AK AIM Learning Session
Severe Maternal Morbidity (SMM) Review

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Objectives

- Review background data around rising severe maternal morbidity (SMM) rates in United States
- Learn definitions of SMM
- Discuss SMM racial and hospital disparities
- Learn how to create and run a hospital SMM review committee
- See examples of pearls learned from a local SMM review committee
- Review Alaska SMM data

Severe Maternal Morbidity (SMM): Background

Propublica

"The Last Person You'd Expect to Die in Childbirth"

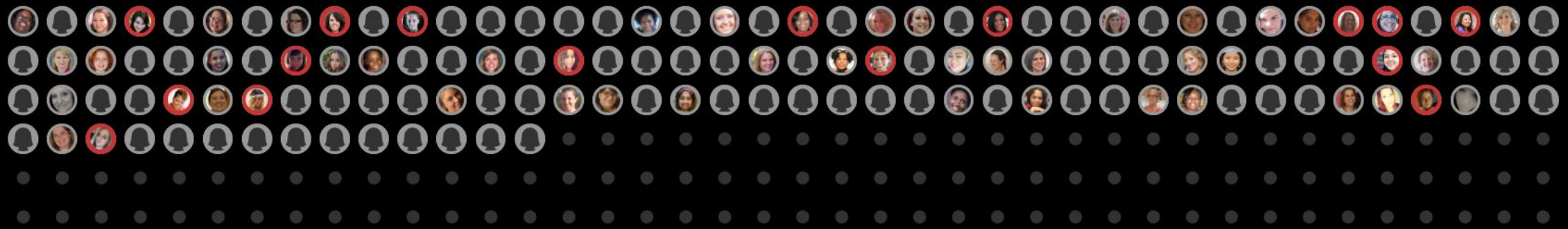
Lauren Bloomstein, a neonatal nurse, died from preeclampsia in the hospital where she worked

The U.S. has the highest rate of maternal mortality in the developed world.

Lost Mothers

An estimated 700 to 900 women in the U.S. died from pregnancy-related causes in 2016. We have identified 134 of them so far.

by Nina Martin, ProPublica, Emma Cillekens and Alessandra Freitas, special to ProPublica
July 17, 2017



SMM Background

LOST MOTHERS

Do You Know Someone Who Died or Nearly Died in Childbirth? Help Us Investigate Maternal Health

By many measures, the United States has become the most dangerous industrialized country in which to give birth.

by Adriana Gallardo

Feb. 10, 2017, 9 a.m. EST

- For every expectant or new mother in the U.S. who dies, as many as 100 women come very close to dying, often with devastating long-term physical, emotional and economic effects.
- Maternal near deaths —from hemorrhages, strokes, aneurysms, clots, sepsis infections, cardiac arrest, organ failure and other life-threatening complications of pregnancy and childbirth— have been on the rise, and now exceed 65,000 a year, according to the Centers for Disease Control.
- The racial disparities are striking: African-American mothers are 3 to 4 times more likely to die or nearly die than whites.

SMM: What is it?

- SMM = Severe Maternal Morbidity
- Morbidity = Unintended outcomes of the process of labor and delivery that result in significant short-term or long-term consequences to a woman’s health

SMM in actuality…

SMM = a near miss for mortality

because without identification and treatment

often these conditions can lead to death

SMM: Why Focus here?

