Maternal Mortality and Morbidity

Presentation to the Senate Committee on Health & Human Services

John Hellerstedt, MD
Commissioner

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Presentation Overview

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- More Accurately Calculating Maternal Deaths
- Improving the Quality of Death Certificate Information
- Maternal Risk Profiles
- Maternal Safety Initiative: *TexasAIM*

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Overview: Maternal Death Calculations

- **Maternal Mortality Rate (42 Days):** *per* 100,000 live births
  - Rate is used by the Centers for Disease Control National Center for Health Statistics in establishing a Maternal Mortality Rate (MMR) for each state

- **365 Day Count:** number of deaths occurring within 365 days after pregnancy
  - 365 Days is used by the Task Force for their review of maternal deaths for determining pregnancy relatedness and preventability.

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More Accurately Calculating Maternal Deaths

Review of 2012 Numbers Calculated Using Standard Method

- Deaths within 365 days: 189
- Deaths within 42 days: 147
- Maternal Mortality Rate (42 days, per 100,000 live births): 38.4

2012 Numbers Using *Enhanced* Method

- Deaths within 365 days: 118
- Deaths within 42 days: 56
- Maternal Mortality Rate (42 days, per 100,000 live births): 14.6

More Accurately Calculating Maternal Deaths

Original Research

Identifying Maternal Deaths in Texas Using an Enhanced Method, 2012

Sonia Baeva, MA, Debra L. Saxton, MS, Karen Ruggiero, PhD, Michelle L. Kormondy, BS, Lisa M. Hollier, MD, MPH, John Hellerstedt, MD, Manda Hall, MD, and Natalie P. Archer, PhD

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More Accurately Calculating Maternal Deaths

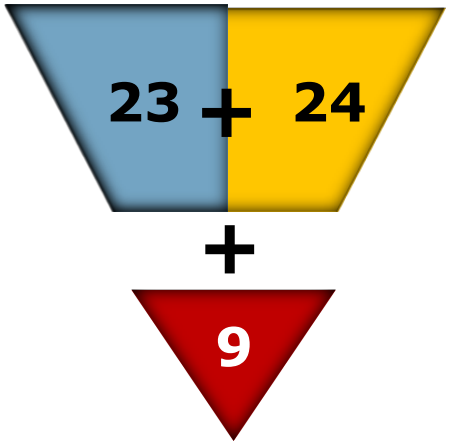
Number of Maternal Deaths in 42 Days Following End of Pregnancy, Texas, 2012

147 — Maternal deaths identified using death certificates alone (STANDARD METHOD TOTAL)

ENHANCED METHOD

STEP 1
Maternal deaths identified using death certificates alone matched with birth/fetal deaths

STEP 2
For unmatched deaths, records reviewed for evidence of pregnancy including miscarriage



STEP 3
All female deaths matched with birth/fetal deaths to identify additional maternal deaths

56 — Maternal deaths identified using data-matching and record review (ENHANCED METHOD TOTAL)

More Accurately Calculating Maternal Deaths: Next Steps

- The DSHS Enhanced Method will be used in future Texas analyses, beginning with 2013 data
- This will result in greater certainty about the numbers reported by Texas
  - The Enhanced Method further assures current/future interventions address major drivers in maternal mortality and severe maternal morbidity

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Improving the Quality of Death Certificate Information

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Improving the Quality of Death Certificate Information

DSHS Rider 36

- **Requirement**: study the quality of cause of death data by examining the current process and identified challenges related to accuracy, completeness, medical certifier roles and perceptions, and structural, procedural technological issues. DSHS shall also consult national standards and may convene a panel of experts.
- **Report due**: October 1, 2018

SB 17, 1st Called Session, 85th Legislature

- **Requirement**: Codified Rider 36 requirements, and must also look specifically at issues related to maternal deaths
- **Report due**: December 1, 2018

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Improving the Quality of Death Certificate Information

Overview of Cause of Death Process

- **Report of Death:** Funeral director files a Report of Death with local registrar (within 24 hours of taking custody)
  - Funeral director collaborates with medical certifier to complete the death certificate
  - Medical certifier must be either:
    - Physician,
    - Medical Examiner*
    - Justice of the Peace*
- **Death Certificate** must be filed electronically within 10 days of date of death

*must be contacted for non-natural deaths and circumstances defined in statute

Medical Certifiers Completing Cause of Death, Texas Occurrence, 2011-2015

2011-2015	Includes Certificates with Natural Causes-of-Death		Includes Certificates with Injury Causes-of-Death		All Death Certificates	
Certifier	*Count*	*% of Natural Deaths*	*Count*	*% of Injury Deaths*	*Count*	*% of All Deaths*
Physician	730,869	87.7	4,258	5.7	735,127	**81.0**
Justice of the Peace	59,946	7.2	27,683	**37.3**	87,629	9.7
Medical Examiner	42,334	5.1	42,300	**57.0**	84,634	9.3
Total	**833,149**		**74,241**		**907,390**	

Physicians medically certify the majority of death certificates in Texas. But medical certification may not be a regular or frequent task for most Texas physicians.

