Maternal Morbidity & Mortality: Taking action at the state level

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ASHONN Oregon
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opc Oregon Perinatal Collaborative

Disclosures

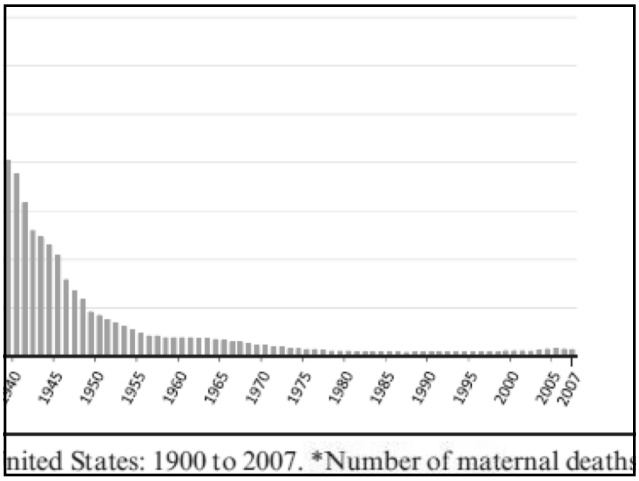
- CDC Cooperative agreement NU58DP006358
- I have no other financial disclosures or conflicts of interest

Learning Objectives

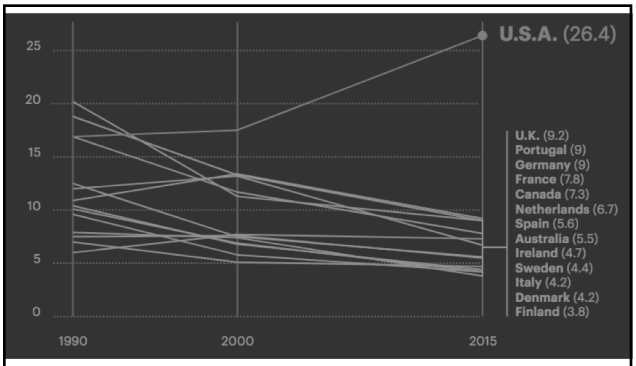
1. Describe the trends in maternal morbidity and mortality over the last 20 years and the growing disparities in health outcomes.
2. Understand the purpose of state based quality improvement efforts in perinatal care
3. Identify the current and planned statewide initiatives run by the Oregon Perinatal Collaborative

Why all the fuss… now?

- 19th Century – 7 deaths per 100 births
- 20th Century
  - Home to hospital
  - Aseptic technique
  - Antibiotics
  - Oxytocin
  - Transfusion medicine
  - Antihypertensive medications
- Improvements in Europe, US & Canada



nited States: 1900 to 2007. *Number of maternal deaths



Lancet, 2015 & graphics courtesy ProPublica

Pro-Publica & National Focus

- MFMU: 4/34 initiatives primarily target women, while 24 aimed at infants
- Title V Maternal Child Health Block Grants: 6% of block grants in 2016 aimed at programs for women, 78% for infants and special needs children
- Medicaid Funding & Pregnancy Care
  - Eligibility thresholds
  - Documentation status & CHIP
  - Postpartum cut offs
- Joint Commission Perinatal Core Measures
  - 1/6 focused on maternal health (CS rates)

How do we know what we know?

- Pregnancy-Related Death (CDC) – the death of a woman while pregnant or within 1 year of pregnancy termination, regardless of the duration or site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes
- Pregnancy-Related Death (WHO) – the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of cause of death

How do we know what we know?

- Pregnancy-Related Mortality Ratio (CDC) – an estimate of the number of pregnancy-related deaths for every 100,000 live births
- Maternal Mortality Ratio (WHO) – The number of maternal deaths per 100,000 live births

How do we know what we know?

- Current methods to identify maternal deaths are problematic...
- Are maternal deaths really increasing?