- Severe morbidity 100 times more common than mortality
- It is increasing
- The majority are preventable

SMM is increasing: CDC SMM 1993-2014

SMM: Rates

- SMM rates are 1-2% of births nationally
- There are racial disparities in SMM even when case-mixed adjusted

SMM Analysis by Race in 7 States*

TABLE 2

Rates (± standard errors) of severe maternal morbidities during delivery hospitalizations per 10,000 delivery hospitalizations by race/ethnicity

Severe maternal morbidity indicator	Non-Hispanic White (n = 1,485,280	Non-Hispanic Black (n = 434,431)	Hispanic (n = 1,140,592)	Asian/Pacific Islander (n = 247,852)	American Indian/Alaska Native (n = 20,535)	All[a] (N = 3,476,392)
Blood transfusion	78.94 ± 0.73	187.03 ± 2.06[b]	104.31 ± 0.95[b]	97.92 ± 1.98[b]	168.49 ± 8.98[b]	104.40 ± 0.55
Severe maternal morbidity[b]	113.93 ± 0.87	284.26 ± 2.52[b]	145.28 ± 1.12[b]	131.97 ± 2.29[b]	225.47 ± 10.36[b]	150.68 ± 0.65
Severe maternal morbidity without blood transfusion[c]	48.06 ± 0.57	131.67 ± 1.73[b]	57.75 ± 0.71[b]	55.52 ± 1.49[b]	75.97 ± 6.06[b]	64.26 ± 0.43

*AZ, CA, FL, MI, NJ, NY, NC (2008-2010)

Creanga AA, Bateman BT, Kuklina EV, et al. Racial and ethnic disparities in severe maternal morbidity: a multistate analysis, 2008-2010. Am J Obstet Gynecol 2014;210

ALLIANCE FOR INNOVATION ON MATERNAL HEALTH AIM

SMM: Why on the rise?

- CDC has shown population increases in
  - maternal age
  - pre-pregnancy obesity
  - preexisting chronic medical conditions
  - cesarean delivery
- Rural Areas with no OB provider?
- Lack of standardized guidelines and safety tools?
- Variation in clinical practice and hospital care?

SMM: Definition

- There is not agreement on definition of SMM

  and

- Maternal morbidity is difficult to define
  - Broad range of complications and conditions
  - Broad range of severity

SMM Definition: CDC

- CDC: ICD diagnoses and procedure codes in 25 “buckets”, indicative of major complications during delivery
  - Blood transfusion (does not denote the number of units)
  - Pulmonary edema
  - Renal failure
  - Hysterectomy
- This list may have a low positive predictive value (0.4)

SMM definition: ACOG and SMFM, TJC too

ACOG and SMFM recommend the following clinical definition*

Transfusion of 4 or more units of blood

and/or

Admission of a pregnant or postpartum woman to an ICU

- High sensitivity and specificity and a high PPV (0.85)
- Not all cases meeting screening criteria will be true cases of morbidity

*Institutions may choose to incorporate additional screening criteria

Hospital rates of SMM

- Wide variation in hospital rates with the use of either CDC ICD criteria or the clinical criteria
- Case-mix adjustment to compare hospitals
- However, even without case-mix adjustment, the measure can be of value to follow a single hospital's progress over time

The TJC: Sentinel event definition

A patient safety event (not primarily related to the natural course of the patient's illness or underlying condition) that reaches a patient and results in any of the following:

- Death
- permanent or temporary harm

For obstetrics: severe maternal morbidity is receiving 4 or more units of blood products (subsequently revised to 4 or more units of RBCs) and/or ICU admission

SMM: Case Review

PROMPTING EVENT: ≥ 4 units and ICU Admission

- Severe preeclampsia, magnesium, induction of labor
- SVD with uterine atony QBL at delivery was 515cc
- Excessive bleeding
- OR for D&C and BAKRI balloon placement for retained placenta
- 4 units of blood and 2 units plasma
- Severe HTN in PACU prompted transfer to ICU

SMM: Case review

SMM Review Conclusions

- Diagnosis of retained placenta earlier by ultrasound or bimanual exam
- Transition to the OR was very efficient
- Consider using beside u/s to access for retained placenta when medications are being given for ongoing atony
- TXA in high risk hemorrhage patients (we give always now at blood loss of 1000 ml)

Examples of Pearls from recent Reviews

- Remember during a TOLAC that s/s rupture can be obscured with a working epidural.
- If we have a patient who is seen early enough, ensure we are starting ASA appropriately with risk factors to
- Evalution of tachycardia and Chest X-ray for cardiomyopathy
- Remember the value of bedside u/s to evaluate for not only uterine blood but blood in the abdomen. While CT does take some time to coordinated the u/s machine is on the unit and is a good tool.

