



All times listed are CENTRAL time zone

Day 1 - Wednesday, August 26	
6:45-7:45 am	Breakfast Provided
7:45-8:00 am	Welcome and Overview – <i>Lee T. Dresang, MD</i>
8:00-8:45 am	Pregnancy Care in a Time of Change – <i>John S. Cullen, MD, FAAFP</i>
8:45-9:30 am	Family Medicine and the Rural Pregnancy Landscape – <i>Dana Iglesias, MD</i>
9:30-9:45 am	Q&A 1
9:45-10:00 am	Break
10:00-10:45 am	Before and Beyond: Care Across the Reproductive Life Course – <i>Narges Farahi, MD, FAAFP</i>
10:45-11:30 am	Laboratory Tests, Genetic Screening and Imaging in Pregnancy – <i>Susanna R. Magee, MD, MPH, FAAFP</i>
11:30-11:45 am	Q&A 2
11:45am-1:00 pm	Lunch on Your Own
1:00-1:45 pm	Influential Obstetric Publications in the Past Year – <i>Benjamin J.F. Huntley, MD, FAAFP</i>
1:45-2:30 pm	Counseling Approach and Management Strategies for Pregnancy Losses – <i>Erin S. Huntley, DO</i>
2:30-2:45pm	Q&A 3
2:45-3:00 pm	Break
3:00-3:45 pm	Fewer Cesareans More VBACs – <i>Lee. T. Dresang, MD</i>
3:45-4:30 pm	Health Disparities Among Indigenous Birthing Parents – <i>River Cornelius, MD</i>
4:30-4:45pm	Q&A 4
4:45 pm	Recess



Pregnancy Care in a Time of Change

John S. Cullen, MD, FAAFP

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The following individual(s) in a position to control content for this activity have disclosed the following relevant financial relationships:

- John S. Cullen, MD, FAAFP, disclosed he has stocks/bond holdings with AbbVie, Abbot Laboratories, Bristol Myers Squibb, GE Healthcare, Pfizer and Sanofi.

All relevant financial relationships have been mitigated. All other individuals in a position to control content for this activity have indicated they have no relevant financial relationships to disclose.