National Center for Health Statistics

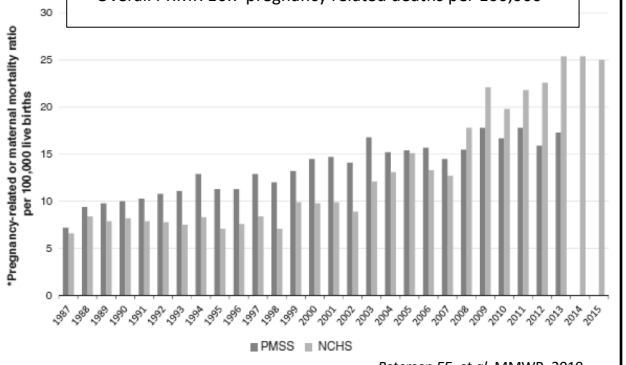
NVSS National Vital Statistics System

Mortality Data

Pregnancy Mortality Surveillance System

Creanga, Clin Obstet & Gynecol. 2018

- ~700 die annually in the US (PMSS data)
- Overall PRMR 16.7 pregnancy related deaths per 100,000



Petersen EE, et al. MMWR, 2019,
Creanga, Clin Obstet & Gynecol. 2018

Can we believe the trend?

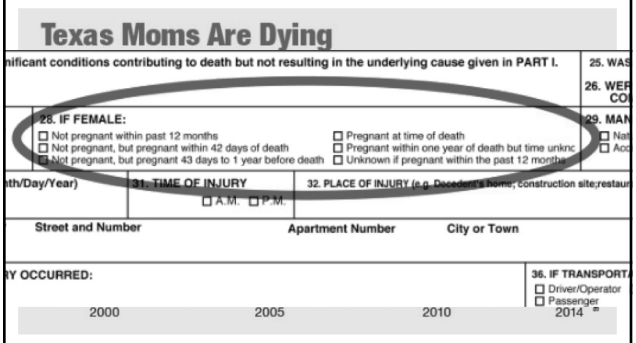
- We are more sick
- Socioeconomic factors
- CS rates
- Selection bias for CPD overcome by CS
- Disparities in care and outcomes

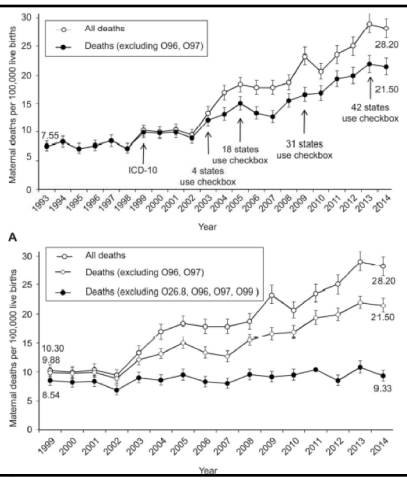
Improvement in ascertainment methods?

- 2003 Death Certificate Check Box
- ICD-9→ICD-10

Creanga, Clin Obstet & Gynecol. 2018

Why Texas Is the Most Dangerous U.S. State to Have a Baby





Joseph, Obstet Gynecol, 2018

Can we believe the trend?

- We are more sick
- Socioeconomic factors
- CS rates
- Selection bias for CPD overcome by CS
- Disparities in care and outcomes

Improvement in ascertainment methods?

Despite uncertainty: risk of death during and shortly after pregnancy from pregnancy related causes has not declined in the US for more than 25 years