SMM

TOOLS

TEAMS

TRACKING

Standardized review of SMM: Team

- Committee Chairperson
- OB/GYN physician
- CNM
- OB RN
- CRNA or anesthesiologist
- Pediatrics physician
- Residents
- Ad Hoc members as needed
- CMO or other high level medical directors
- Hospital Risk or QA team members
- Patient advocate or public member

SMM: Tools

- Department charter or bylaws
  - Goal
  - Scope
  - Members
  - Responsibilities
  - Location for confidential minutes
- Committee Procedure
  - Institutional criteria for review
  - Review process
  - Data management

Confidentiality and Protection from Discovery

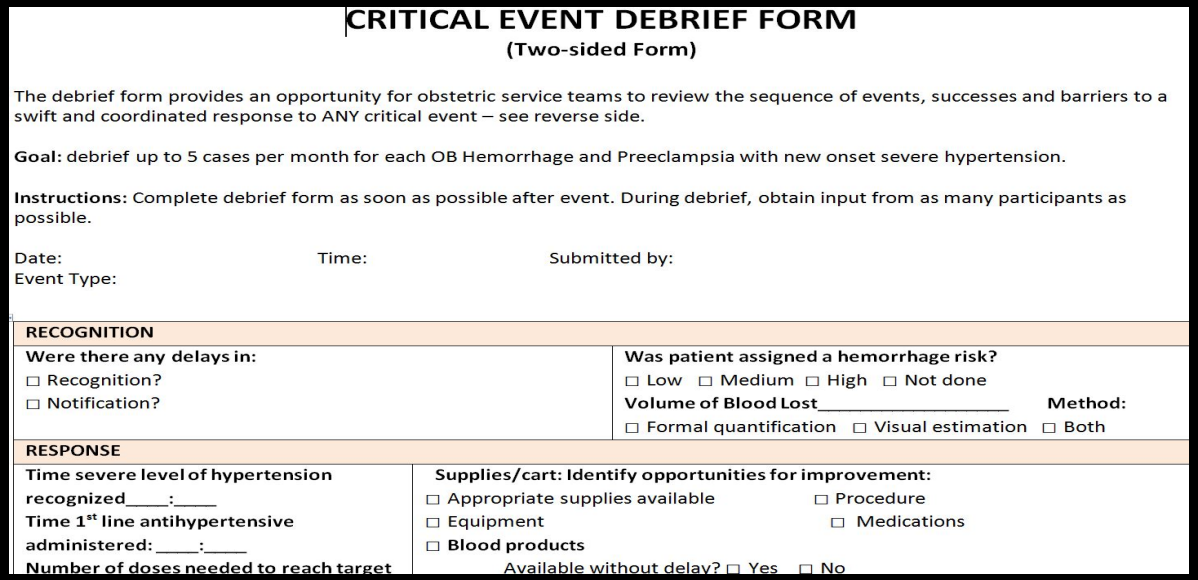
- All Committee members sign affidavits of confidentiality
- The SMM Review Committee should be sanctioned by the hospital and protected from discovery
- Alaska State statute determines if protection or authority exists for maternal morbidity review
- Facilities should obtain guidance from legal counsel and compliance
- Follow medical staff processes

- ALASKA PEER REVIEW In AS 18.23.005-18.23.070

- Tribal Health Care Entities: The Health Care Quality Improvement Act of 1986, 42 U.S.C. 11101, et seq., the Indian Health Care Improvement Act, 25 USC 1675, and Alaska Statute 18.23.030

SMM: Tools

- Debrief Form for staff at events
- Review form for chart abstraction



CRITICAL EVENT DEBRIEF FORM
(Two-sided Form)

The debrief form provides an opportunity for obstetric service teams to review the sequence of events, successes and barriers to a swift and coordinated response to ANY critical event – see reverse side.

