



MATERNAL MORTALITY REPORT PREVIEW

MATERNAL DEATH IN VIRGINIA: 1999-2001

We are pleased to present this preliminary report from Virginia's Maternal Mortality Review Team, a multidisciplinary team that reviews Virginia's maternal deaths and identifies intervention and prevention strategies to reduce these deaths.

Maternal Mortality Review is not new to Virginia. In fact, maternal death review has been underway in the Commonwealth since 1928. Early efforts reflected a collaborative partnership between the Medical Society of Virginia and the Virginia Department of Health and focused on the review of medical records in natural maternal deaths.

With support from the Centers for Disease Control and Prevention (CDC), the American College of Obstetricians and Gynecologists and the Medical Society of Virginia, the Virginia Department of Health (VDH) restructured maternal death review in 2001. Under a new partnership between the VDH Office of Family Health Services and the VDH Office of the Chief Medical Examiner, reviews were expanded to include both natural and violent maternal deaths. Team review now reflects a multidisciplinary, public health approach with emphasis on understanding more global disease and injury patterns associated with maternal deaths; the demography of maternal death risk in Virginia; and community, patient and health care factors influencing maternal death.

A new venture such as this always has its champions, those who provide the vision and determination to get a new program off the ground. In that spirit, we gratefully acknowledge the leadership efforts of Cheryl N. Bodamer, Joan Corder-Mabe, Dr. Peter S. Heyl, Suzanne J. Keller and Mary Elizabeth White in bringing new energy to maternal mortality review in our Commonwealth. Thanks also to Dr. Robert B. Stroube, Virginia's State Health Commissioner, and to Dr. Janice Hicks, Director of Policy and Assessment at the VDH Office of Family Health Services, for their support of this public health project.

Premature pregnancy-related death is a community crisis that warrants our attention and our response. Our experience with similar projects in Virginia - those that focus on child deaths, on fetal and infant deaths, and on family and intimate partner-related deaths - have convinced us of the preventative power of fatality review. We recommend this preliminary report to you.

Team members are currently reviewing the findings reported here and developing recommendations. A detailed report is expected this summer.

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Virginia's Maternal Mortality Review Team represents a partnership within the Virginia Department of Health, between the Office of Family Health Services and the Office of the Chief Medical Examiner.

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Background Information on the Team

Virginia's Maternal Mortality Review Team reviews all maternal deaths in the Commonwealth and develops recommendations to reduce those deaths. The review is conducted to understand the causes of maternal death within the context of women's lives and the circumstances surrounding injury and disease patterns. The results of these reviews are used to educate colleagues and policymakers about these deaths, to identify needed changes in law and/or practice, and to recommend other improvements and interventions to reduce maternal death in Virginia.

The Team reviews every death that occurred during a pregnancy or within one year of a pregnancy. Cases of maternal death are identified through one or more of the following: (1) through the International Classification of Diseases, Tenth Revision (ICD), a designation of the cause of maternal death as occurring during "pregnancy, childbirth and the puerperium"; (2) by matching birth or fetal death certificates with maternal death certificate information; and/or (3) by selecting cases where a Commonwealth of Virginia death certificate indicates the decedent was pregnant within three months of her death.

Once a case has been reviewed, the Team works collaboratively to answer two questions: was this death a preventable death? and, was this death pregnancy-related? A preventable death is defined as a death that may have been averted by one or more changes in clinical care, facility infrastructure, community and/or patient factors. A pregnancy-related death is defined as a pregnancy-associated death resulting from one or more of the following: complications of the pregnancy itself; the chain of events initiated by the pregnancy that led to death; or aggravation of an unrelated condition by physiological effects of the pregnancy that subsequently caused death.¹ Team members then identify the factors that contributed to the death and generate strategies for prevention and intervention. These include the availability and accessibility of services, transportation issues, patient noncompliance or delay in seeking care, mental illness such as perinatal depression, substance use and abuse, and intimate partner violence. Factors related to availability of facilities, equipment and technology; effectiveness of treatment; referral and follow-up; adequacy of patient education; and continuity of care are also considered.

Team discussion and deliberation are governed by the values of multidisciplinary review and consensus decision-making which requires discussion and input from various health care and service systems designed to provide care and support to pregnant women and their families. Confidentiality is strictly maintained by the Team. The Team takes a public health approach emphasizing descriptions of the populations of women at-risk for

maternal death and understandings of the totality of factors impacting maternal deaths. Retrospective review permits the passage of time with regard to a fatal injury or illness event, which facilitates closure, complete death investigation and comprehensive case review.

In the spirit of multidisciplinary review, Team members are drawn from professional organizations such as the Virginia Chapter of the National Association of Social Workers; the Association of Women's Health, Obstetric and Neonatal Nurses; the Medical Society of Virginia; the Virginia Chapter of the American College of Obstetricians and Gynecologists; from state agencies; and from the fields of obstetrics and gynecology, psychiatry, nursing and forensic pathology. A list of Team members is provided on the back cover of this report.

Preliminary Findings for 1999-2001

The Maternal Mortality Review Team identified 121 maternal deaths in Virginia for the time period 1999-2001. More than one-half of these deaths, 52%, were due to natural causes. An additional 26% were from unintentional injuries; 71% of the women dying from unintentional injuries died in motor vehicle accidents. Fourteen percent of maternal deaths resulted from homicide and six percent from suicide. In two percent of cases, manner of death was not determined. See Figure 1.