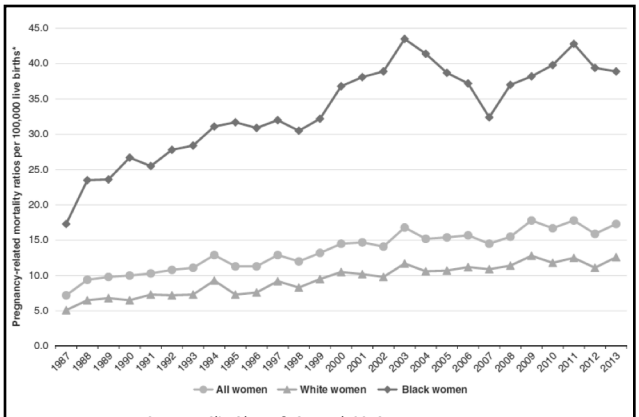
Creanga, Clin Obstet & Gynecol. 2018

Causes of Maternal Death

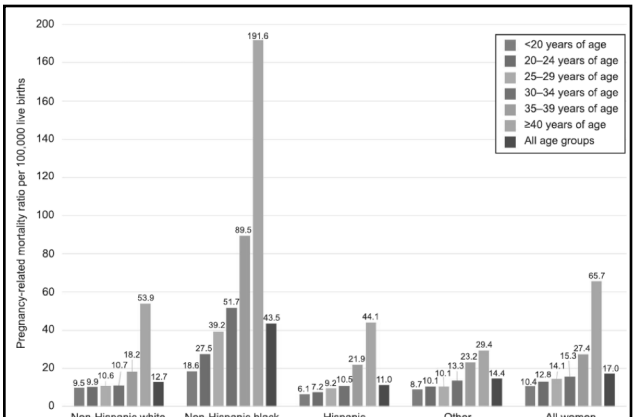
- Serious morbidity vs mortality
- The when matters (<42 days, within 1 year)
- The where matters
- The who matters: age, education, marital status, insurance status

Race || Ethnicity || Nativity

For Serena Williams, Childbirth Was a Harrowing Ordeal. She's Not Alone.



Creanga, Clin Obstet & Gynecol. 2018



Creanga, Obstet & Gynecol. 2017

Racial/Ethnic Disparities

- NH black women 3-4 times more likely to die from pregnancy related causes than NH white women
- Native Americans, Native Alaskans, Asians/Pacific Islanders, Latina women also face disparities
- Regional variation: 12 fold higher risk of pregnancy related death for NHB than NHW
- For every maternal death, 100 women suffer a severe obstetric morbidity, life threatening diagnosis or undergo a lifesaving procedure during hospitalization

Peterson, MMWR, 2019
Howell, Clin Obstet & Gynecol. 2018

Differences in leading cause of Death

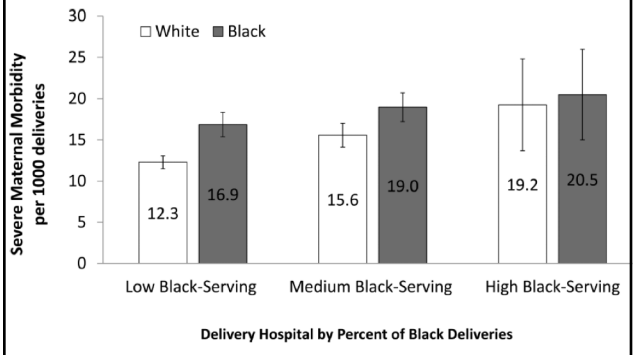
Non-Hispanic white	**Non-Hispanic black**
1. CV conditions(15.5%)	1. Cardiomyopathy (14.0%)
2. Hemorrhage (14.4%)	2. CV conditions (12.8%)
3. Infection (13.4%)	3. Pre-/eclampsia (11.6%)
4. Mental Health (11.3%)	4. Hemorrhage (10.5%)
5. Cardiomyopathy (10.3%)	5. Embolism (9.3%)

CDC, 9 MMRCs. 2018

Disparities in Maternal Mortality

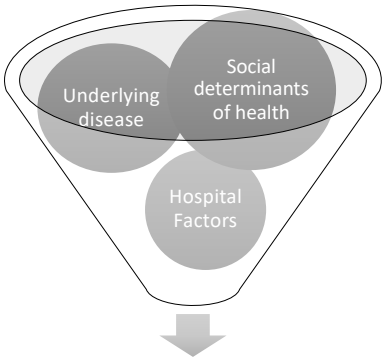
- NH black case fatality rate 2.4-3.3 times higher than that of NH white women for:
  - Preeclampsia
  - Eclampsia
  - Placental abruption
  - Placenta previa
  - Postpartum hemorrhage

Tucker, Am J Public Health. 2007



Howell, AJOG. 2016

Disparities in Maternal Mortality



Maternal Mortality

So what is being done?