Goal: debrief up to 5 cases per month for each OB Hemorrhage and Preeclampsia with new onset severe hypertension.

Instructions: Complete debrief form as soon as possible after event. During debrief, obtain input from as many participants as possible.

Date: Time: Submitted by:
Event Type:

RECOGNITION

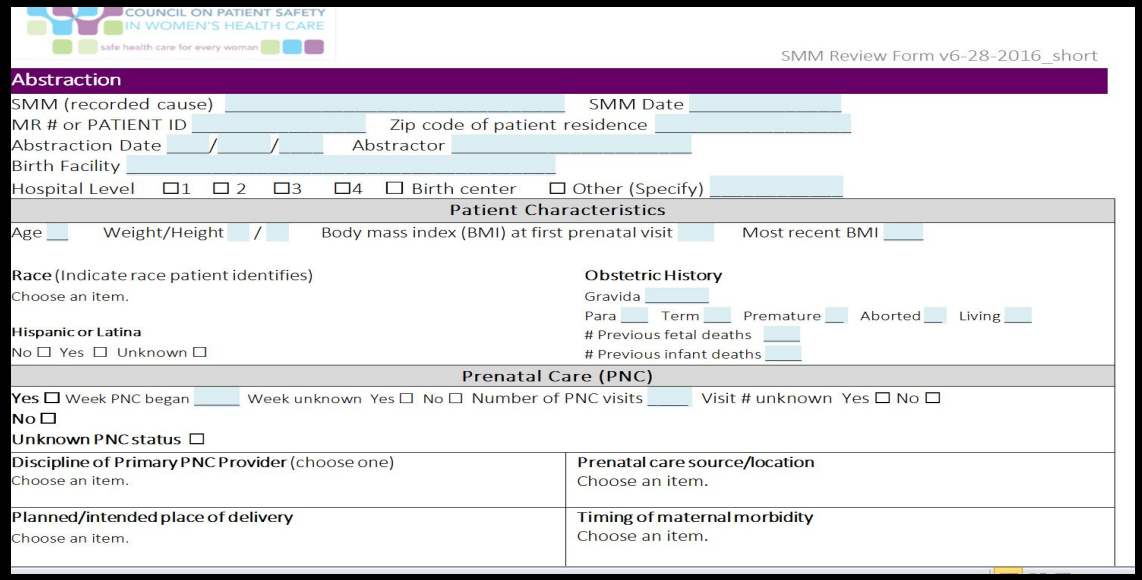
Were there any delays in:
☐ Recognition?
☐ Notification?

Was patient assigned a hemorrhage risk?
☐ Low ☐ Medium ☐ High ☐ Not done
Volume of Blood Lost_____ **Method:**
☐ Formal quantification ☐ Visual estimation ☐ Both

RESPONSE

Time severe level of hypertension recognized____:____
Time 1st line antihypertensive administered: ____:____
Number of doses needed to reach target

Supplies/cart: Identify opportunities for improvement:
☐ Appropriate supplies available ☐ Procedure
☐ Equipment ☐ Medications
☐ **Blood products**
Available without delay? ☐ Yes ☐ No



COUNCIL ON PATIENT SAFETY IN WOMEN'S HEALTH CARE
safe health care for every woman

SMM Review Form v6-28-2016_short

Abstraction

SMM (recorded cause) _____ SMM Date _____
MR # or PATIENT ID _____ Zip code of patient residence _____
Abstraction Date ____/____/____ Abstractor _____
Birth Facility _____
Hospital Level ☐1 ☐ 2 ☐3 ☐4 ☐ Birth center ☐ Other (Specify) _____

Patient Characteristics

Age __ Weight/Height __ / __ Body mass index (BMI) at first prenatal visit ____ Most recent BMI ____

Race (Indicate race patient identifies)
Choose an item.

