Maternal Mortality in Georgia challenges, progress, and opportunities

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Conflict of Interest

• I have no conflicts of interest
Learning Objectives

• Describe how we measure MM in the US and examine recent trends.

• Review findings and recommendations from 2012, 2013 MMRC of maternal deaths in Georgia.

• Describe the Georgia Perinatal Quality Collaborative (GAPQC) role in implementing state-wide patient safety initiatives.
Definitions

• WHO ICD-10:
  - Maternal Death
    The death of a women while pregnant within 42 days of termination of pregnancy irrespective of duration and site but not from accidental or incidental causes
  - Late Maternal Death (1999)

WHO: 2004
Pregnancy-Mortality Surveillance Systems in USA

• CDC/National Center Health Statistics

• CDC/Pregnancy Mortality Surveillance System

• Maternal Mortality Review Committees

St Pierre Obstet Gynecol 2018
National Sources of Maternal Mortality Information

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<td>Show national trends and provide a basis for international comparison</td>
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**State:**
- Death Occurred
- Death Certified
- Death Registered

**NCHS:**
- ICD-Code assigned
- Sent back to state
- Public dataset created

# National Sources of Maternal Mortality Information

**CDC – National Center for Health Statistics (NCHS)**

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![Graph showing maternal mortality rate from 1990 to 2010](image)
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Pregnancy-Associated Deaths

Pregnancy-Related Death
The death of a woman during pregnancy or within one year of pregnancy from a pregnancy complication, a chain of events initiated by pregnancy, or the aggravation of an unrelated condition by the physiologic effects of pregnancy.

Pregnancy-Associated but NOT Related Death
The death of a woman during pregnancy or within one year of pregnancy from a cause that is not related to pregnancy.

Unable to Determine

10
Maternal Mortality Review Committee

Data source
- Death certificate linked fetal death/birth certificate
- Medical records, social service

Time: preg-365 days

Term: Pregnancy associated/Pregnancy related

Measure: Deaths/100,000 live births
(National) Sources of Maternal Mortality Information

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<td>Analyze clinical factors associated with deaths; publish information that may lead to prevention strategies</td>
<td>Understand medical and non-medical contributors to deaths, prioritize interventions that effectively reduce maternal deaths</td>
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US Standard Certificate of Death 2003 Revision

• If Female
  □ not pregnant within past year
  □ pregnant at time of death
  □ not pregnant, but pregnant within 42 days of death
  □ not pregnant but pregnant 43 days to 1 year before death
  □ unknown if pregnant within the past year

Mackay AM J Prev Med 2003
Maternal Deaths in The United States

• About 500-600 year.
• Approximately one-half of all maternal deaths considered preventable.
MM Crisis In Georgia

• In 2010 Amnesty International “Deadly Delivery: The Maternal Health Care Crisis in the USA”
• GA 50th MM
• Maternal Mortality Ratio
  – 2001-2006 24.8 100,000/live births
  – 2010 23.2
  – 2011 28.7
  – 2012 19.2

  – Amnesty International 2010
Georgia Maternal Mortality Review Committee (MMRC)

- Results of a 3 year process collaboration
  - Georgia Department of Public Health
  - Georgia Obstetric and Gynecological Society
  - Centers for Disease Control and Prevention
  - Georgia General Assembly and Governor Nathan Deal
Case Identification

1. Maternal Death
2. Check Mark on Death Certificate
   Mandatory Reporting
   Identification
   ICD-10/ICD-9
   Data Linkages
3. Cases Selected for Abstraction
4. Review by Committee
5. Committee Recommendations
6. Actionable Items
Maternal Mortality Review – Summary Findings 2012

- 86 maternal deaths in 2012; 26 (29%) were pregnancy-related and 60 (71%) pregnancy-associated
- 32% of pregnancy-related deaths occurred while pregnant or within one day of the end of pregnancy
- 52% of the pregnancy-related deaths occurred within the first 42 days after the pregnancy ended
79 maternal deaths in 2013 compared with 86 deaths in 2012, 32 were pregnancy-related and 47 pregnancy-associated

16 (50%) of the 32 pregnancy-related deaths were determined by the MMRC to be preventable

60% of the pregnancy-related deaths occurred within the first 42 days after the pregnancy ended

