

North Dakota Maternal Mortality Review Committee

ANNUAL REPORT

TO THE
INTERIM HEALTH CARE
COMMITTEE

8-30-2023

Overview

- ND MMRC Chronology
- ND MMRC Membership
- National Trends in Maternal Mortality
- ND MMRC Update
- North Dakota Maternal Mortality
- Challenges and Focus

MMRC Background

Established in 1954

One of the oldest MMRCs in the country

Committee Objectives:

- Annual review of maternal deaths in ND
- Education
- Remain Non-political

Background

- 2021-Establishment of the ND MMRC within the ND Century Code HB No.1205
- Initiated the reporting of the MMRC activities to the legislature and other entities
- UNDSMHS Department of Ob/Gyn administratively oversees the MMRC
- Coordination with CDC allows for national tabulation and sharing of data

ND MMRC Membership

Membership per HB No. 1205:

“The department shall appoint individuals to serve as members on the maternal mortality review committee. Committee membership must include representatives of multiple specialties and disciplines, including forensic pathology. In appointing members, **the department shall endeavor to appoint individuals working in and representing communities affected by pregnancy - related deaths, severe maternal morbidity, and a lack of access to relevant perinatal and intrapartum care services.**”

Membership

- Culturally Inclusive/Diverse
- Professional Expertise
- Geographical Representation
- State and Local Health Organization Participation
- At Risk Population Perspective/Input
- Ad Hoc Community Consultants/Advisors As Needed
- Public Member

MMRC Membership

- Thomas F. Arnold MD-Dickinson-Chair ND MMRC
- Dennis Lutz MD-Minot-Secretary ND MMRC
- Steffen P. Christensen MD-Fargo-Case Review Analyst

ND MMRC Membership

N.D. Medical Association (NDMA)

- | | |
|--------------------------------------|---|
| 1. District 1 – Fargo | Stephen T. Linn, M.D. (Essentia Health, Ob-Gyn) |
| 2. District 2 – Devils Lake | Candelaria Martin-Arndt, M.D. (Family Medicine) |
| 3. District 3 – Grand Forks | Collette R. Lessard, M.D. (Altru Health, Ob-Gyn) |
| 4. District 4 – Minot | David A. Billings, M.D. (Trinity Health, Ob-Gyn) |
| 5. District 5 – Valley City | Genevieve M. Goven, M.D. (Family Medicine) |
| 6. District 6 – Bismarck | Jerry M. Obritsch, M.D. (Mid Dakota, Ob-Gyn) |
| 7. District 7 – Jamestown | Larry E. Johnson, M.D. (Family Medicine/County Coroner) |
| 8. District 8 – Williston | Beverly J. Tong, M.D. (Great Plains Women’s Health, Ob) |
| 9. District 9 – Dickinson | Erica C. Hofland, M.D. (Sanford Health, Ob-Gyn) |
| 10. District 10 – Mayville/Hillsboro | Peter Van Eerden, M.D. (Eastern ND MFM) |
| 11. District 11 – Hettinger | Ana M. Tobiasz, M.D. (Western ND MFM) |

Present MMRC Membership

2022 North Dakota Maternal Mortality Committee Membership Roster

N.D. Century Code HB1205 (enacted August 2021)

UND School of Medicine & Health Sciences Department Obstetrics & Gynecology

MEMBER CATEGORY

REPRESENTATIVE (TITLE)

UNDSMHS

- | | |
|----------------------------------|---|
| 1. Chair Dept. Ob-Gyn | Dennis J. Lutz, M.D. (Immediate Past Chair MMRC) |
| 2. Vice Chair Dept. Ob-Gyn | Thomas F. Arnold, M.D. (MMRC Chair) |
| 3. Assoc. Prof. Dept. Ob-Gyn | Steffen P. Christensen, M.D. (Case Review Analyst) |
| 4. Dept. Family Medicine | David F. Schmitz, M.D. (Dept. Chair & FM Residency Programs) |
| 5. Dept. Pathology | Mary Ann Sens, M.D. (Dept. Chair & Forensic Pathology) |
| 6. Dept. Pediatrics | Christopher H. Tiongson, M.D. (Dept. Chair & Urgent Care) |
| 7. Dept. Psychiatry | Andrew J McLean, M.D. (Dept. Chair & Mental Health/Addiction) |
| 8. Indians Into Medicine Program | Daniel Henry, M.D. M.D. (INMED Director-UND) |