Hispanic or Latina
No ☐ Yes ☐ Unknown ☐

Obstetric History
Gravida ____
Para ___ Term ___ Premature ___ Aborted ___ Living ___
Previous fetal deaths ____
Previous infant deaths ____

Prenatal Care (PNC)

Yes ☐ Week PNC began ____ Week unknown Yes ☐ No ☐ Number of PNC visits ____ Visit # unknown Yes ☐ No ☐
No ☐
Unknown PNC status ☐

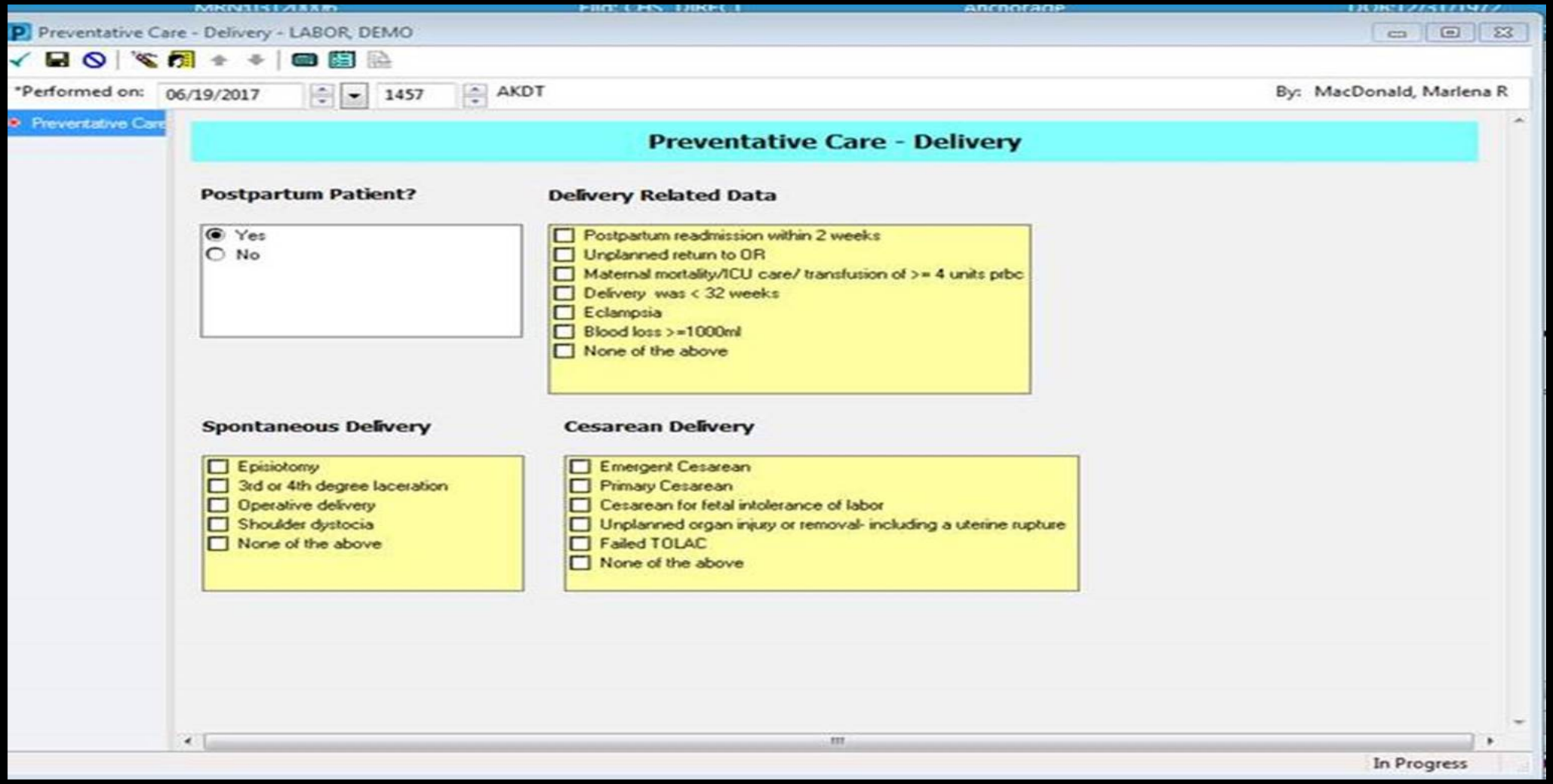
Discipline of Primary PNC Provider (choose one)
Choose an item.