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Improving the Quality of Death Certificate Information

Work Completed

- Surveyed medical certifiers and funeral directors to understand current understanding of death certification and challenges navigating current electronic registration system
- Convened an expert panel from Texas, other states, and the National Center for Health Statistics
- Contracted with Texas A&M to develop effective training modules for the new electronic registration system, TxEVER

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Improving the Quality of Death Certificate Information

Recommendations

1. Foster a working understanding of the medical and administrative tasks required for death registration, as well as the role of death registration in public health.
2. Facilitate communication among stakeholders to reduce role confusion and time to complete individual death registrations.
3. Create a DSHS framework to continually identify data completion issues, receive stakeholder feedback, and implement quality improvement projects to enhance user-friendliness of death registration system and accuracy of submitted data.
4. Establish a workgroup of stakeholders that impact the quality of death registration data to identify opportunities to implement recommendations 1-3.

Maternal Risk Profiles

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Maternal Risk Profiles

- **Purpose**: increase the likelihood of identifying a person or group that may develop certain complications during or following pregnancy
- **Effect**: guide public health interventions and care coordination to potentially reduce the incidence of maternal death or severe maternal morbidity

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Maternal Risk Profiles: Timeline Analysis

Confirmed Maternal Deaths by Timing and Cause of Death, Texas, 2012-2015

Cause of Death	While Pregnant	0-7 Days Post-partum	8-42 Days Post-partum	43-60 Days Post-partum	61+ Days Post-partum	Total
Amniotic Embolism	1	9	0	0	0	10
Cardiac Event	2	12	9	5	27	55
Cerebrovascular Event	0	8	9	1	9	27
Drug Overdose	0	3	7	5	49	64
Hemorrhage	3	12	2	0	3	20
Homicide	2	1	5	2	32	42
Hypertension/Eclampsia	0	7	4	0	7	18
Infection/Sepsis	1	3	14	3	11	32
Pulmonary Embolism	2	3	4	2	2	13
Substance Use Sequelae (e.g., liver cirrhosis)	0	0	2	0	3	5
Suicide	0	1	2	2	28	33
Other	5	5	6	3	44	63
Total	16	64	64	23	215	382

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Maternal Risk Profiles: Drug Overdose Deaths

Significant Findings, 2012-2015

- 382 Maternal Deaths analyzed
- 64 Maternal Drug Overdose Deaths
  - 42 (66%) involved a combination of drugs
    - 32 occurred 61+ days postpartum
  - 37 (58%) involved opioids
    - 28 occurred 61+ days postpartum
    - Benzodiazepines were involved in at least 13 opioid-involved maternal drug overdose deaths

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Maternal Risk Profiles: Drug Overdose Deaths

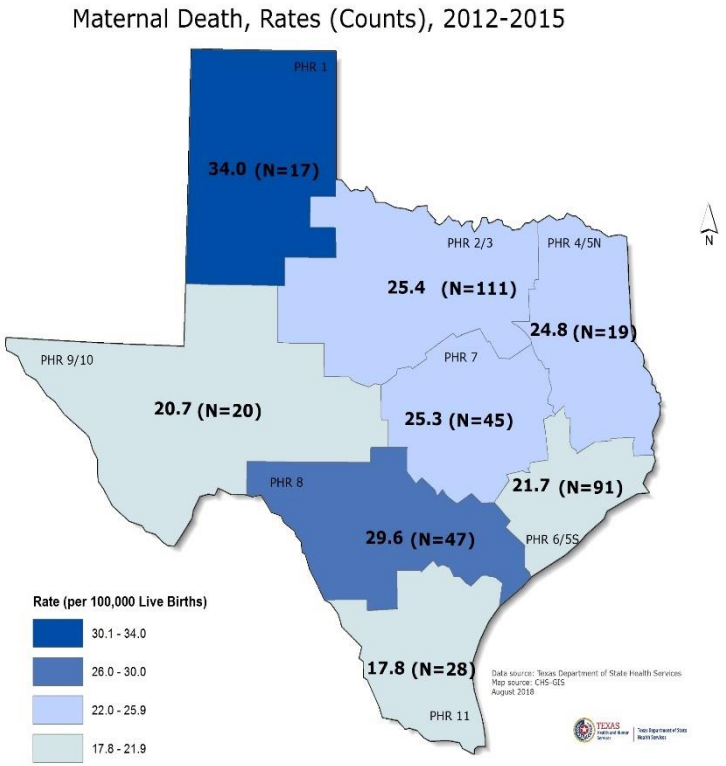
Specific Drugs Identified from Death Certificate Narratives for Drug Overdose Confirmed Maternal Deaths, 2012-2015