MMRC Membership

N.D. Department of Health and Human Services

- | | |
|------------------------------|--|
| 1. Health Analytics Director | Grace N. Njau (Epidemiologist/Director Special Projects) |
| 2. Public Health Specialist | Alicia Belay, PhD, MPH (Health Equity Office) |
| 3. Division of Vital Records | Stephen W. Denn (Data Processing Manager) |

Present MMRC Membership

N.D. Medical Association (NDMA)

- | | |
|--------------------------------------|---|
| 1. District 1 – Fargo | Stephen T. Linn, M.D. (Essentia Health, Ob-Gyn) |
| 2. District 2 – Devils Lake | Candelaria Martin-Arndt, M.D. (Family Medicine) |
| 3. District 3 – Grand Forks | Collette R. Lessard, M.D. (Altru Health, Ob-Gyn) |
| 4. District 4 – Minot | David A. Billings, M.D. (Trinity Health, Ob-Gyn) |
| 5. District 5 – Valley City | Genevieve M. Goven, M.D. (Family Medicine) |
| 6. District 6 – Bismarck | Jerry M. Obritsch, M.D. (Mid Dakota, Ob-Gyn) |
| 7. District 7 – Jamestown | Larry E. Johnson, M.D. (Family Medicine/County Coroner) |
| 8. District 8 – Williston | Beverly J. Tong, M.D. (Great Plains Women’s Health, Ob) |
| 9. District 9 – Dickinson | Erica C. Hofland, M.D. (Sanford Health, Ob-Gyn) |
| 10. District 10 – Mayville/Hillsboro | Peter Van Eerden, M.D. (Eastern ND MFM) |
| 11. District 11 – Hettinger | Ana M. Tobiasz, M.D. (Western ND MFM) |

Present MMRC Membership

N.D. Hospital Association

Tim Blasl-President NDHA

Public Member

Vicki Steiner (N.D. House of Representatives)

Note:

1. Ad hoc community consultants/advisors as needed for specific ethnic populations, law enforcement, etc.
2. MMRC Liaison contact @ Center for Disease Control, Atlanta, Georgia

Definition of Maternal Mortality

A maternal death is defined as, “the death of a woman while pregnant or within 42 days of termination of pregnancy,” but excludes those from accidental or incidental causes.

The leading underlying causes of pregnancy-related death include:

- Mental health conditions (including deaths to suicide and overdose/poisoning related to substance use disorder) (23%)
- Excessive bleeding (hemorrhage) (14%)
- Cardiac and coronary conditions (relating to the heart) (13%)
- Infection (9%)
- Thrombotic embolism (a type of blood clot) (9%)
- Cardiomyopathy (a disease of the heart muscle) (9%)
- Hypertensive disorders of pregnancy (relating to high blood pressure) (7%)

Timing of Maternal Deaths

- 22% of deaths occur during pregnancy
- 25% occur on the day of delivery or within 7 days after
- 53% occur between 7 days to 1 year after pregnancy.

Per CDC Data:

“Maternal mortality ratio (MMR-
maternal deaths per 100,000 live births)
decreased globally by about 38%
between 2000 and 2017, yet, it
continues to climb in the United States.
Ranked worst in the developed world,
the United States reports almost 700
pregnancy-related deaths annually.”

2021

What Accounts for the Rise in the US?