Prenatal care source/location
Choose an item.

Planned/intended place of delivery
Choose an item.

Timing of maternal morbidity
Choose an item.

SMM: Tools that allow tracking



SMM: Tracking Improvements

What have we changed based on 3 years of reviews?

- Dedicated unit clerk
- Highlighted differences in staff anesthesia resources that affect more complex cases at night.
- Added maternal codes in the OR to simulation schedule.
- Postpartum hemorrhage committee: designed uniform hemorrhage risk stratification system.

SMM: Tracking Improvements

- Educated staff on difference in calling a code vs rapid response vs L&D stat team
- Physicians initiate severe hypertensive bundle order set instead of giving 1 time orders
- Multi-facility M&M with teleconferences to outside hospitals
- TXA use for hemorrhage
- Learning FAST scans from ED physicians
- Focus on cases of post-op bleeding and following I’s and O’s very closely

SMM: Tracking Improvements

- Team discussions related to the importance of stabilizing Pre-eclampsia and optimizing blood pressure whenever possible before transition to OR
- When TXA is ordered in OR ensure it is communicated to entire OB team
- Consider using the Nifedipine post-partum blood pressure order set to decrease time after delivery we can discharge patients.
- Evidence showing we need telemetry on OB unit

SMM: Tracking Rates and Causes

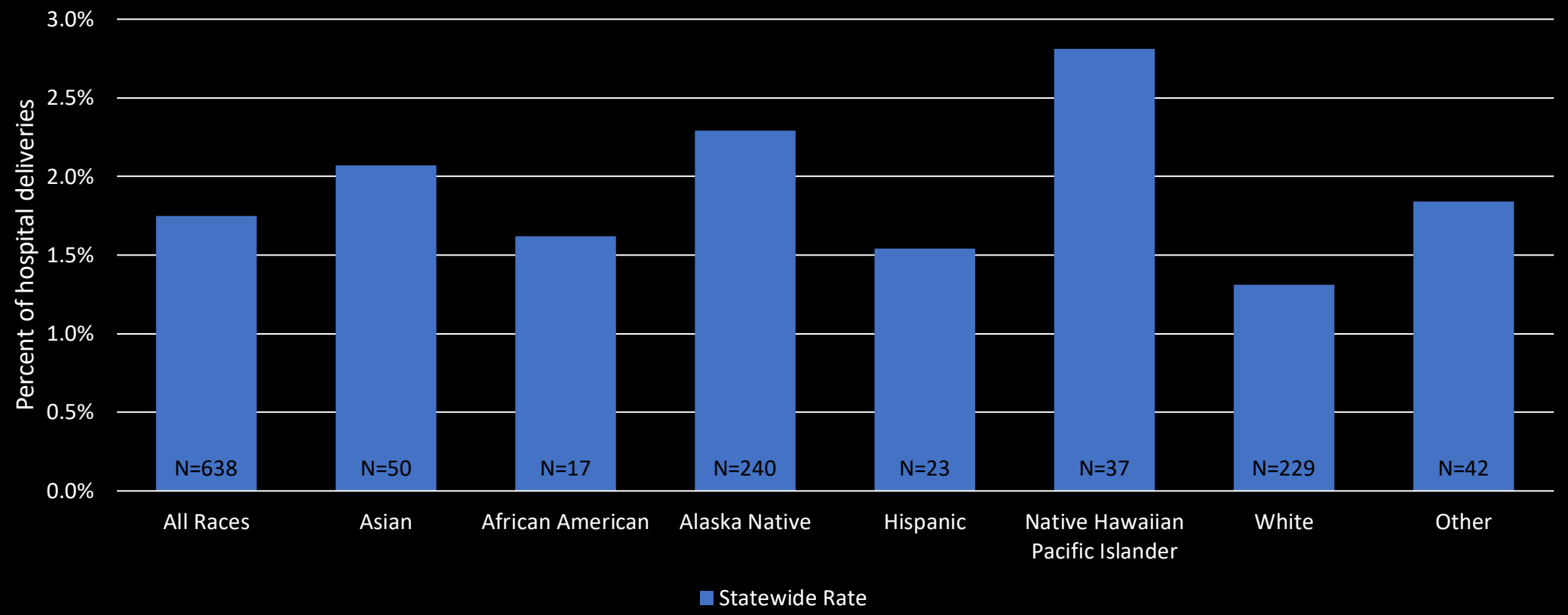
- How to track rates of SMM?
  - Facility
  - State
  - Nation
- The Alaska Health Facilities Data Reporting Program (HFDR) is governed by regulations 7 AAC 27.660 Article 14. Health Care Facility Discharge Data Reporting and AIM Database

