Improving maternal outcomes by expanding the midwifery workforce in Arizona communities

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OBJECTIVES

• 1. Review the data documenting the maternal health crisis in Arizona and nationally.

• 2. Discuss how expanding the midwifery workforce and implementing the midwifery model of care will improve maternal outcomes in the state of Arizona.

• 3. Describe the University of Arizona midwifery educational program, efforts to promote diversity within the profession, and incorporation of antiracist content in the curriculum.
What is a midwife?

Certified Nurse-Midwife
Certified Midwife
Certified Professional Midwife
### Maternal Mortality in US

<table>
<thead>
<tr>
<th></th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal Deaths</td>
<td>658 (17.4)</td>
<td>754 (20.1)</td>
<td>861 (23.8)</td>
<td>1200* (32.9)</td>
<td>733**</td>
</tr>
</tbody>
</table>

*Note: 2020 and 2021 data adjusted to new 12-month reference period.
Maternal Mortality in US

Deaths per 100,000 live births

- Hispanic: 2018: 11.8, 2019: 12.6, 2020: 18.2

1Statistically significant increase in rate from previous year (p < 0.05).
NOTE: Race groups are single race.
# Maternal Mortality in the U.S. Far Outstrips That of Other Industrialized Nations

<table>
<thead>
<tr>
<th>Country</th>
<th>Maternal Mortality Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.</td>
<td>23.8</td>
</tr>
<tr>
<td>France</td>
<td>8.7</td>
</tr>
<tr>
<td>Canada</td>
<td>8.6</td>
</tr>
<tr>
<td>UK</td>
<td>6.5</td>
</tr>
<tr>
<td>Australia</td>
<td>4.8</td>
</tr>
<tr>
<td>Switzerland</td>
<td>4.6</td>
</tr>
<tr>
<td>Sweden</td>
<td>4.3</td>
</tr>
<tr>
<td>Germany</td>
<td>3.2</td>
</tr>
<tr>
<td>Netherlands</td>
<td>3</td>
</tr>
<tr>
<td>Norway</td>
<td>1.8</td>
</tr>
<tr>
<td>New Zealand</td>
<td>1.7</td>
</tr>
</tbody>
</table>

*Deaths per 100,000 live births

Maternal Mortality in Arizona

- U.S. has the highest maternal mortality rate of developed countries
- 20.3 maternal deaths per 100,000 live births in Arizona (2012-2016)
Maternal Mortality Rate by Race/Ethnicity

Arizona Maternal Mortality Rate (per 1,000 live births) by Race/Ethnicity (2012-2015)

- White: 7
- Hispanic: 9
- Native American: 28.4
- Other: 17.6

2016 Arizona Maternal Mortality Review Program Report
2012-2015 Arizona Vital Records
AZ Department of Health Services

Spectrum of Maternal Health Outcomes

Maternal Mortality

Maternal Near Miss

Severe Maternal Morbidity

Maternal Morbidity

Uncomplicated Pregnancies

Complicated Pregnancies

INCREASING SEVERITY

Life-threatening conditions

Potentially life-threatening conditions

Non life-threatening conditions

Adapted from:
Maternal Mortality: 2016-2017 Arizona MMRC Reviewed Deaths

Deaths in Arizona of Women 15-49 Years Old with a Pregnancy in the Previous 365 Days

All Pregnancy-Associated Deaths 134

- Associated but Not Related 70.9% (95)
- Pregnancy-Related 23.1% (31)
- Unable to Determine Relatedness 6.0% (8)

Mortality Ratio (deaths per 100,000 births)

- Pregnancy-Associated Mortality Ratio 79.1
- Pregnancy-Related Mortality Ratio 18.3

83.6% of Pregnancy-Associated & 80.6% of Pregnancy-Related deaths were Preventable

Timing of Pregnancy-Related Deaths

- Pregnant at time of death 16.4% of deaths
- Pregnant within 42 days of death 31.3% of deaths
- Pregnant within 43 - 365 days of death 50.0% of deaths

91% Preventable 76% Preventable 85% Preventable

Note: Due to limitations of cases reviewed prior to full implementation of MMRS, some data are incomplete (2.1% of reviewed cases)

Underlying Cause of Pregnancy-Related Deaths

- Cardiovascular, Coronary, Cerebrovascular Conditions 25.8%
- Conditions of Pregnancy Includes amnionitis, fluid embolism, pre eclampsia, & eclampsia 22.6%
- Infection 19.4%
- Mental Health Conditions 19.4%
- Other Includes metabolic, endocrine, autoimmune, fever, gastrointestinal, pulmonary, & neurological conditions 19.4%

