

# Postpartum Hemorrhage

## *What is obstetric hemorrhage?*

Postpartum hemorrhage has been defined as blood loss in excess of 500 mL following a vaginal birth or more than 1000 mL following a cesarean birth.<sup>1</sup> It is estimated that one woman dies every four minutes from postpartum hemorrhage worldwide.<sup>1</sup> Hemorrhage, or severe bleeding, is the leading cause of pregnancy-related mortality worldwide and in the United States.<sup>1,2</sup>

## *Why is it important to measure obstetric hemorrhage?*

The pregnancy-related mortality ratio in the United States has increased to its highest levels in decades from 11.1 to 15.7 deaths per 100,000 live births from 1993 to 2006.<sup>3</sup> Further, between 1994 and 2004 there was a 27.5% increase in postpartum hemorrhage deaths, primarily due to uterine atony, and a 92% increase in maternal blood transfusions.<sup>2,4</sup> Recent research indicates that 54% to 93% of hemorrhage-related deaths may be preventable.<sup>5</sup>

## *How is obstetric hemorrhage measured?*

The American College of Obstetricians and Gynecologists (ACOG) is the lead partner in The Alliance for Innovation on Maternal Health (AIM) program. This program has defined the metrics for obstetric hemorrhage as severe maternal morbidity (SMM) among hemorrhage cases including and excluding transfusions as follows<sup>6</sup>:

$$\text{SMM among Hemorrhage Cases} = \frac{\text{All SMM}}{\text{All Hemorrhage Cases}^a}$$
$$\text{SMM (excluding transfusion) among Hemorrhage Cases} = \frac{\text{All SMM}}{\text{All Hemorrhage Cases, except transfusions}^b}$$

<sup>a</sup>Excludes ectopic pregnancies and miscarriages. Includes abruption, placenta previa, antepartum hemorrhage, transfusion (except for women with sickle cell disease), and postpartum hemorrhage.

<sup>b</sup>Same as above, but excludes all transfusions from the denominator.

## *What are the limitations of measuring obstetric hemorrhage?*

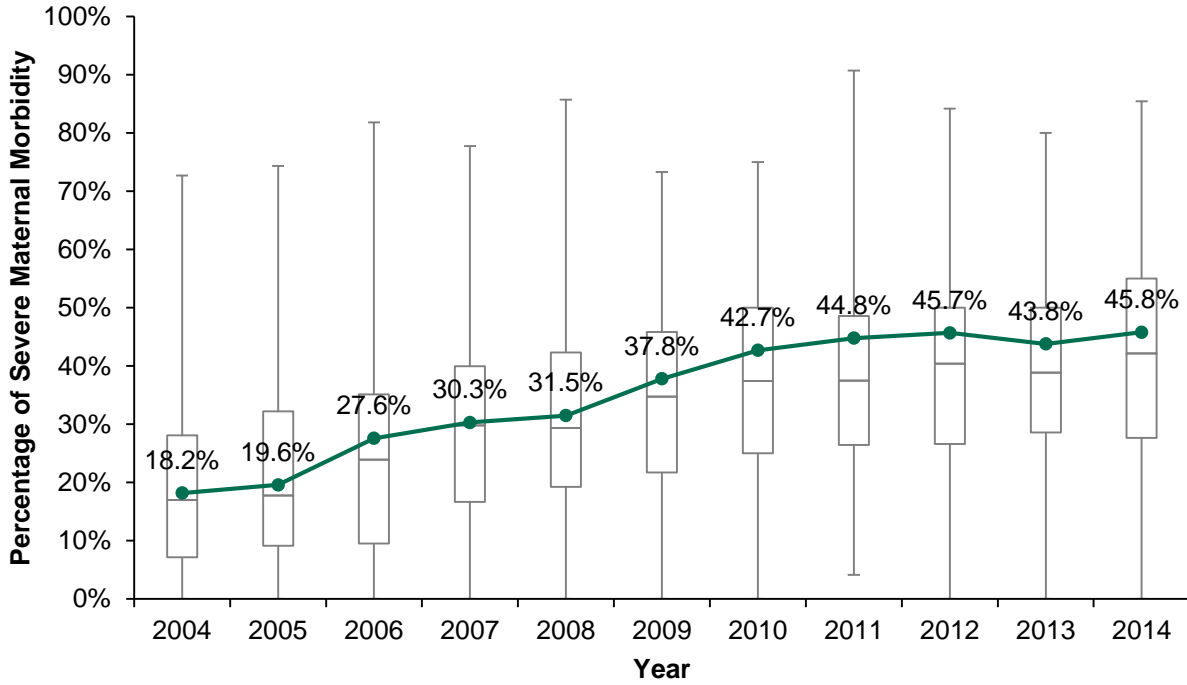
The obstetric hemorrhage indicator was initially developed with ICD-9 codes. With the conversion to ICD-10, equivalent codes are pending their assessment for sensitivity and positive predictive value, as well as a proxy for the full assessment of obstetric hemorrhage severity. The source of data for obstetric hemorrhage estimates is the linked birth certificate and discharge records data set. Since the hospital discharge data set is primarily used for billing, it is also subject to errors of omission and commission by medical coders, as well as changes over time in coding practices. Limitations aside, standardizing a measure of obstetric hemorrhage has been on the research and quality improvement agenda of several organizations, which came together in the AIM initiative.

