



Department of Health and Social Services  
Joel Gilbertson, Commissioner

Division of Public Health  
Richard Mandsager, MD, Director

Section of Epidemiology  
Beth Funk, MD, MPH, Editor

3601 C Street, Suite 540, PO Box 240249, Anchorage, Alaska 99524-0249 (907) 269-8000  
24-Hour Emergency Number 1-800-478-0084

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## Pregnancy-Associated Mortality in Alaska, 1990–1999

### Introduction

*Pregnancy-associated* deaths are those that occur during or within one year of pregnancy. These are rare, sentinel events that alert the public health community to important medical and social problems that affect the health of women and families. Pregnancy-associated deaths include those that are *Pregnancy-related*—deaths that occur as a result of causes directly related to pregnancy and childbirth. Recent research attention has focused on pregnancy-associated injury mortality, particularly homicide.<sup>1,2</sup>

Pregnancy-associated mortality surveillance in Alaska uses the following methods to identify cases:

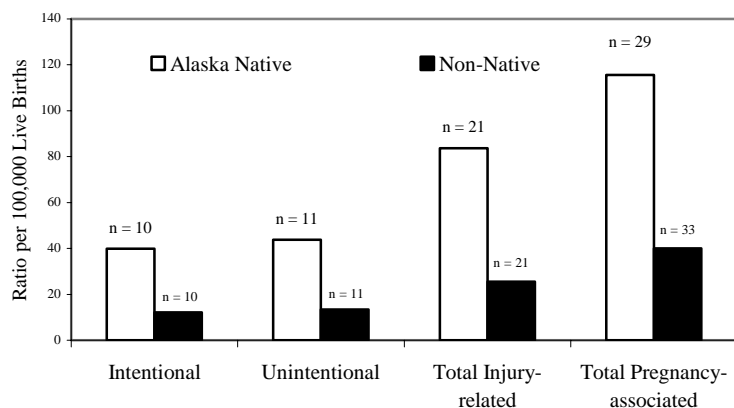
1. searching death certificate files for obstetrical ICD9 cause of death codes or notations of recent pregnancy,
2. matching female death certificates with birth certificates or fetal death certificates for deliveries that occurred within one year of the woman's death, and
3. reviewing Medical Examiner records for evidence of recent pregnancy. The Alaska Maternal and Infant Mortality Review Committee reviews all pregnancy-associated deaths for consensus on cause of death, contributing factors and preventability.

### Results

Sixty-two pregnancy-associated deaths were identified in Alaska during 1990 through 1999, of which 8 (13%) were pregnancy-related (58 and 7.4 per 100,000 live births, respectively). Injuries accounted for 69% (39 per 100,000 live births) of pregnancy-associated mortality, including 52% due to unintentional and 48% due to intentional injuries. The most common etiologies for pregnancy-associated injury mortality included motor vehicle crashes (n=7), homicide (n=5), suicide (n=4) and drug overdose (n=4) (7.4, 6.5, 6.5, and 5.6 per 100,000 live births, respectively).

During 1995-99, Alaska Natives had an increased risk of pregnancy-associated mortality (relative risk [RR] 3.1; 95% confidence interval [CI] 1.6-5.9) compared to non-Natives, including both intentional (RR 3.3; CI 1.4-7.9) and unintentional injury-specific mortality (RR 3.3; CI 1.4-7.6) (Figure 1).

**Figure 1. Pregnancy-Associated Mortality Ratios by Manner of Death and Race, Alaska, 1990-1999**



### Conclusions

Despite having a pregnancy-related mortality ratio lower than that of the US as a whole (7.4 compared to 11.8 deaths per 100,000 live births),<sup>3</sup> Alaska has one of the highest reported statewide estimates of pregnancy-associated mortality in the country. Most of this excess in mortality is injury-related, particularly among Alaska Natives. In addition, Alaskan women, regardless of ethnicity, were at elevated risk of pregnancy-associated homicide—3.5 times higher than the 1.7 deaths per 100,000 live births reported for the US as a whole.<sup>1</sup>

Healthcare providers have a unique opportunity to direct injury control interventions toward pregnant and postpartum women through pre- and postnatal clinical encounters. Although no evidence currently exists regarding successful interventions for preventing pregnancy-associated injury mortality, screening and referral to mental health, drug and alcohol dependency and domestic violence services are likely to be beneficial. For example, prenatal domestic violence screening increased the identification of intimate partner abuse by up to 10-fold.<sup>4</sup> Further studies are needed to evaluate whether interventions such as this, in combination with effective referral, are successful in preventing pregnancy-associated injury.

### Recommendations

Healthcare providers should implement published screening protocols for domestic violence and postpartum mental health.<sup>5,6</sup> Comprehensive care before, during and after pregnancy should include screening, followed by tested regimens for validation, documentation and referral. The Council on Scientific Affairs of the American Medical Association recommends screening for domestic violence in primary care, emergency services, obstetric and gynecological services, psychiatric services and pediatric care.<sup>7</sup>

Healthcare providers should supply injury prevention education materials and provide risk factor counseling for their pregnant and postpartum patients.

### References

- 1 Chang J, Berg C, et al. Homicide: A Leading Cause of Injury Deaths Among Pregnant and Postpartum Women in the United States, 1991-1999. *Am J Public Health* March 2005; 95, (3).
- 2 Horon IL, Cheng D. Enhanced surveillance for pregnancy-associated mortality: Maryland, 1993-1998. *JAMA* 2001;285:1455-1459.
- 3 CDC. Pregnancy-Related Mortality Surveillance United States, 1991-1999. *MMWR* 2003;52(SS02)1-8.
- 4 Wiist WH, McFarlane J. The effectiveness of an abuse assessment protocol in public health prenatal clinics. *Am J Public Health* 2000 Oct;90(10): 1648
- 5 Medline Abstracts: Violence Against women – Screening protocols. Available at: <http://www.medscape.com/viewarticle/463966>.
- 6 Medline. Postpartum Depression Predictors. Available at: <http://www.medscape.com/viewarticle/450939?src=search>.
- 7 Council of Scientific Affairs, American Medical Association. Violence Against Women: Relevance for medical practitioners. *JAMA* 1992; 267:3184-9.