Figure 1: Maternal Death in Virginia by Manner of Death 1999-2001 (N=121)

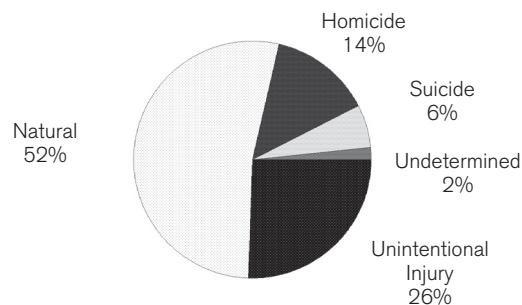
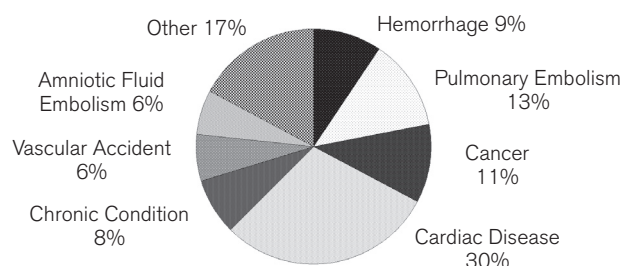


Figure 2 lays out the leading causes of natural maternal death in Virginia. Nearly one-third of these natural deaths, 30%, were attributed to cardiac disease. Pulmonary embolism was the cause of death in an additional 13% of cases; cancer caused the death in 11% of cases. Other natural causes of death included hemorrhage (9%); chronic conditions such as asthma or a seizure disorder (8%); and a vascular accident (6%) or amniotic fluid embolism (6%). Seventeen percent of these deaths were related to other causes such as infection or eclampsia.

Table 1 provides an overview of maternal death in Virginia from 1999-2001 in the setting of the following statewide demographics. The population of Virginia was 7,078,515 in 2000. Seventy-two percent of the population were

¹Berg C, Danel I, Atrash H, Zane S, Bartlett L (Editors). Strategies to reduce pregnancy-related deaths: from identification and review to action. Atlanta: Centers for Disease Control and Prevention; 2001.

Figure 2: Maternal Death in Virginia by Leading Causes of Natural Death 1999-2001 (N=64)



white and 20 percent were black. There were a total of 96,759 live births in Virginia during that year. Births to white women totaled 67,232 and births to black women totaled 22,302. Other races accounted for 7,225 births.

Thirty-four percent of women were under the age of 26 at the time of their death. Nearly half were between 26 and 35 years old while the remaining 22% were between 36 and 45 years old. With regard to race, white women accounted for 50% of the deaths during the three year period, while 43% of the deaths were among black women. Nearly one-half had completed high school and roughly one-third had some education beyond high school. Almost one-half of these women were married at the time of their death. Thirty percent of cases were from the Eastern Health Services Area and 23% were

from the Central Health Services Area. The Northern and Southwest Health Services Areas each accounted for 18% of the deaths; the remaining 11% of cases were from the Northwest Health Services Area. Forty-five percent of women were covered under private healthcare insurance plans while 33% were covered by Medicaid or Medicare.

The ratio of pregnancy-related maternal deaths to live births in Virginia for the three year period 1999-2001 was 17.4.² Further examination of pregnancy-related maternal mortality ratios revealed a profound racial disparity: 34.6 for black women and 11.5 among white women. Findings also indicated that, on average, black women entered prenatal care slightly later (14.1 weeks) than white women (11.7 weeks); had fewer total prenatal care visits (10 visits for black women versus 12 visits for white women); and gave birth to infants at a median of 37.6 weeks gestation compared to 38.1 weeks gestation among white women. Similar racial disparities in maternal mortality have been reported throughout the United States.

Maternal Death Review: Team Insights

Through its review, the Maternal Mortality Review Team identified four leading risk factors that are impacting maternal deaths in the Commonwealth. Substance use, mental illness, intimate partner violence and poor nutrition contributed to many of these deaths:

- The Team identified substance use as a risk factor in twenty-nine percent of all cases.
- Mental illness was identified as a risk factor in just over sixteen percent of all cases.
- Intimate partner violence was identified as a risk factor in fourteen percent of all cases. Sixty-five percent of the homicides were committed by a husband, boyfriend or ex-boyfriend.
- Thirty-eight percent of the women were classified as overweight or obese before the twelfth week of pregnancy.

After review of 121 maternal deaths, the Team determined that 41% of deaths were pregnancy-related; 67% of natural deaths were considered pregnancy-related while 13% of violent deaths were pregnancy-related. Team members concluded that 46% of maternal deaths were probably or definitely preventable suggesting that changes in clinical care, facility infrastructure, community and/or patient factors may have prevented the death of fifty-six young women during the three year period.

Identification of these maternal death issues—racial disparity, substance use, issues of mental health and intimate partner violence—will allow the Team to develop focused interventions and strategies directed toward reducing maternal deaths in the Commonwealth.

Victoria M. Kavanaugh, RN, PhD

Table 1: Maternal Death in Virginia, by Selected Characteristics 1999-2001 (N=121)

	Number	Percent
Age at time of death		
14 - 25	41	34
26 - 35	53	44
36 - 45	27	22
Race of decedent		
White	61	50
Black	52	43
Asian	3	3
Other	5	4
Number of years of education completed		
0 - 11	23	19
12	58	48
13 or more	39	32
Unknown	1	1
Marital status at time of death		
Married	59	49
Never married	52	43
Widowed or divorced	10	8
Health Services Area of fatal injury		
Eastern	36	30
Central	28	23
Northern	22	18
Southwest	22	18
Northwest	13	11
Healthcare insurance coverage		
Private insurance	54	45
Medicaid/Medicare	40	33
Self pay	12	10
No medical care	1	1
Unknown	14	11

² The maternal mortality ratio reflects the number of maternal deaths divided by the number of live births then multiplied by a constant: in this report, 100,000.

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