- Fellowship Training
  - ICU, L&D, D&C Training
- CDC & HRSA Funding
- Public Awareness & Quality Metrics
- Maternal Levels of Care (LOCATe)
- Maternal Mortality Review Committees (MMRCs)
- Growth of Perinatal Quality Collaboratives (PQC)

Prepublication Requirements

The Joint Commission

• Issued August 21, 2019 •

New Standards for Perinatal Safety

APPLICABLE TO THE HOSPITAL ACCREDITATION PROGRAM

Effective July 1, 2020

Provision of Care, Treatment, and Services (PC) Chapter

PC.06.01.01

Reduce the likelihood of harm related to maternal hemorrhage.

Levels of Maternal Care

- Introduced by SMFM and ACOG in 2015
- Four designations for maternity care hospitals based on nursing, provider, and facility resources

Level I: Basic Care
Level II: Specialty Care
Level III: Subspecialty Care
Level IV: Regional Perinatal Care

- Hospital volume & Access to specialty providers are known to affect obstetric outcomes
- States are beginning to implement the levels of maternal care but limited data exists yet on their utility or ability to improve maternal care

Clapp; AJOG 2018

Weight	Conditions
5	Severe preeclampsia/eclampsia Chronic congestive heart failure
4	Congenital heart disease Pulmonary hypertension
3	Chronic ischemic heart disease Sickle cell disease Age >44
2	Cardiac valvular disease Systemic lupus erythematosus Human immunodeficiency virus Mild or unspecified preeclampsia Drug abuse Placenta previa Age 40-44
1	Chronic renal disease Pre-existing hypertension Previous cesarean delivery Gestational hypertension Alcohol abuse Asthma Pre-existing diabetes mellitus Age 35-39

Significant interaction between patient risk and hospital acuity that ultimately affects a patient outcome

The risk ratio of experiencing severe maternal morbidity among high-risk patients was greater in low acuity hospitals compared to high acuity hospitals, supporting the concept of regionalization

Patient comorbidity risk	Hospital, adjusted risk ratio (95% confidence interval)	
	Low acuity	High acuity
Low	Reference	Reference
Intermediate	1.53 (1.33–1.77)	1.57 (1.49–1.65)
High	9.55 (6.83–13.35)	6.50 (5.95–7.09)

Clapp; AJOG 2018

Maternal Mortality Review

- 1930 -- New York Academy of Medicine & Philadelphia County Medical Society
- 1968 – 44 states + DC
- 2012 – 18 states + Philadelphia
- 2019 – 34 states + Philadelphia & NYC
  - *Planning: 10 states + Puerto Rico*

Slide courtesy Julie Zaharatos, CDC

Maternal Mortality Review

	CDC – National Center for Health Statistics (NCHS)	CDC – Pregnancy Mortality Surveillance System (PMSS)	Maternal Mortality Review Committees
Data Source	Death certificates	Death certificates linked to fetal death and birth certificates	Death certificates linked to fetal death and birth certificates, **medical records, social service records, autopsy, informant interviews…**
Time Frame	During pregnancy – 42 days	During pregnancy – 365 days	During pregnancy – 365 days
Source of Classification	ICD-10 codes	Medical epidemiologists (PMSS-MM)	**Multidisciplinary committees**
Terms	Maternal death	Pregnancy associated, (Associated and) Pregnancy related, (Associated but) Not pregnancy related	Pregnancy associated, (Associated and) Pregnancy related, (Associated but) Not pregnancy related
Measure	Maternal Mortality Rate - # of Maternal Deaths per 100,000 live births	Pregnancy Related Mortality Ratio - # of Pregnancy Related Deaths per 100,000 live births	Pregnancy Related Mortality Ratio - # of Pregnancy Related Deaths per 100,000 live births
Purpose	Show national trends and provide a basis for international comparison	Analyze clinical factors associated with deaths, publish information that may lead to prevention strategies	**Understand medical and non-medical contributors to deaths, prioritize interventions that effectively reduce maternal deaths**