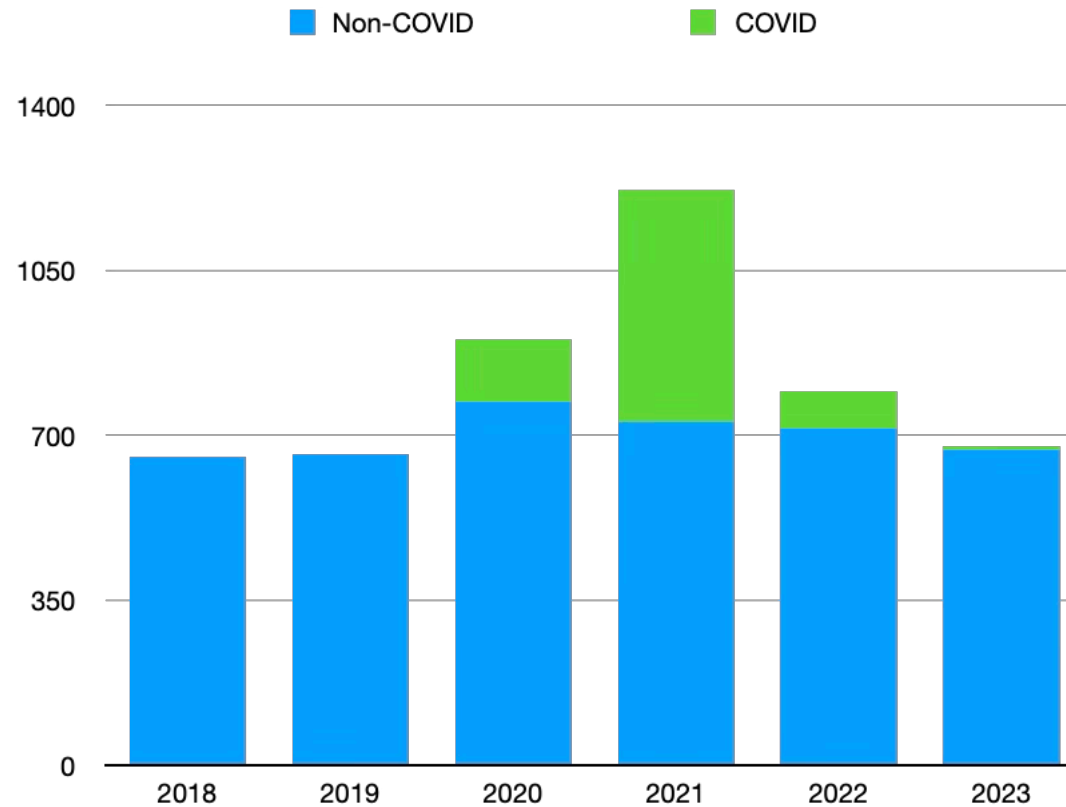
Learning Objectives

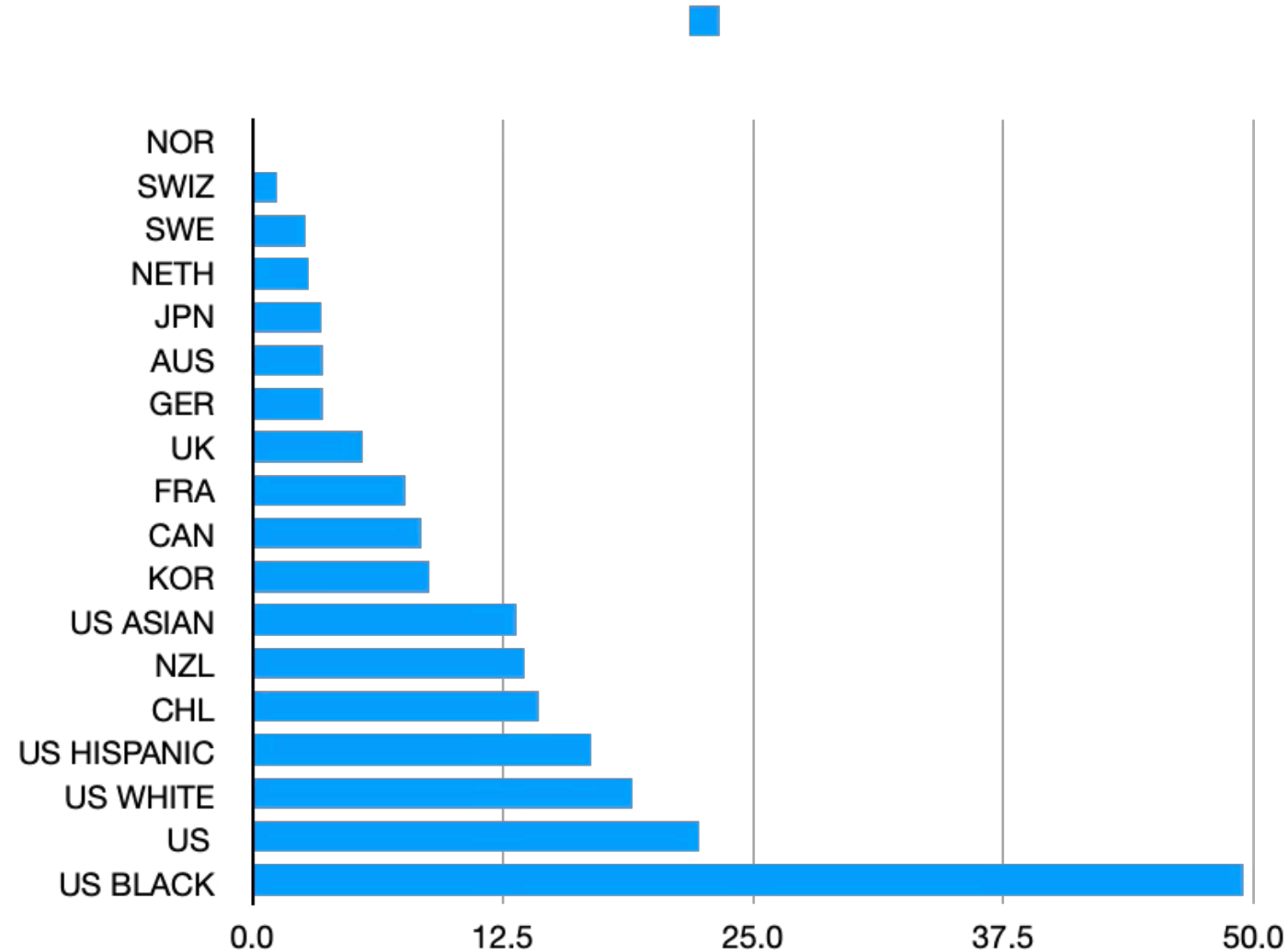
1. Analyze the root causes of poor pregnancy morbidity and mortality rates in the country and how they are affected by the changing health care environment.
2. Implement evidence-based practices to improve pregnancy outcomes from prenatal care through the 4th trimester.
3. Advocate for policy changes that support comprehensive care for pregnant individuals.
4. Collaborate with multidisciplinary teams to address broader social determinants of health affecting pregnancy.