## *How can we improve quality based on this indicator?*

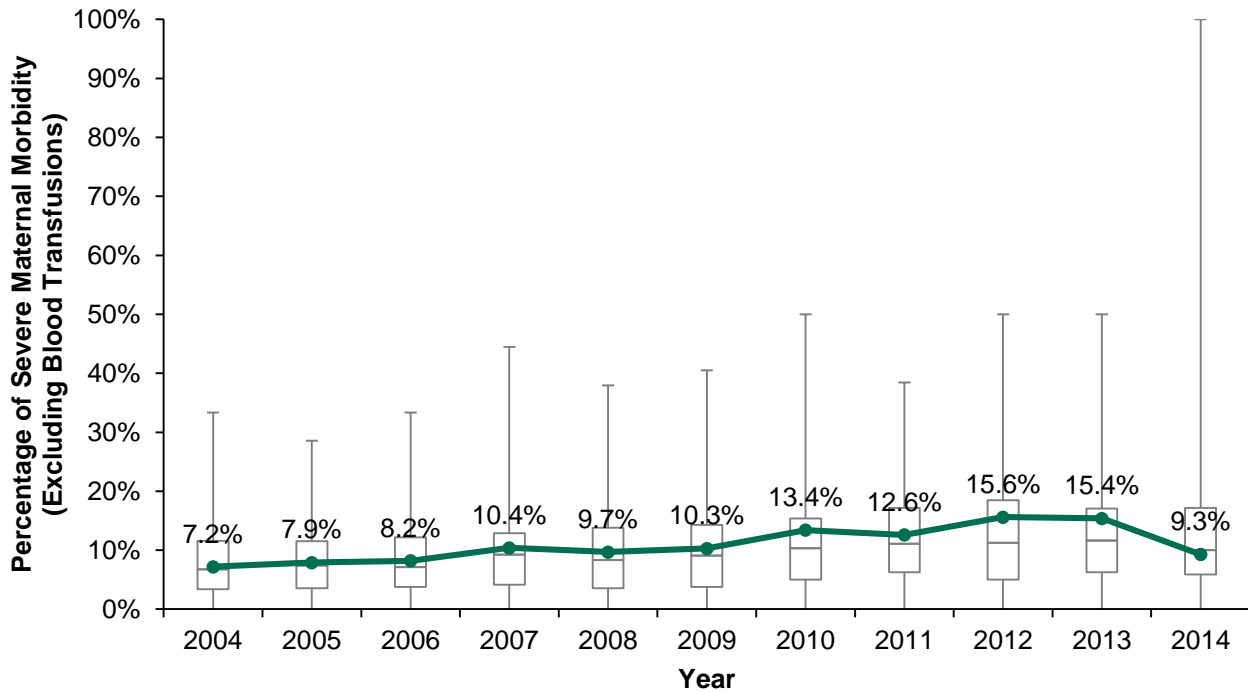
Maternal hemorrhage is considered to be the most preventable cause of maternal mortality.<sup>7</sup> Improved quality of medical care is the most important factor for the prevention of mortality due to obstetric hemorrhage. More than 90% of the potentially preventable morbidity and mortality due to hemorrhage is because of provider-related factors, notably incomplete or inappropriate management.<sup>8</sup> A 2011 study found that delay in treatment or diagnosis, ineffective management, and lack of proper preventive measures for hemorrhage led to preventable pregnancy-related deaths and extreme morbidity.<sup>8</sup>

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**Figure 1.** Percentage of severe maternal morbidity among women with obstetric hemorrhage, Hospital X. Florida, 2004-2014.