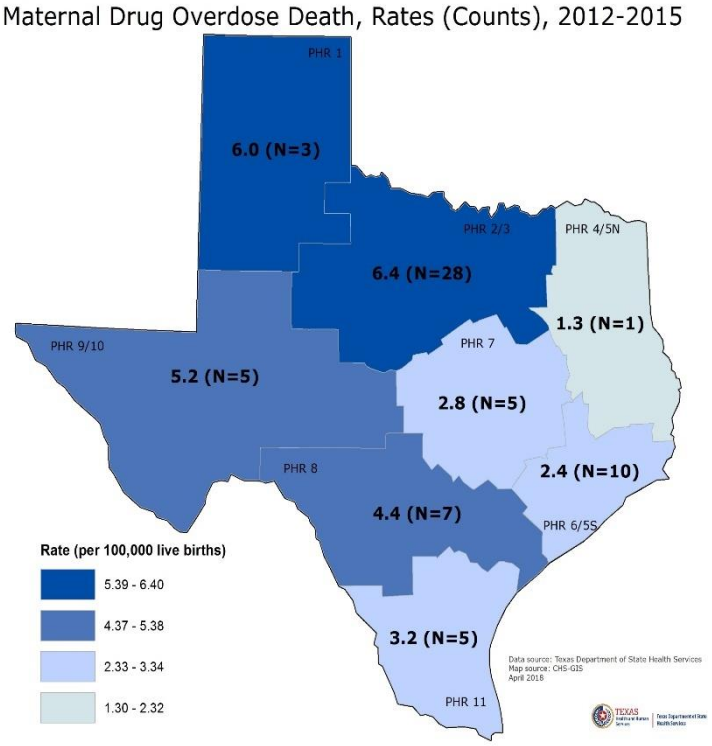
Specific Drugs	*Count*
OPIOIDS	
Opioid	23
Heroin	18
Fentanyl	1
NON-OPIOIDS	
Sedative	22
Cocaine	12
Methamphetamine	9
Alcohol	3
Acetaminophen	2
Antidepressant	1
Anticonvulsant	1
Inhalant	1
Caffeine	1
UNKNOWN	1

Note: These numbers should not be tallied, as multiple drugs often appear on a single death certificate

Maternal Risk Profiles: Geographic Variations

Number of Maternal Deaths by Region and Timing of Death, Texas, 2012-2015





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Maternal Risk Profiles

All Maternal Deaths

- Black women
- Aged 40+
- Living in urban counties and/or:
  - Region 1 (Panhandle)
  - Region 8 (includes San Antonio)
- Medicaid at delivery

Drug Overdose Maternal Deaths

- White women
- Aged 40+
- Living in urban counties and/or:
  - Region 2/3 (Dallas/Ft. Worth)
  - Region 1 (Panhandle)
- Medicaid at delivery

TexasAIM Initiative: Maternal Safety Initiative

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Senate Bill 17

85th Legislature, 2017, 1st Called Session

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Sec. 34.0156. MATERNAL HEALTH AND SAFETY INITIATIVE.

(a) Using existing resources, the department, in collaboration with the task force, shall promote and facilitate the use among health care providers in this state of maternal health and safety informational materials, including tools and procedures related to best practices in maternal health and safety.