First the good news!

Total Pregnancy Related Deaths in the United States





US has the highest pregnancy related death rate of developed countries, especially for black women

ARS Question

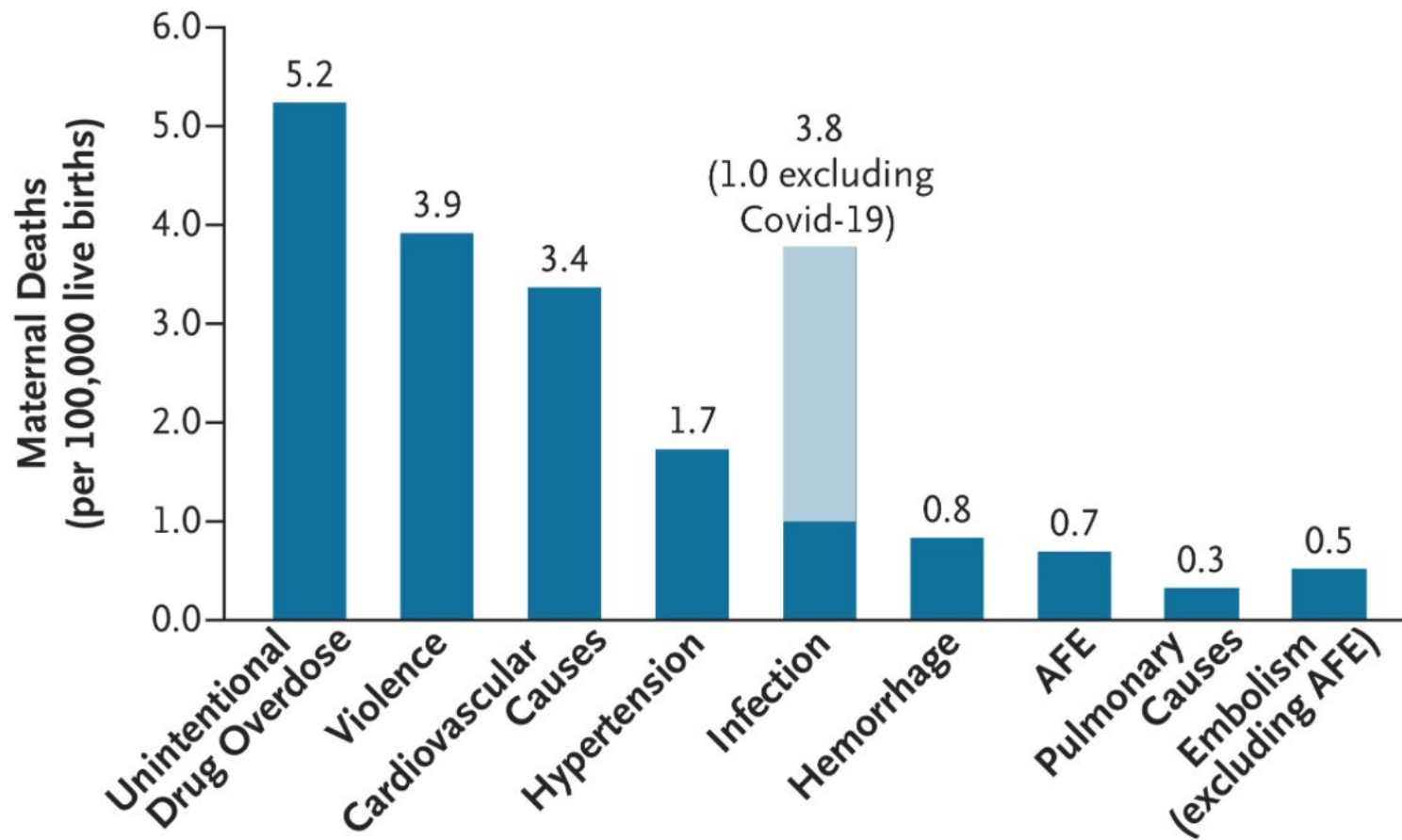


Question 1

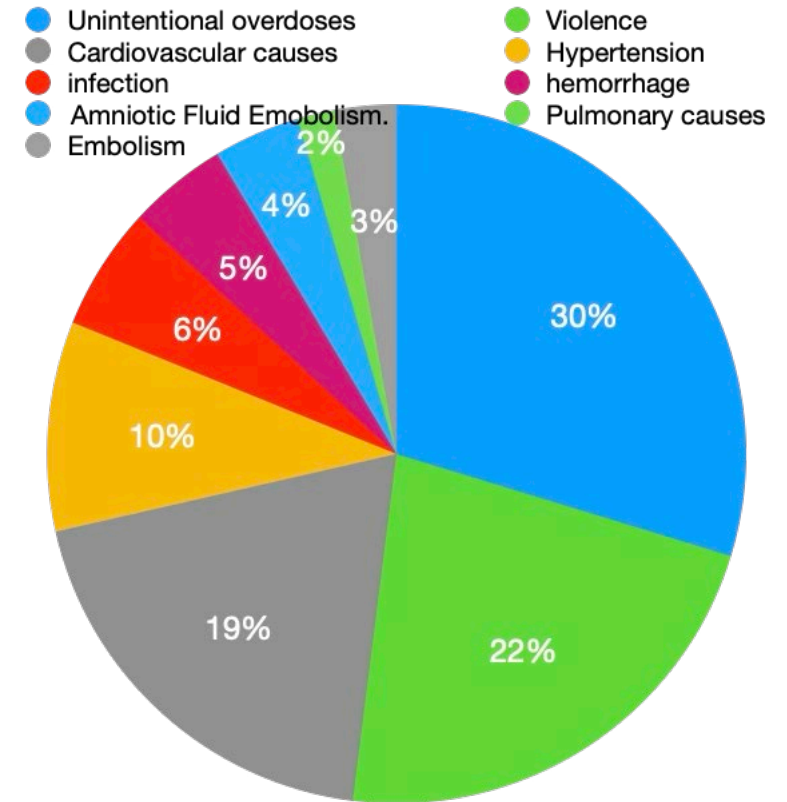
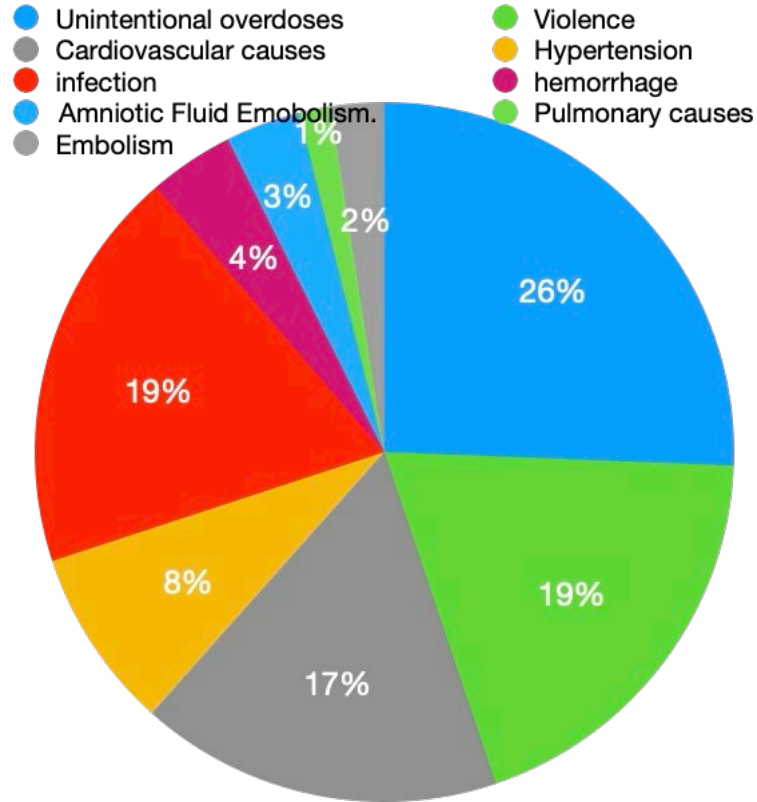
What is the greatest contributor to pregnancy related mortality?

