STATE OF DELAWARE
Child Death Review Commission
(CDRC)

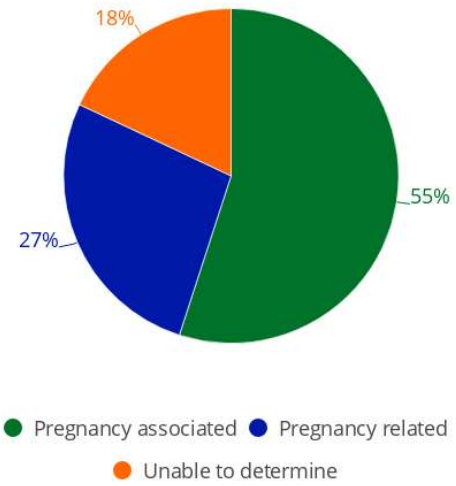
Issue Brief: Delaware Maternal Mortality Review (MMR) 2016-2017

Maternal deaths have been rising in the United States, an alarming trend that has prompted much national attention to this issue. Maternal deaths are the tip of the iceberg in the spectrum of outcomes for pregnant women, representing the most dire and rarest outcome. For every maternal death that occurs, it is estimated that 100 women suffer a severe maternal morbidity.[1] Thus an increase in maternal deaths is a portent of worsening health outcomes for women of childbearing age in general.

Delaware's MMR reveals the toll that violence and substance abuse, along with medical issues, take on the well-being of pregnant and postpartum women. In 2016-2017, the multidisciplinary Delaware MMR panel reviewed 11 maternal death cases of women dying during pregnancy or up to one year postpartum. These deaths occurred between 2012 and 2016. The MMR panel determined over half of these deaths (55%) to be pregnancy-associated, meaning the death was not related to the pregnancy. (See Figure 1.) About one-quarter of MMR cases (27%) were deemed pregnancy-related, that is the death was caused by a pregnancy complication or a chain of events initiated by pregnancy. Among pregnancy-associated cases, homicide and drug intoxication were the leading causes of death. Among pregnancy-related cases, medical complications were the leading cause of death.

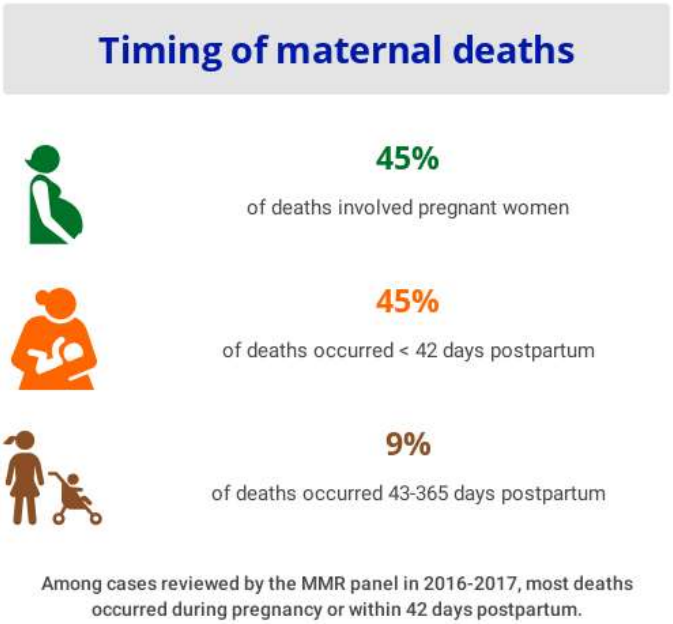
Figure 1: Pregnancy relatedness

Determination by the MMR panel whether a death was causally linked to pregnancy



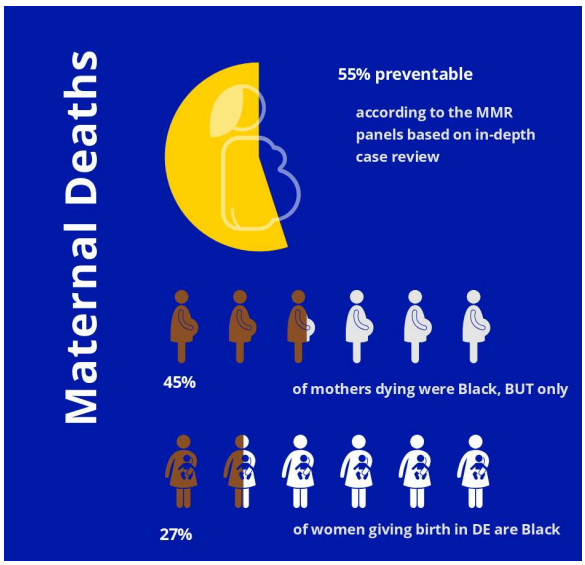
Based on the eleven MMR cases reviewed in 2016-2017, pregnancy and the immediate period postpartum—up to 42 days after the end of pregnancy—were the two time periods with the most deaths, 5 cases in each (Figure 2). Only one of the 11 deaths occurred in the late postpartum period, between 43 days and 1 year after the end of pregnancy.

Figure 2



Maternal deaths disproportionately affect Black women. While about one in three live births in Delaware is to a Black mother, almost half—one in two—maternal deaths involve Black women (Figure 3).[2] Finding ways to reduce maternal deaths is an important aspect of improving equitable health outcomes for Delaware women.