- Variations in data collection, definitions and ability to account for maternal deaths
- Changes in death certificate reporting
- Increasing pregnancy rates in patients with significant obstetric risk factors
- Assisted reproductive ability to achieve pregnancy in patients previously diagnosed as infertile
- Increased attention to maternal mortality reporting
- Increase in multiple fetus pregnancies

US Maternal Deaths Disparity

	<u>2018</u>	<u>2019</u>	<u>2020</u>
• Total	658 (*17.4)	754 (*20.1)	861 (*23.8)
• Black	37.3%	44.0%	55.0%
• White	14.9%	17.9%	19.1%
• Hispanic	11.8%	12.6%	18.3%

*Maternal Mortality Ratio (deaths per 100,000 live births)

CDC

Maternal Mortality Disparities

- American Indian/Alaskan Native maternal mortality ratio is 29.7 (CDC).
- All minority populations incur significantly higher maternal mortality rates
- 14-15% of ND births are to American Indian mothers
- 80% of ND births are to Non-Hispanic White mothers
- <3-5 % of ND births are to all other racial and ethnic mothers
- 93% of pregnancy-related deaths to American Indian or Alaska Native persons determined by MMRCs to be preventable vs. 80% of Caucasian deaths (CDC)
- Rurality is an additive factor in the discrepant mortality rates among American Indians-though their mortality rates were higher for both rural and urban areas

Underlying causes of pregnancy-related death among American Indian or Alaska Native persons

Data from 36 States 2017-2019:

- Mental health conditions 31.3 %
- Hemorrhage 18.8 %
- Amniotic fluid embolism 12.5 %
- Infection 12.5 %
- Cardiac and coronary conditions 6.3%
- Collagen vascular/autoimmune diseases 6.3 %
- Conditions unique to pregnancy 6.3 %
- Injury/trauma 6.3%

93% of pregnancy-related deaths to
American Indian or Alaska Native
persons determined by MMRCs to be
preventable

Pregnancy Data for 15-54 y/o ND Deaths

PREGNANCY DESCRIPTION	2015	2016	2017	2018	2019	2020	2021 *	Total
Pregnancy Code not provided	4	5	10	3	5	2	7	36
Not pregnant within past year	225	180	196	179	156	198	194	1328
Not pregnant, but pregnant 43 days to 1 year before death	2	3	5	1	0	4	3	18
Not pregnant, but pregnant within 42 days of death	2	0	2	0	2	1	2	9
Pregnant at time of death	2	4	1	1	5	4	5	22
Unknown if pregnant within the past year	30	31	40	52	58	49	89	349
Total	265	223	254	236	226	258	300	1762

* 2021 Data is provisional.

2021 ND Maternal Mortality Manner of Death

- Natural=4
 - Accident=2
 - Suicide=1
 - Homicide=1
 - Inconclusive=2
 - Overdose-Intentional vs. accidental ?
 - Gunshot-self inflicted vs. homicide ?
 - Could not be determined=0
- Total=10**

2021 Experience

Total 2021 maternal deaths=**10**

Maternal deaths meeting CDC criteria=**2**

- Maternal deaths with possible pregnancy association (? related or aggravated by pregnancy)=**8**
- Maternal deaths identified on death certificates but found not to be pregnant:
 - **56 y/o**
 - **82 y/o**
 - **94 y/o**

Challenges in Data Reporting

- Reliance on volunteer efforts of physicians and staff
- Disinterest in ensuring accuracy in reporting
- Undiagnosed cause of death-postmortem evaluations not performed
- Delays in death certificate documentation
- Unfamiliarity with death certificate form
- No documentation of pregnancy status or pregnancy testing on certificate

Previous ND Experience

1918 No data

1927-28=170

1937-38=90

1943=39

1950=9

1960=5

1979=1

2018=0

2019=1 (Possible =5)

2020=2 (Possible=5)

2021=2 (Possible=8)

Manner of Death 2022

C-Section Complications-**1** (Out of state death-records pending)

Questionable drug related death-**1** (Out of state death-records pending)

Cardio-pulmonary arrest-**1**

Hypoxic respiratory failure due to infection-**1**

Anoxic brain injury-**1**

Suicide by hanging-**1**

Total=7

Homicide by gunshot-**1**

*Out of state deaths of a ND citizen are considered a ND maternal mortality case

Type of Death*

- Natural=4
- Accident=0
- Traumatic
 - Suicide=1
 - Homicide=1
- Pending investigation=1
 - Drug related-Intentional vs. accidental ?