- A. Post Partum hemorrhage
- B. Violence
- C. Cardiovascular Causes
- D. Unintentional overdose

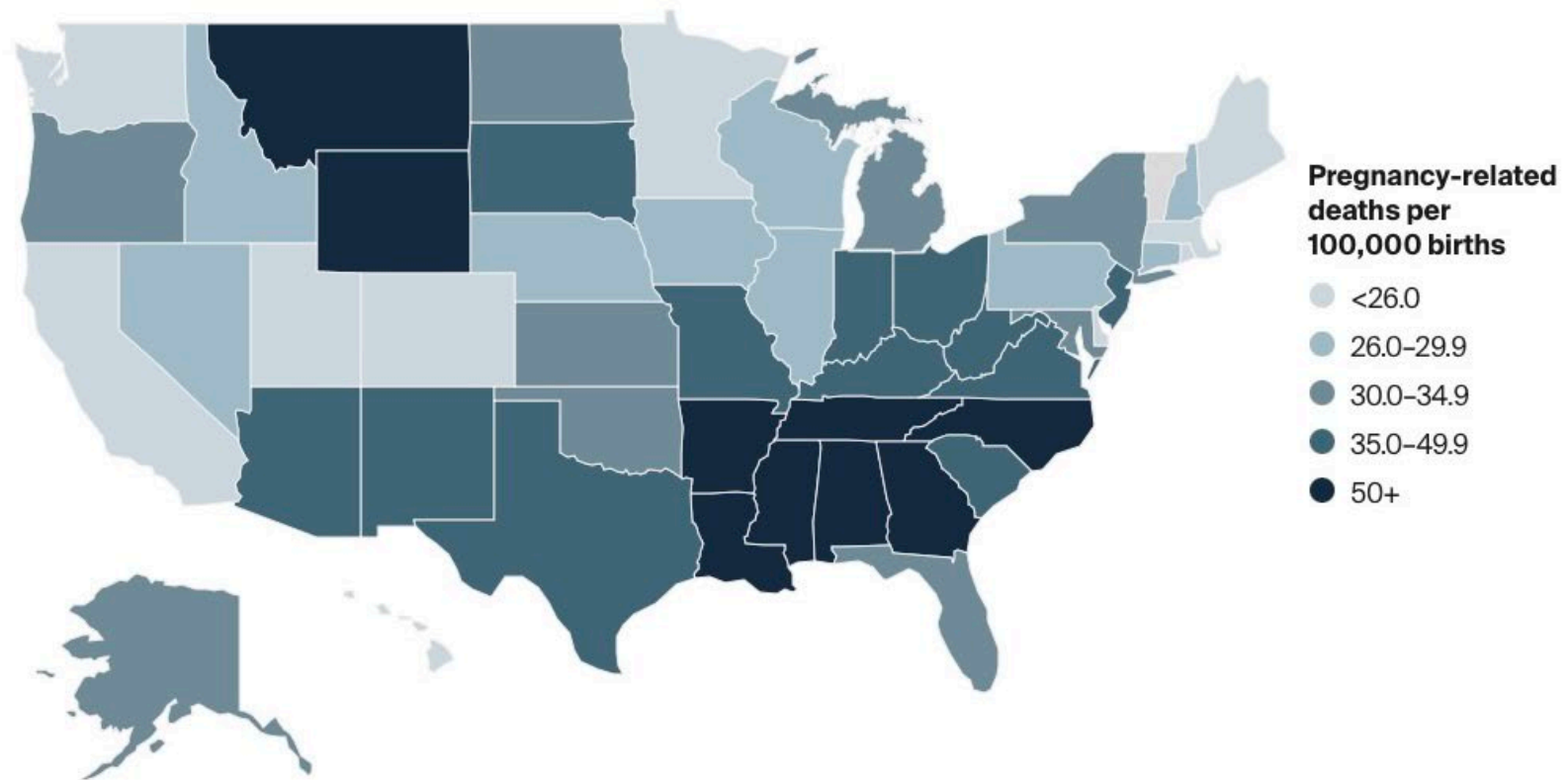
Leading Causes of Death among Pregnant and Postpartum Women in the United States, 2018–2023



Unintentional overdose and Violence make up the majority of pregnancy related mortality.