Statewide trend in SMM by quarter, Alaska

Data Source: Alaska Health Facilities Data Reporting System

Prepared by: Rachel Gallegos, MCH Epidemiology Unit, Rachel.Gallegos@Alaska.gov

SMM by maternal race, Alaska Q1 2016 – Q2 2020



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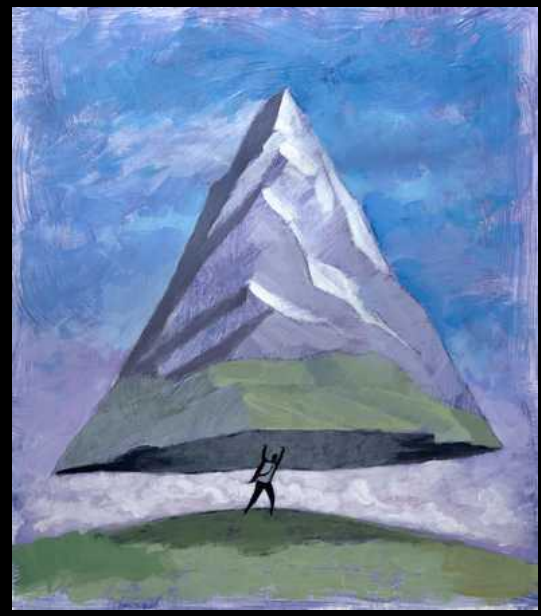