Note: Total will be more than 100% as 2 cases had multiple underlying cause codes

Deaths from Intentional Injuries

<table>
<thead>
<tr>
<th>% of Pregnancy-Associated Deaths</th>
<th>% of Pregnancy-Related Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suicide</td>
<td>9.7%</td>
</tr>
<tr>
<td>Homicide</td>
<td>12.7%</td>
</tr>
<tr>
<td>Mental Health Conditions</td>
<td>25.8%</td>
</tr>
<tr>
<td>Substance Use Disorder</td>
<td>38.1%</td>
</tr>
<tr>
<td>Obesity</td>
<td>15.7%</td>
</tr>
</tbody>
</table>

Definitions

Pregnancy-Associated: The death of a woman during pregnancy or within one year of the end of pregnancy, regardless of the cause.

Pregnancy-Related: The death of a woman during pregnancy or within one year of the end 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.

Preventability: A death is considered preventable if the committee determines that there was at least some chance of the death being averted by one or more reasonable changes to patient, community, provider, facility, and/or systems factors.
Severe Maternal Morbidity: 2016-2019
In-State Delivery Hospitalizations of Arizona Residents

**SMM Rate per 10,000 Arizona Resident Delivery Hospitalizations, 2016-2019**

Average 119.4

Severe Maternal Morbidity (SMM):
Unexpected conditions or outcomes of pregnancy, delivery, or postpartum that aggravate or lead to significant negative effects on a woman’s health and wellbeing.

SMM Rate by Race and Ethnicity

- American Indian or Alaska Native: 303.0
- Asian or Pacific Islander: 132.3
- Black or African American: 163.8
- Hispanic or Latina: 133.0
- White, Non-Hispanic: 83.3

**Top Diagnoses Indicators of SMM**

- Adult Respiratory Distress Syndrome: 8.4%
- Acute Renal Failure: 7.7%
- Sepsis: 7.6%
- Disseminated Intravascular Coagulation (DIC): 6.5%
- Acute Heart Failure / Pulmonary Edema: 6.0%
- Shock: 5.6%

**Top Procedure Indicators of SMM**

- Transfusion: 67.6%
- Hysterectomy: 7.8%
- Ventilation: 4.5%

Rural Impact

Severe Maternal Morbidity Rate for Urban and Rural Counties

- Rural: 155.6
- Urban: 114.8

Rural counties are: Apache, Cochise, Coconino, Gila, Graham, Greenlee, La Paz, Mohave, Navajo, Santa Cruz, and Yavapai. Urban counties are Maricopa, Pima, Pinal, and Yuma. Based on definitions used by the ADHS Bureau of Public Health Statistics.
Notable Disparity: The amount of prenatal care received differs greatly by PCA.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Rate per 100 births</th>
</tr>
</thead>
<tbody>
<tr>
<td>Births with complications of labor and/or delivery</td>
<td>32.3</td>
</tr>
<tr>
<td>Births with medical risk factors</td>
<td>33.1</td>
</tr>
<tr>
<td>Preterm births (gestational age &lt; 37 weeks)</td>
<td>9.9</td>
</tr>
<tr>
<td>Births with abnormal conditions of the newborn</td>
<td>6.8</td>
</tr>
<tr>
<td>Low birthweight births (&lt;2,500 grams)</td>
<td>8.2</td>
</tr>
<tr>
<td>Very low birthweight births (&lt;1,500 grams)</td>
<td>1.2</td>
</tr>
<tr>
<td>Births with congenital anomalies of the newborn</td>
<td>0.5</td>
</tr>
<tr>
<td>Tobacco use during pregnancy</td>
<td>5.1</td>
</tr>
<tr>
<td>C-section</td>
<td>27.8</td>
</tr>
<tr>
<td>Infants admitted to newborn intensive care units</td>
<td>11.5</td>
</tr>
<tr>
<td>Women giving birth who received prenatal care in the 1st trimester</td>
<td>64.0</td>
</tr>
<tr>
<td>Public sources of payment for birth</td>
<td>51.0</td>
</tr>
<tr>
<td>Births to unmarried mothers</td>
<td>45.5</td>
</tr>
</tbody>
</table>

Table 9 Rates of occurrence for selected characteristics of newborns and mothers giving birth in Pima County

Teen pregnancies have showed a decreasing trend since 2009 in Pima County. In 2019, there were 4.1 pregnancies per 1,000 females ages 10-17 compared to 11.2 in 2009. Among 18-19-year-olds, there were 35.2 pregnancies per 1,000 females compared to 82.3 in 2009 (Table 10).
Pima County 2021
Community Health Needs Assessment

2019
- 10,357 births in Pima County
- 9.9% preterm (<37wks)
- 32.3% involved complications
- 33.1% medical risk factors
- 11.5% admitted to the NICU

2019
- 5.9/1,000 infant mortality ratio (61 infants)
- 2013-2019
  - White 4/1,000
  - Black 8/1,000
  - Native American 10/1,000
  - Hispanic 5/1,000
Why?