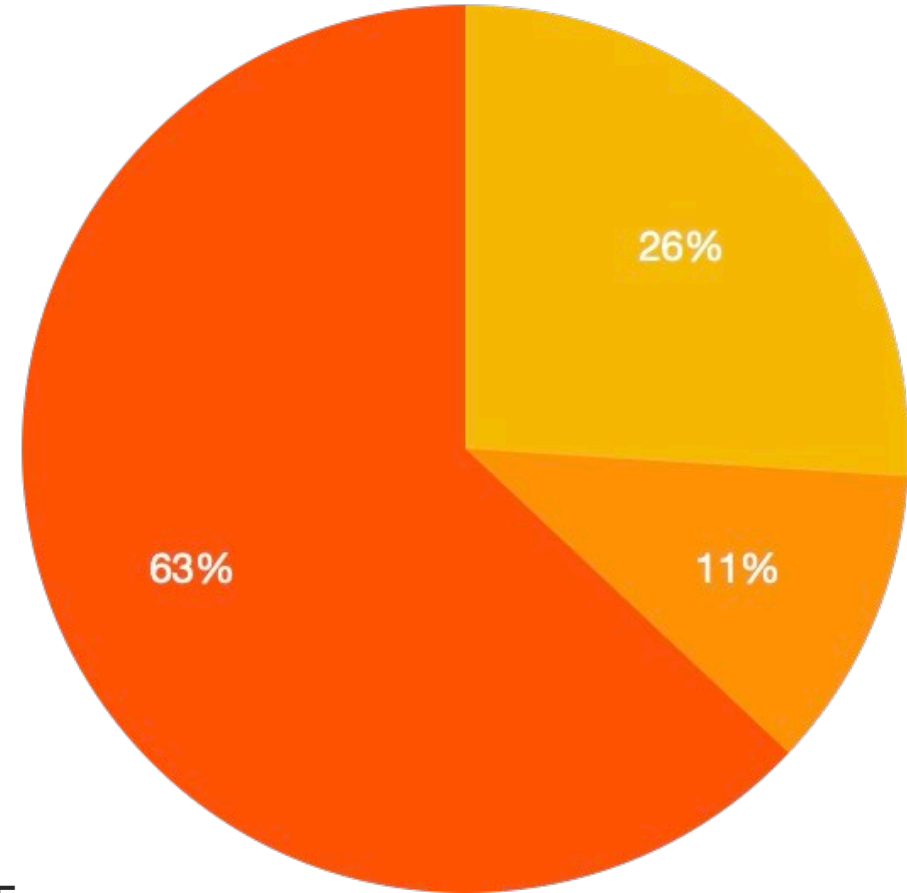


There were wide interstate differences in pregnancy-related mortality ratios between 2019 and 2023.



Two-Thirds of pregnancy related mortality occurred after delivery.

● Maternal deaths during pregnancy
 ● Day of Delivery
 ● Postpartum UP TO 1 YEAR





Root causes of high US pregnancy related mortality.

- Unintentional Overdose
- Suicide
- Homicide
- Access
- Shortage of Pregnancy Care Providers

Root Causes of High US pregnancy related mortality.

- Health Care policies
- Data Gaps and delayed surveillance
- Racial and Ethnic Disparities
- Lack of National Standards of care



Unintentional Overdoses

- Punitive laws for substance use disorder
 - Fines
 - Loss of custody
 - Involuntary commitment
 - Incarceration
- Decreased rate of referral to Addiction Treatment Centers
- Opioid detoxification
- IPV

Punitive Laws

Mcelroy vs State of Alabama

- Incarcerated for suspicion of drug use during pregnancy
- SPROM without medical care for over 24 hours.
- Delivered in cell with assistance of other inmates while guards watched.



Violence

- Suicide
 - Postpartum Depression
- Homicide
 - mostly firearm related
 - Mostly IPV



Access

- 5.5 Million women live in counties without pregnancy care.
- Since 2020, 130 rural Hospitals have stopped providing pregnancy care.
- Between 2010 and 2022, 537 hospitals closed delivery wards.
- More than 1/3 of counties in US qualify as obstetric deserts.
- By 2022 52% of rural hospitals and 35.7 of urban hospitals have stopped delivering babies.