50% of the pregnancy-related deaths occurred among women 29 years of age or younger

69% of the pregnancy-related deaths had a pre-existing medical condition

Of the 79 total maternal deaths 52% were Medicaid recipients and 18% had private insurance
<table>
<thead>
<tr>
<th>Year</th>
<th>Number</th>
<th>Causes</th>
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| 2012 | 26     | - Hemorrhage (28%)  
          - Hypertension (16%)  
          - Cardiac (16%)  
          - Embolism (16%)  
          - Seizures (12%)  
          - Other (12%) |
| 2013 | 32     | - Cardiomyopathy (25%)  
          - Hemorrhage (16%)  
          - Embolism (16%)  
          - Cardiovascular and coronary conditions (6%)  
          - Infections (6%)  
          - Pregnancy-specific condition (6%)  
          - Anesthesia complications (6%)  
          - Mental health conditions (6%)  
          - Other (13%) |
Causes of Pregnancy-Associated Deaths

2012 (60)
- Motor vehicle accidents (15%)
- Homicide (15%)
- Suicide (15%)
- Heart disease (13%)
- Cancer (12%)
- Drug toxicity (12%)
- Other (18%)

2013 (47)
- Motor vehicle accidents (19%)
- Drug toxicity (15%)
- Homicide (13%)
- Respiratory conditions (11%)
- Non-peripartum or postpartum cardiomyopathy (6%)
- Other cardiovascular (6%)
- Suicide (6%)
- Cancer (4%)
- Diabetes (4%)
- Sepsis (4%)
- Other (12%)
Georgia Maternal Mortality – Key Opportunities for Prevention

- After two full years of review, many opportunities for improvement were identified and fall into 2 major categories:
  - Education of providers, patients and community regarding potential or actual problems that most commonly lead to poor maternal outcomes/death
  - Early identification of risk factors associated with maternal mortality and appropriate follow up of these problems
Additional Areas of Concern Associated with Poor Maternal Outcomes

• Obesity
  – 58% of reviewed maternal deaths had documented BMIs of >30
  – Co-existed with chronic medical conditions such as DM and cHTN and postpartum complications
  – Appears to be inadequate monitoring of obese pregnant/postpartum patients
  – Lack of referral to MFM or cardiologist for morbid obesity
Additional Areas of Concern Associated with Poor Maternal Outcomes

• Chronic medical conditions
  – Women with chronic medical conditions often did not receive referrals to treat those chronic medical conditions during pregnancy or postpartum
  – Women with high risk or chronic conditions often did not receive preconceptual or early pregnancy counseling on their increased risks during pregnancy

• Cardiomyopathies and cardiovascular conditions such as hypertension
Additional Areas of Concern Associated with Poor Maternal Outcomes

• **Drugs in pregnancy**
  – Inappropriate usage of prescription, nonprescription and illicit drugs during pregnancy and postpartum
  – Lack of prescription history being available to providers
  – Inappropriate mixing or adding of medications to those prescribed
  – Lack of documented screening for prescription and/or illegal substance abuse

• **Availability of high risk care**
  – Lack of transfer or referral to a higher level of care when indicated
  – Inability of incarcerated pregnant women to get the appropriate level of care
  – Lack of standardization for treatment and referral of high risk pregnancies
Additional Areas of Concern Associated with Poor Maternal Outcomes

• **Hemorrhage**
  – Delayed recognition and treatment of hemorrhage in postpartum women by both patients and providers

• **Anxiety/depression**
  – Inadequate screening of pregnant and postpartum women for depression and other mental health issues
  – Possible lack of access to mental health services
  – Potential lack of awareness by patients or providers of benefits and safety of antidepressant therapy during pregnancy and postpartum period
Recommendations from 2013
Case Review

• Medical Education Opportunities
• Community Education Opportunities
• Policy Recommendations
Recommendations from 2013 Case Review

- **Medical education opportunities**
  - Partner with GaPQC to implement AIM patient safety bundles related to CV disease and hemorrhage
  - Consider appropriate consults for high risk patients
  - Encourage interconceptual and postpartum f/u and care
  - Encourage depression screening during pregnancy/postpartum
  - Encourage taking/recording of complete medical history
  - Prescribe affordable medications
  - Encourage patients to take medications as directed
Georgia Perinatal Quality Collaborative (GaPQC)

