutrition Counseling: [www.aafp.org/patient-care/public-health/fitness-obesity/nutrition-pregnancy.html](http://www.aafp.org/patient-care/public-health/fitness-obesity/nutrition-pregnancy.html)

Table. Pregnancy-related deaths by cause of death, United States; 2011–2015<sup>2</sup>

Cause of Death	Number of Deaths
Amniotic fluid embolism	173 (5.8%)
Anesthesia complications	10 (0.3%)
Cardiomyopathy	307 (10.3%)
Cerebrovascular accidents	228 (7.6%)
Hemorrhage	329 (11.0%)
Hypertensive disorders of pregnancy	212 (7.1%)
Infection	360 (12.0%)
Thrombotic pulmonary or other embolism	281 (9.4%)
Other cardiovascular conditions	460 (15.4%)
Other non-cardiovascular-medical conditions	427 (14.3%)
Unknown	203 (6.8%)
Total	2,990

- California Maternal Quality Care Collaborative Toolkits: [www.cmqcc.org/resources-tool-kits/toolkits](http://www.cmqcc.org/resources-tool-kits/toolkits)
- Mayo Clinic Labor and Delivery: Postpartum Care: [www.mayoclinic.org/healthy-lifestyle/labor-and-delivery/in-depth/postpartum-complications/art-20446702/](http://www.mayoclinic.org/healthy-lifestyle/labor-and-delivery/in-depth/postpartum-complications/art-20446702/). Accessed 13 Dec 2019.

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