Recognize the problem of rising MMR working individually

ALLIANCE FOR INNOVATION ON MATERNAL HEALTH AIM

SMM: Partners

ALLIANCE FOR INNOVATION ON MATERNAL HEALTH AIM

AK PQC: Alaska Perinatal Quality Collaborative

ASHNHA

ALASKA STATE HOSPITAL & NURSING HOME ASSOCIATION

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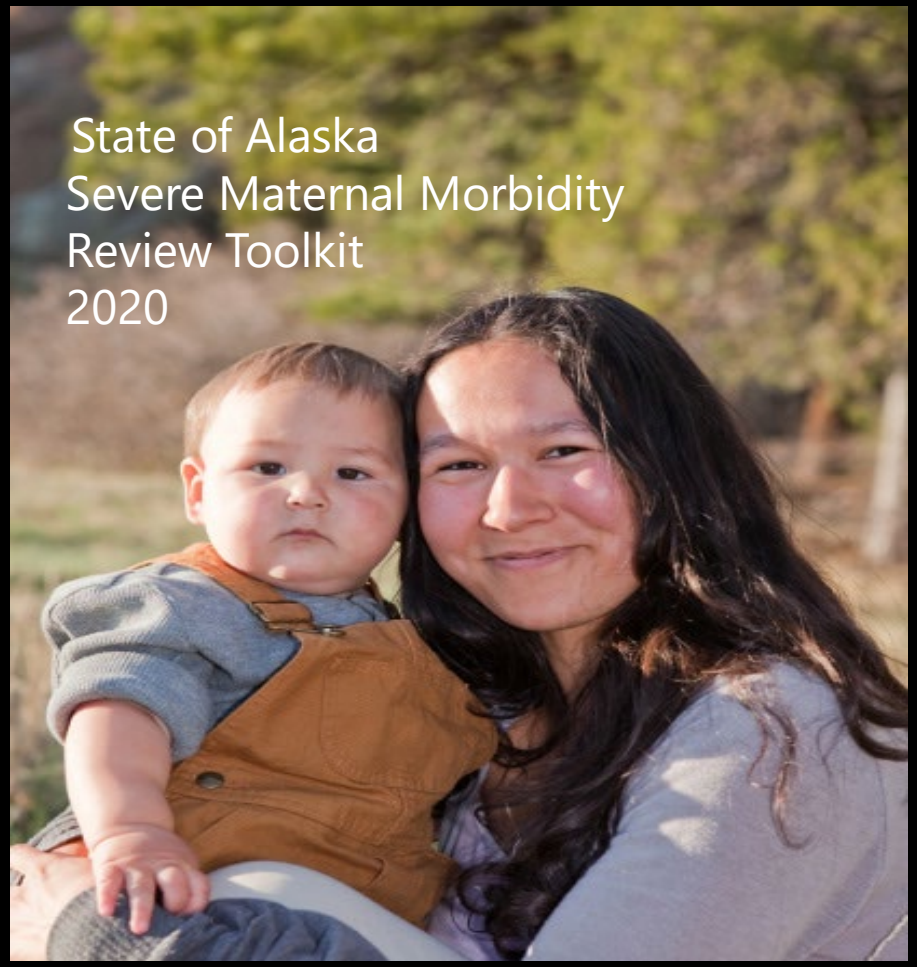

- SMM Debrief Form
- SMM Review Form (long version)
- SMM Review Form (short version)

Resources:

Centers for Disease Control and Prevention / Reproductive Health

Alaska Perinatal Quality Collaborative

Alliance for Innovation on Maternal Health (AIM).

AIM Partners' MAJOR Contributions

- **AWHONN** – Postpartum discharge teaching; AIM highlighted throughout Annual Meeting; monthly calls with AIM state AWHONN leaders.
- **ACNM** – Birthtools web info, Leadership on Supporting Intended Vaginal Birth; AIM at annual meeting.
- **AMCHP** – Maternal mortality review web tools; AIM breakout at annual meeting.
- **ASTHO** – Engages state health officers to provide strong support. AIM discussed at bi-monthly calls.
- **AAFP** – Content on bundle work groups and consultation for rural state issues.
- **ABOG** – Portfolio MOC
- **SOAP** – Consultation on bundle implementation and disparities
- **SMFM** – M in MFM; leadership and mentorship on state teams.

Thank You

- ANMC SMM Review Committee and Dr. Stille, committee chair
- Margaret Young, Katy Krings, Rachel Gallegos and the AK Division of Public health MCH team
- ACOG AIM
- Alaska Native Medical Center
- Chrissy Rodriguez, MD
- Leanne Komorowski, MD
- Reinou Groen, MD ANMC PPH Champion
- Neil Murphy, MD ANMC Guidelines Champion
- Tirza Cannon, MD and Valerie Unrien, CNM ANMC HTN Champions
- Jen Harlos, RN ANMC OB nursing champion

Any Questions?

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