Slide courtesy Julie Zaharatos, CDC

Passive Surveillance

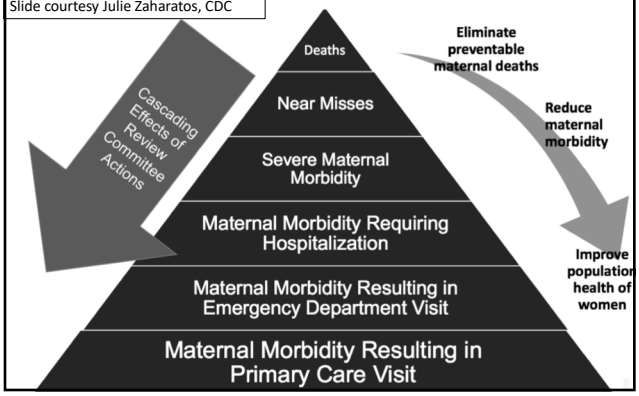
Active Surveillance

Maternal Mortality Review

- Authority to access data
- Confidentiality and protection of collected data, proceedings and activities
- Immunity for committee members
- Regular reporting and dissemination of findings
- Multidisciplinary committee with local input

Maternal Mortality Review

Slide courtesy Julie Zaharatos, CDC



Maternal Mortality Review

79th OREGON LEGISLATIVE ASSEMBLY--2018 Regular Session

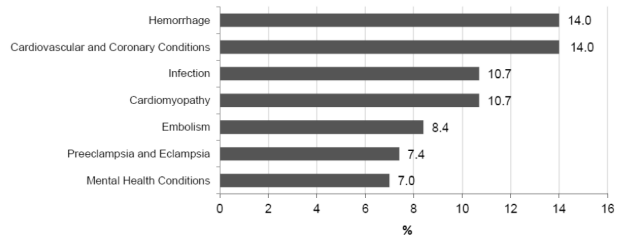
Enrolled

House Bill 4133

Sponsored by Representative KENY-GUYER, Senator STEINER HAYWARD, Representative BYNUM, Senator FREDERICK; Representatives ALONSO LEON, HAYDEN, HERNANDEZ, MALSTROM, MARSH, NOBLE, PARRISH, POWER, SALINAS, SANCHEZ, SMITH DB, Senators DEMBROW, JOHNSON, MONNES ANDERSON, ROBLAN (Presession filed.)

MMRC -9 states

Figure 4. Leading Underlying Causes of Pregnancy-Related Deaths*

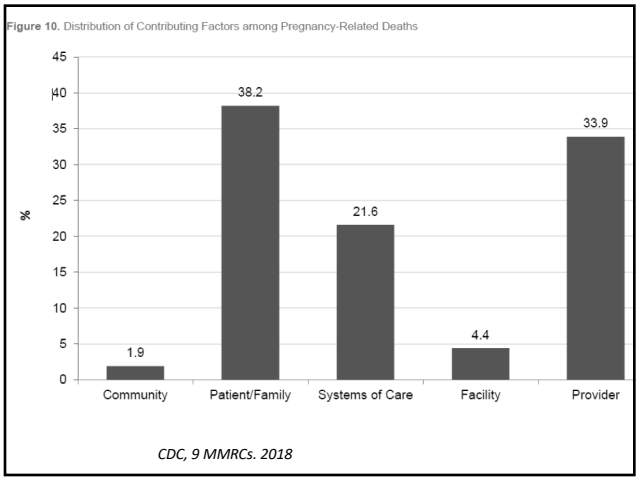


CDC, 9 MMRCs. 2018

MMRC – 9 States

Figure 9. Distribution of Preventability Among Pregnancy-Related Deaths, by Timing in Relation to Pregnancy