Causes of pregnancy-related deaths*

*selected years in Colorado, Delaware, Georgia, Hawaii, Illinois, North Carolina, Ohio, South Carolina and Utah

- Hemorrhage: 14%
- Cardiovascular/Coronary Conditions: 14%
- Infection: 11%
- Cardiomyopathy: 11%
- Embolism: 9%
- Preeclampsia/Eclampsia: 7%
- Mental Health Conditions: 7%
- Amniotic Fluid Embolism: 4%
- Homicide: 3%
- Cardiovascular Accidents: 3%
- Unintentional Injury: 3%
- Anesthesia Complications: 2%
- Autoimmune Diseases: 2%
- Other: 10%

reconnomics

data from Building U.S. Capacity to Review and Prevent Maternal Deaths
No really, but why?

• Shalon MauRene Irving
• Lieutenant Commander in the U.S. Public Health Service and worked at the Centers for Disease Control and Prevention
• Focus of her work was on structural inequalities, trauma, and health disparities
• She died three weeks after giving birth to her first child
• The cause of death was complications caused by high blood pressure
Obstetric Racism

"Obstetric racism is a threat to maternal life and neonatal outcomes. It includes, but is not limited to, critical lapses in diagnosis; being neglected, dismissed, or disrespected; causing pain; and engaging in medical abuse through coercion to perform procedures or performing procedures without consent."

- Racism
- Discrimination
- Bias
- Weathering
- Social Determinants of Health
Midwifery Care is Effective

- Integrate into the health care team in collaborative practice models
- Increase access to care
- Holistic approach
- Supports physiologic birth
- Engages in shared decision-making
- Encourages autonomy, responsibility, and self determination
- Creates environment of respect and safety
1. Rural Data
2. WHO Calculations
We do not have enough... providers, nurses, hospital beds

• Efficient use of our resources
  • Collaborative practice models
  • Practice to full scope of licensure
• Judicious use of interventions
  • Evidence based practice
University of Arizona Nurse-Midwifery Program

• DNP Program
  • 3-year program, 69 credits, 900 clinical hours
  • Hybrid model of online and on campus experiences
• Certificate option (for APRN with MSN or DNP)
  • 4 semesters, 34 credits, 900 clinical hours
  • Hybrid model of online and on campus experiences
Antiracism Curriculum

Addressing Racism and Advancing Equity in Midwifery Education:
A PROGRAM CONTENT TOOLKIT FOR ACTION

- Why is curriculum important?
- Resources: Training Faculty & Staff
- Policies and Position Statements
- Creating an Inclusive Climate
- Recruiting & Retaining Students/Faculty of Color
- Analyzing the Accreditation & Certification Process
- Resources: Fostering & Evaluating Success
- How do we strengthen our current systems?

- Expanding Scholarships & Financial Aid Opportunities
- Eliminating Power & Privilege
- Mentoring Programs
- Promoting Peer Support
- Resources: Cross-Racial Teams
- Academic Support Strategies
- Representation in Leadership
- What is Critical Consciousness?
- Healthy Resources & Focusing on Strengths

Join the Conversation:
- Sign up for email updates HERE!
- Register for Strategy & Collaboration Calls
- Contact Us with Questions & Feedback

Click here to check out our article: Incorporating an Equity Agenda into Health Professions Education and Training to Build a More Representative Workforce
Things to consider for the future...

• Implicit Bias Training for all providers
• Remove barriers to midwifery education (time and money)
• Streamline midwifery education in Arizona
  • Consider CM licensure (NY, PA, DE, HI, ME, MD, CO, OK, RI, VA, DC)
  • Expand use of simulation as a teaching strategy to develop competence
• Mentoring nurses from diverse backgrounds
• Create intensive clinical experiences in settings with midwives and then the learner returns to their home community
References

• Maternal Mortality Rates in the United States, 2021 (CDC)
• Maternal Mortalities and Severe Maternal Morbidity in Arizona, 2020 (AZDHS)
• Maternal Mental Health- and Substance Use-Related Deaths in Arizona, 2022 (AZDHS)
• UArizona OBGYNs and CNMs Work Force Report, 2020 (UArizona)
• Addressing Racism and Advancing Equity in Midwifery Education: Toolkit (ACNM)
• Equity in Midwifery Education (website)
Questions