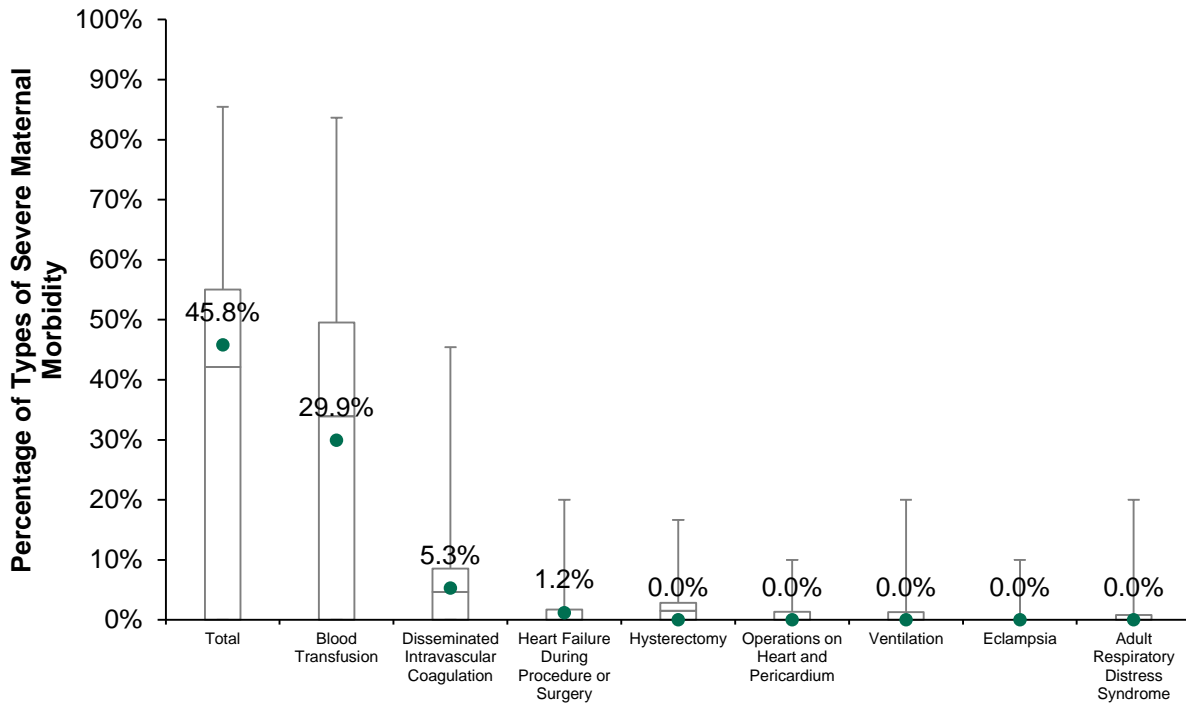


**Figure 2.** Percentage of severe maternal morbidity among women with obstetric hemorrhage (excluding women with blood transfusions), Hospital X. Florida, 2004-2014.

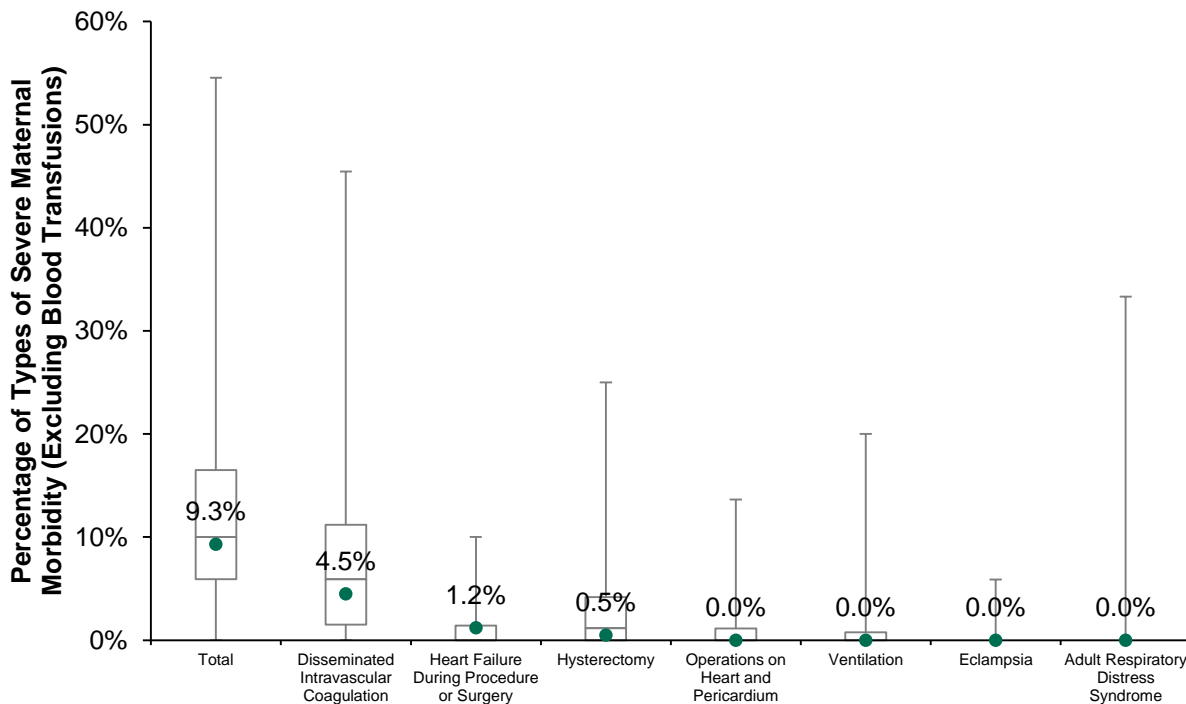


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**Figure 3.** Percentage of types of severe maternal morbidity among women with obstetric hemorrhage, Hospital X. Florida, 2014.



**Figure 4.** Percentage of types of severe maternal morbidity among women with obstetric hemorrhage (excluding women with blood transfusions), Hospital X. Florida, 2014.



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### References

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