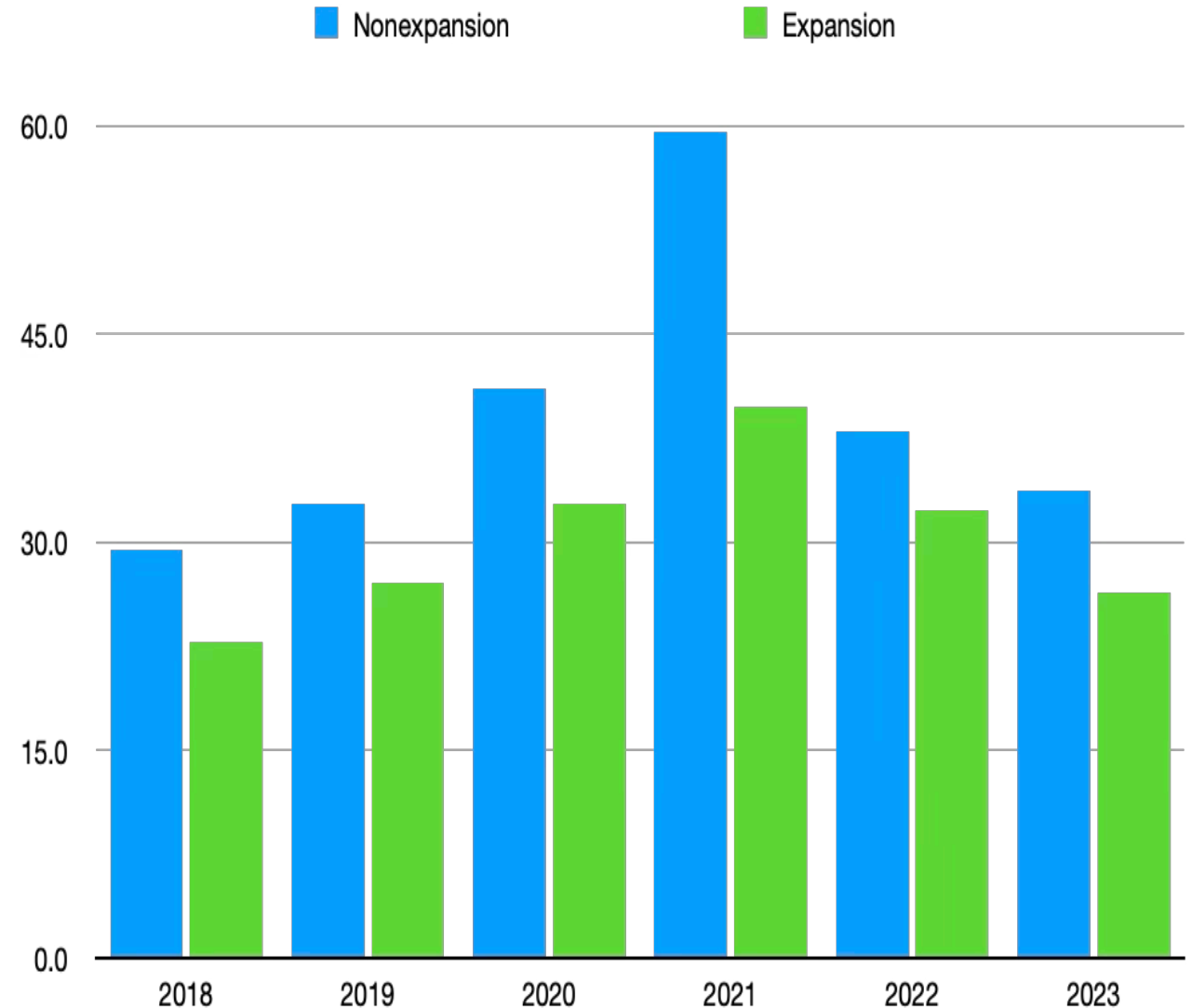
Even if a community is not planning on offering maternity care, they will continue to provide pregnancy care, but they won't be ready for the obstetrical emergencies.

John Cullen MD



Medicaid Expansion

Pregnancy-related
mortality is 18 – 49%
greater in those states
without Medicaid
Expansion



Medicaid Expansion

- Only 10 states have not expanded Medicaid.
 - Alabama
 - Florida
 - Georgia
 - Kansas
 - Mississippi
 - South Carolina
 - Tennessee
 - Texas
 - Wyoming
 - Wisconsin



Medicaid for 4th Trimester

Only 1 state has not adopted a 12 month extension of Medicaid for post partum.

- Arkansas



ARS Question



Question 2

Rural hospital maternity programs will see an increase, decrease, or status quo in funding

- A. Increase in funding
- B. Decrease in Funding
- C. Status quo
- D. It's complicated

Rural Health Transformation Program

- \$50b over 5 years
- Expansion of Maternal Care Models
 - Midwifery
 - Birth Centers

Regional Hub and spoke models.

- Telemedicine
- Remote patient Monitoring.
- Telemedicine prenatal care.