CDC, 9 MMRCs. 2018



CDC, 9 MMRCs. 2018

The Birth of PQCs

Vermont Oxford Network

California Perinatal Quality Care Collaborative

CMQCC Sets the Standard

Maternal data center with 200 hospitals representing 90% of California births

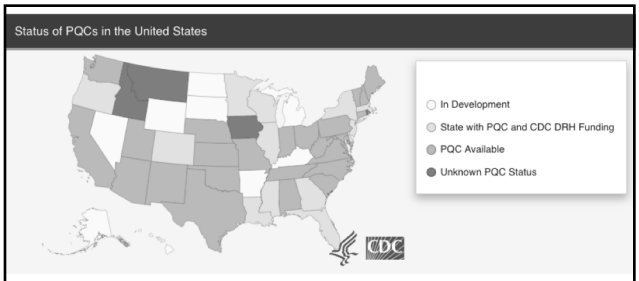
- QI improvement projects, toolkits
  - Hemorrhage
  - Venous thromboembolism
  - Severe hypertension
  - Reducing disparities
- Reduced Maternal Mortality Ratio by 55% from 16.9 in 2006 to 7.3 in 2013

Ozimek, Obstet Gynecol Clin N Am. 2018

COUNCIL ON PATIENT SAFETY IN WOMEN'S HEALTH CARE

safe health care for every woman

- Maternal Mental Health: Depression and Anxiety
- Maternal Venous Thromboembolism (+AIM)
- Obstetric Care for Women with Opioid Use Disorder (+AIM)
- Obstetric Hemorrhage (+AIM)
- Postpartum Care Basics for Maternal Safety
  - From Birth to the Comprehensive Postpartum Visit (+AIM)
  - Transition from Maternity to Well-Woman Care (+AIM)
- Prevention of Retained Vaginal Sponges After Birth
- Reduction of Peripartum Racial/Ethnic Disparities (+AIM)
- Safe Reduction of Primary Cesarean Birth (+AIM)
- Severe Hypertension in Pregnancy (+AIM)



Success of California and other leading states

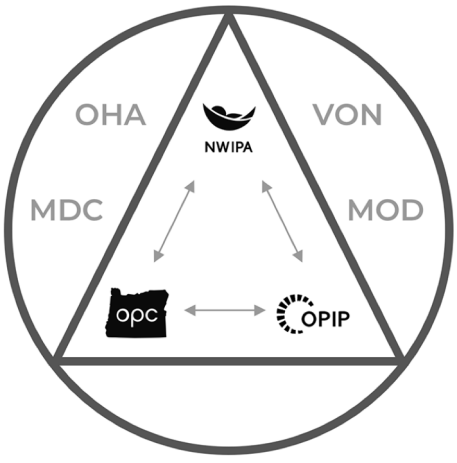
- 2017 Additional CDC Funding – 13 states: Colorado, Delaware, Florida, Georgia, Illinois, Louisiana, Massachusetts, Minnesota, Mississippi, New Jersey, New York, **Oregon**, Wisconsin
- National Network of Perinatal Collaboratives

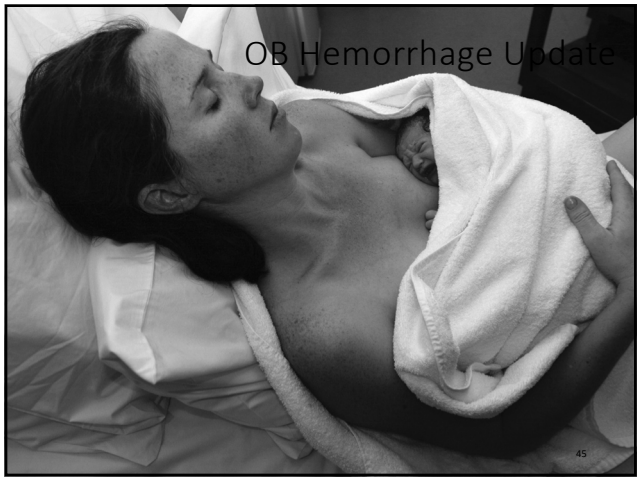
OPC Vision

- Everyone in Oregon, will have access to and receive high-quality maternal and neonatal care to optimize health.

OPC Mission

- We work together to advocate for improved maternal and childhood health outcomes through collaboration, implementation of evidence-based practices, and policy change throughout the state of Oregon.