TexasAIM Initiative

- **Goal**: To reduce severe maternal morbidity using evidence-based systems to enhance maternal care
- **Bundles Address**:
  - Obstetric hemorrhage
  - Obstetric care for women with opioid use disorder
  - Severe hypertension in pregnancy
- **Focus**: implement bundles in Texas birthing hospitals (approximately 238 potential partners)
- **Current Enrollment:** 184 birthing hospitals, covering over 80% of all births in Texas

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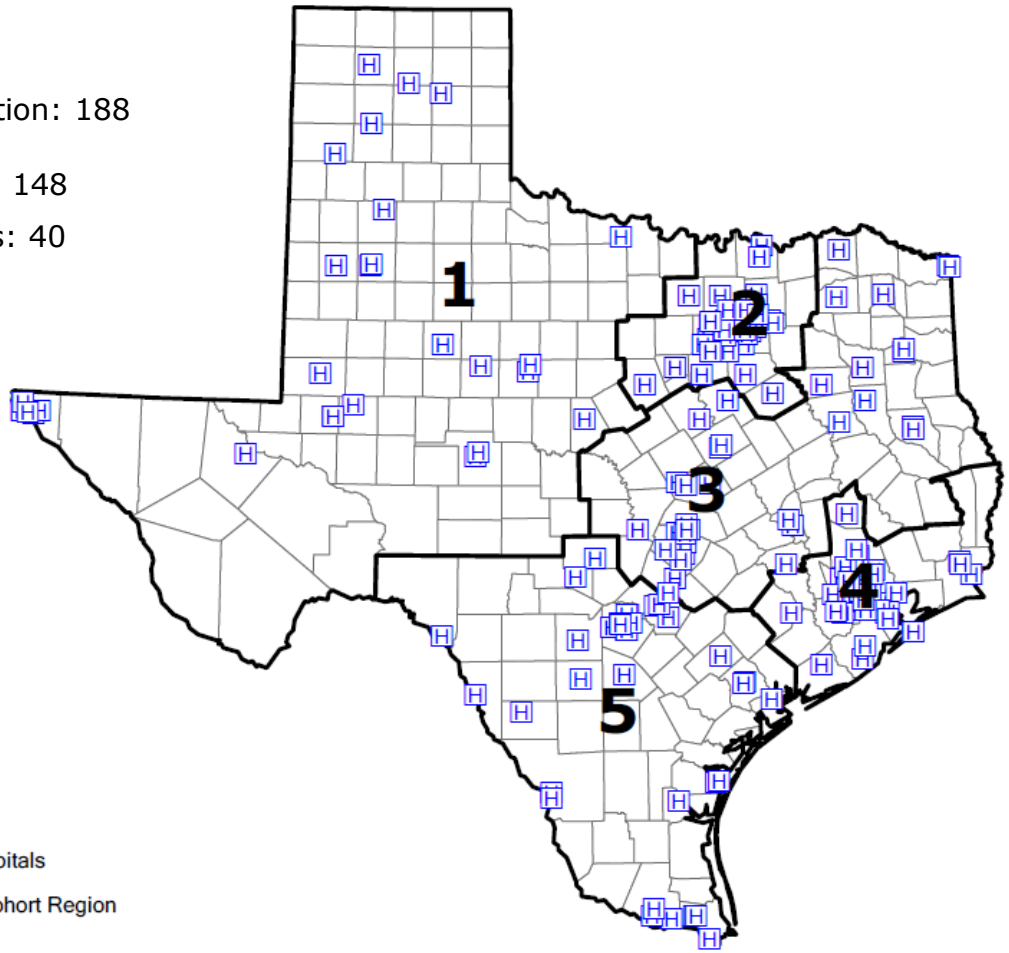
Texas AIM Hospitals Participating in Hemorrhage Bundle

Total AIM Participation: 188 Hospitals

AIM Plus Hospitals: 148

AIM Basic Hospitals: 40



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TexasAIM Initiative: Levels of Participation

AIM Basic

- **Scope**: Implement risk assessment to establish scope of protocols to be implemented, regularly transmit data to DSHS, review submitted data for ongoing quality improvement
- **Participants**: 40

AIM Plus

- **Scope**: AIM Basic requirements, as well enhanced data tracking and submissions, and quarterly collaboration with other regional AIM Plus hospitals
- **Participants**: 148

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TexasAIM Initiative

Next Steps

- Hemorrhage Bundle
  - Kick-off: June 2018
  - Data Submission Ongoing
  - Regional learning meetings for AIM Plus hospitals to occur quarterly
- Opioid Bundle Pilot
  - Identified participating hospitals
  - Implementation in progress
  - Transition from Pilot to Full Bundle: estimated 2020
- Report on Maternal Safety Initiative
  - Due December 1, 2018
- Preeclampsia/Hypertension Bundle
  - Implementation estimated mid-2019

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Thank You