- Started in November 2012; Cathy Bonk (OB) and David Levine (Neo)
- Multidisciplinary – about 15 people initially; 35 now
- Goal is to identify and implement QI initiatives to improve Ga’s maternal and neonatal outcomes
- Have looked at antenatal steroid use and LARC implementation for OB; CCHD screening, antibiotic stewardship, NAS mgt for Peds
- Large increase in last 3 years of states having PQC – California
- Ga received funding from CDC for project implementation
- Meets twice yearly; monthly phone calls
- Now has support of state, DPH and GOGS for implementation of AIM bundles
Currently Available AIM Bundles

- Obstetric Hemorrhage
- Severe Hypertension in Pregnancy
- Maternal Venous Thromboembolism
- Obstetric Care for Women with Opioid Use Disorder
- Maternal Mental Health: Depression and Anxiety
- Postpartum Care Basics for Maternal Safety
- Prevention of Retained Vaginal Sponges after Birth
- Reduction of Peripartum Racial/Ethnic Disparities
- Safe Reduction of Primary Cesarean Birth
- Severe Maternal Morbidity Review
- Support after a Severe Maternal Event
Recommendations from 2013 Case Review

- Community education opportunities
  - Partner with community agencies to promote prenatal care and evidence-based programs such as centering pregnancy
  - Publicize importance of following provider recommendations to ensure a healthy pregnancy
  - Publicize healthy eating habits/maintenance of healthy weights
  - Support contraception education/LARCs
  - Publicize dangers of smoking during pregnancy
  - Promote Georgia’s regional perinatal system for: 1) referral and treatment of high risk pregnancies and 2) coordination of patient safety initiatives
Recommendations from 2013
Case Review

• Policy recommendations
  – Support legislation to preserve women’s health care system including rural labor and delivery units so that all pregnant women will have access to care within a reasonable distance
  – Maintain and increase funding for Public Health Departments when possible
  – Work to extend insurance coverage into months after delivery to manage high risk comorbidities
  – Support implementation of designated maternal levels of care (HB 909)
Georgia’s Obstetric Care Crisis (Zertuche)

Status of Obstetric Services in Georgia (by PCSA)
Dec. 2011
Maternal Mortality in Georgia 2010-2012

Goals: Characterize pregnancy-associated deaths and examine the relationship between area of residence and pregnancy-associated deaths and pregnancy-related mortality ratios in Georgia from 2010-2012
Fig. 1. Description of the process to identify and classify pregnancy-associated deaths. ICD-10, International Statistical Classification of Diseases and Related Health Problems, 10th Revision.

Fig. 2. Number and distribution of pregnancy-associated deaths in Georgia from 2010 to 2012. 
Maternal Mortality in Georgia 2010-2012

- During 3 year study period overall mortality ratio was 26.5 (95% CI 21.9-32.1) per 100,000/live births
- 2010: 34.4 (95% CI 25.8-45.9) per 100,000/births
- 2011: 25.7 (95% CI 18.4-35.9)
- 2012: 19.2 (95% CI 13.0-28.4)
- P=0.55

OBSTETRICS GYNECOLOGY
2016:128:113-20
Maternal Mortality in Georgia
Stratified by Geography
2010-2012

- Rural: 27.1 (95% CI 16.9-43.3) per 100,000 births
- Nonrural: 24.4 (95% CI 17.4-34.3)
- Metro ATL: 27.7 (95% CI 21.3-36.1)
- P = .845
Maternal Mortality in Georgia Stratified by Race 2010-2012

- Black women 49.5 (95% CI 38.9-63.1) per 100,000/live births
- White women 14.3 (95% CI 9.9-20.7)
- P < .001

OBSTETRICS GYNECOLOGY 2016:128:113-20
Maternal Mortality in Georgia Stratified by Race and Geography

Black women most likely to die
- Hypertensive disorders
- Hemorrhage
- VTE
- Cardiomyopathy

White women
- Suicide
- Homicide

OBSTETRIC GYNECOLOGY 2016;128;1113-20.
Racial Disparity Maternal Mortality

- African–American to White ↑ 3.5-4 higher
- Irrespective of education or income level
- Ratio essentially unchanged for 50-60 years

- CDC
References


5. CDC WONDER http://wonder.cdc.gov


References