*4 cases pending awaiting records

2022 Experience

Total 2022 maternal deaths=7

- Maternal deaths meeting CDC criteria=1
- Maternal deaths with [possible](#) pregnancy association (Potentially related or aggravated by pregnancy)=4 (still under investigation-records pending)
- Traumatic deaths=2

Case Analysis

- Death Certificates are sent to the Department of Vital Records by reporting provider
- Certificates are documented and determination is made as to pregnancy
- Records documenting a maternal mortality are sent to the MMRC for review
- Initial review is by the Case Review Analyst Steffen P. Christensen MD-Fargo
- Any cases identified by the analyst undergo further investigation-Record request, interview of family and others involved with the case, coroner's report, etc
- Need for further discernment of cases is determined on an individual basis and then are examined by the MMRC Review Panel

Case Discernment

- Done by the MMRC Review Panel
- Individual case analysis including may involve medical, family, friends, law enforcement and other entities as indicated
- Cause of death is identified along with contributing factors
- Contributing factors are further studied to look for potential underlying conditions placing the patient at risk
- Perspicacity regarding these contributing conditions may identify potential changes which may reduce their impact
- MMRC to make/promote system change (e.g. policy, education, facility, medical practice, socio-economic or legislative intervention, etc.)

MMRC Review Panel

North Dakota Maternal Mortality Review Committee-Review Panel

Steffen P. Christensen, M.D.
Thomas F. Arnold, M.D.
Dennis J. Lutz, M.D.

Mary Ann Sens, M.D.
Grace N. Njau

Stephen W. Denn
Larry E. Johnson, M.D.
Collette Lessard, M.D.

Ana Tobiasz, M.D.

Reproductive Endocrinology (Case Review Analyst)
Chair of the ND Maternal Mortality Committee (MMRC)
Immediate Past Chair of the ND MMRC/Chair (UNDSMHS
Department of Obstetrics and Gynecology)
Dept. Chair (UNDSMHS Pathology and Forensic Medicine)
ND Dept. of Health (Health Analytics Director/
Epidemiologist/Special Projects)
ND Division of Vital Records (Data Processing Manager)
Family Medicine (County Coroner)
Ob/Gyn Physician (ND Section Vice-Chair American College of
Obstetricians and Gynecologists
Maternal Fetal Medicine Sanford Health-Bismarck

ND Women's Health Data Retrieval and Collation

- North Dakota Division of Vital Records has complete death certificate records for all deaths in ND for the years 1980-Present
- University of North Dakota School of Medicine and Health Sciences (UNDSMHS) Department of Obstetrics and Gynecology has participated in the Research Experience for Medical Students (REMS) program
- Research project evaluated the level of education attained by mother and their racial backgrounds and correlated it to maternal mortality rates
- Results confirmed an association between lower education rates and higher mortality rate
- Plan is to continue REMS program annually to mine useful information from the data accumulated by the Division of Vital Records

Opportunities for the MMRC

- Coordination with the CDC through the Maternal Mortality Review Information Application (MMRIA)
- Refine case reviews to enhance recognition of correctable contributing factors to maternal mortality
- Close cooperation/coordination with the ND Division of Vital Records to fully utilize their expertise and data base
- Improve accuracy of completion of death records at the provider level
- Recommend postmortem evaluations in cases with no apparent cause of death
- Continue with data mining, trend identification of maternal morbidity and mortality from 1980-present -REMS Program
- Coordinate activities with the ND Section of ACOG and the NSDPQC

Questions