Figure 3

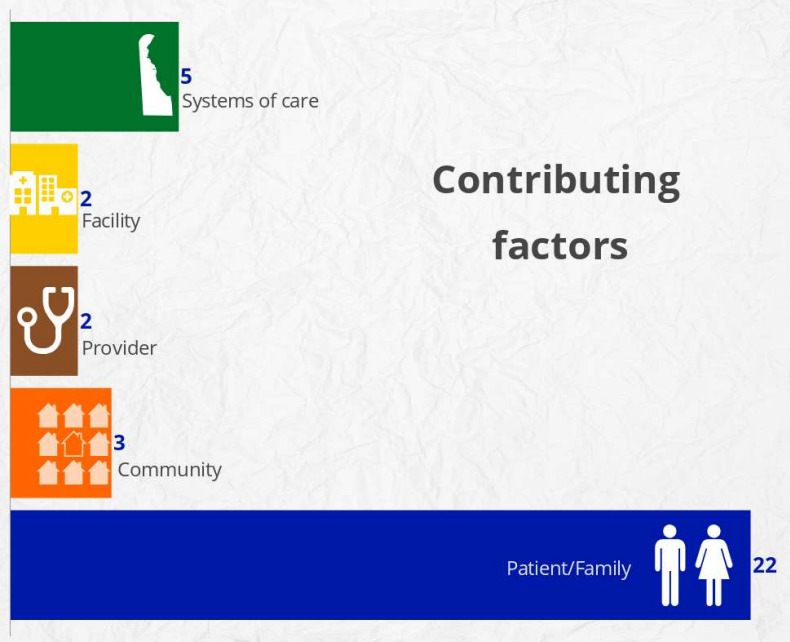


Overall, the MMR panel believed over half of maternal deaths (55%) are potentially preventable and identified several recurring themes among the factors contributing to the deaths. Some contributing factors identified include:

- Lack of referral or delay in obtaining services, such as for substance addiction treatment or intimate partner violence (IPV) (systems of care level)
- Lack of screening for risk factors such as IPV or substance abuse (facility level)
- Violence or desensitization to violence (community level)
- Delay in seeking care (patient/family level)
- Difficulty adhering to medical advice (patient/family level)
- Substance abuse (patient/family level)
- IPV (patient/family level)
- Mental health issues (patient/family level)
- Social isolation (patient/family level)

Figure 4

Number of contributing factors by level among the 11 cases reviewed.
Each case had 4-5 contributing factors identified on average.



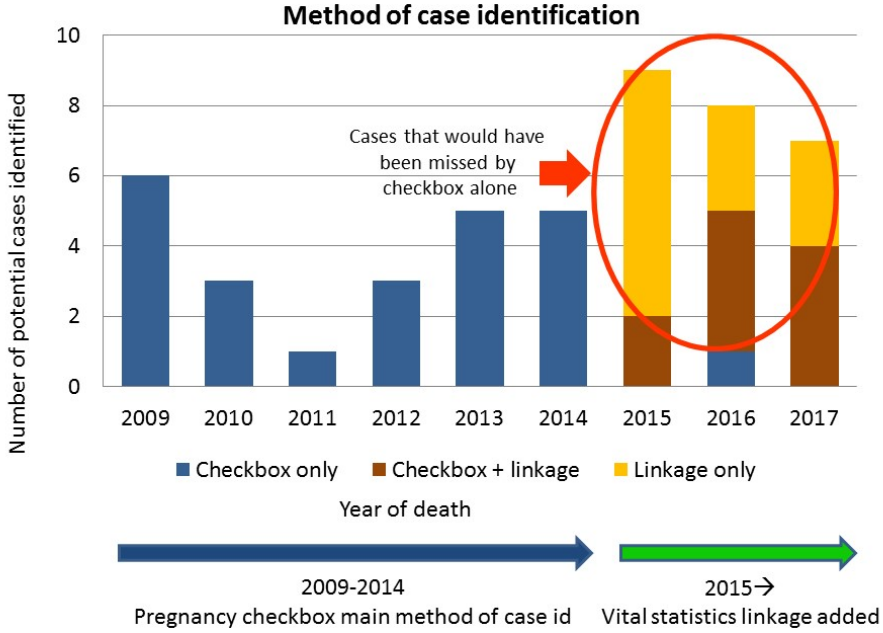
One recommendation from the Child Death Review Commission based on MMR findings in 2016-2017 states:

> **Improve case identification of possible maternal deaths by linking live birth and fetal death certificate information with death certificates of women of reproductive age.**

Many MMR programs and the CDC have found that this type of linkage improves the chances of identifying potential MMR cases compared to the use of the pregnancy checkbox question on the death certificate alone, which until 2014

was the primary method of Delaware's case identification. However, data from 2015 onwards (Figure 5) clearly shows that many cases are missed by using the pregnancy checkbox question alone. For 2015-2017, an additional 13 cases were picked up by the vital statistics linkage that would have otherwise not been identified because the pregnancy checkbox was inaccurate.

Figure 5
Method of case identification



Moving forward, vital statistics linkage and the pregnancy checkbox responses will be used together to identify the group of potential maternal deaths for the Delaware MMR program. This will likely result in an increase in the pregnancy-related mortality ratio from 2015 onwards as prior there was underascertainment bias in the data. The annual case load of maternal deaths is thus higher than previously estimated for Delaware and will require more staff resources, as each case takes 12-14 hours on average to be prepared for panel review.

Delaware's MMR is an important public health surveillance program that provides insights into the issues affecting the health of women of reproductive age from all causes, both related and unrelated to pregnancy. Delaware's efforts and findings are being shared not only statewide but also with national partners to inform preventive actions that can improve women's health.

[1] Callaghan WM, Creanaga AA, Kuklina EV. Severe maternal morbidity among delivery and postpartum hospitalizations in the United States. OB Gyn 2012; 120(5): 1029-1036.
[2] Delaware Health Statistics Center. *Delaware Vital Statistics Executive Summary Report, 2016*. Delaware Department of Health and Social Services, Division of Public Health, 2018.