OB Hemorrhage Statewide Launch

September 2018 – Perinatal Summit (VTE, HTN, IOL, Hemorrhage)

March 2019 – Steering Group Convened

May 2019 – AIM State Application

June-August 2019 – Planning, materials, generating interest

July-August 2019 – Baseline survey

September 2019 – Follow up, letter of commitment, speaking engagements

October 28-29th – Statewide kickoff & Team training

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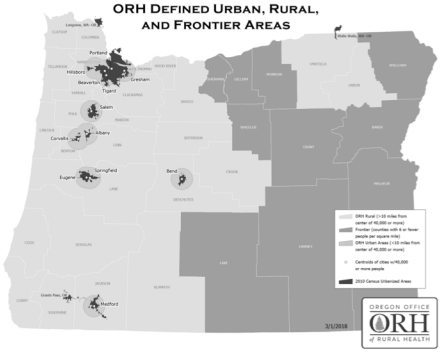
Oregon at a Glance
- ~42,600 births 2018
- Birthrate declined x2 years
- 2026 (deaths > births)

Unique Populations
- Community or Home Births
- Rural | Frontier | Critical Access



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48 Hospitals w/OB Service Lines
- 22 responded
- 18 expressed interest
- 55% of births statewide

15 community birth providers
- Largely from independent practices, not birth center based facilities
- QI Experience
- Majority have policies which are followed most of the time (range 25-100%)
- Majority kept statistics, most referenced MANA stats.

Total Births		County
Adventist	777	Multnomah
Asante – Ashland	253	Jackson
Asante Rogue Regional Medical Center	1606	Jackson
Good Samaritan Regional Medical Center	940	Benton
Samaritan Albany General Hospital	536	Linn
Samaritan Lebanon Community Hospital	281	Linn
Samaritan North Lincoln Hospital	145	Lincoln
Samaritan Pacific Communities Hospital	164	Lincoln
Harney District Hospital	39	Harney
Kaiser Westside Medical Center	1527	Washington
Legacy Emanuel Medical Center	1826	Multnomah
Legacy Good Samaritan Medical Center	984	Multnomah
Legacy Meridian Park Medical Center	961	Clackamas
Legacy Mt Hood Medical Center	915	Multnomah
Legacy Silverton Medical Center	1346	Marion
Mercy Medical Center	857	Douglas
Providence Medford Medical Center	476	Jackson
Providence Portland Medical Center	2882	Multnomah
Providence Seaside Maternity Services	95	Clatsop
Salem Health	3386	Marion
Tuality Community Hospital	577	Washington
Willamette Valley Medical Center	427	Yamhill
Oregon Health & Science University	2291	Multnomah

Data Sources

Structure, Process, Outcome Measures

- AIM, CMQCC NYPCQ, ACOG, MSPQC

Oregon M[illegible]

OAHHS Ag[illegible]

Baseline 2[illegible]

Blinded re[illegible]

Measure
Hemorrhage Safety Bundle
Hemorrhage: Massive RBC Transfusions (≥ 4 RBC Units)
Severe Maternal Morbidity (SMM)
Severe Maternal Morbidity Among Hemorrhage Cases
Severe Maternal Morbidity Cases Reviewed

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OB Hemorrhage Initiative

- Readiness, Recognition, Response
- 5 Process Measures
  - Unit Drills
  - Provider Education
  - Nursing Education
  - Risk Assessment
  - QBL

OB Hemorrhage Initiative

- 18 Structure Measures
  - Measurement of a feature related to capacity to provide high quality health care including human and material resources available to the healthcare system and organizational factors such as staff deployment and protocols
- 4 Outcome Measures
  - SMM
  - SMM, excluding transfusions
  - SMM among hemorrhage cases
  - SMM excluding transfusions among hemorrhage cases

OB Hemorrhage

- Join!
- Thought leadership/cultural shift
- Refer your patients
- OPC volunteer opportunities
- Implicit bias training

Other Projects

- Opioid Use Disorder
- Family Well Being Assessment & Social Determinants of Health
- Rural Health & OB Ready Projects
- Maternal Levels of Care

- OPC Summit – October 28, 2019

Register www.oregonperinatalcollaborative.org