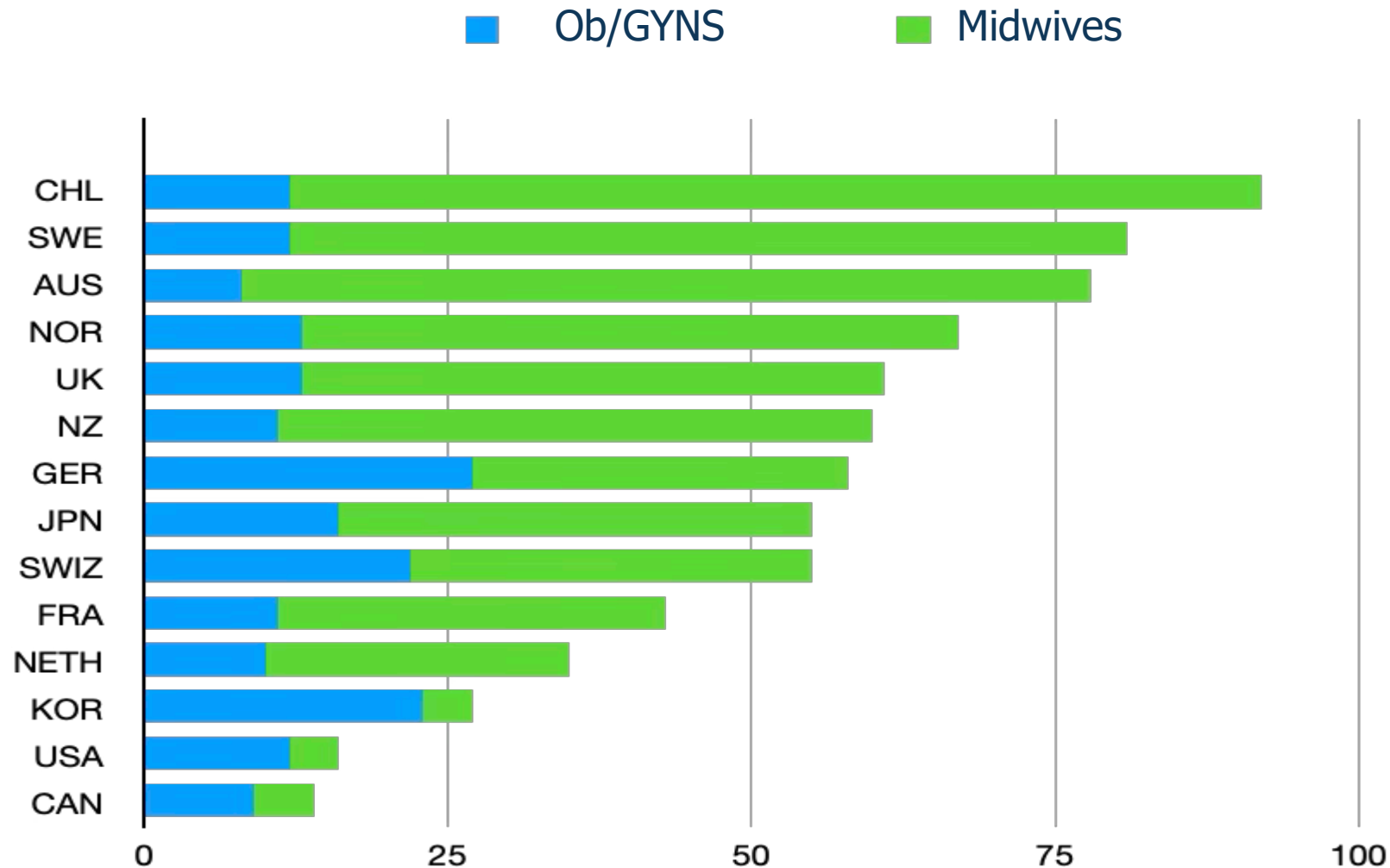
Rural Health Transformation Program

- 40.6 % of rural children are on Medicaid or CHIP
- Programs cut by \$990b Rural hospitals lose \$137b over 10 years
- 15% cap on using money for rural hospitals.
- Chaotic roll out
- Usurpation of funds by urban hospitals.

Shortage of Pregnancy Care Providers

- Not enough OB/GYNs, CNM, FM-Obs, Nurses
- Especially in rural or underserved areas
- Legal risk especially in states with restrictive pregnancy laws

Number of OB/GYNs and midwives per 1000 births (excluding Family Physicians). 2024



Shortage of Pregnancy Care Providers

- 46554 practicing OBGYNs in 2024
- Shortage of 5170 OB/GYNs by 2030
- More than 30% of OB/GYNs specialize
- 1567 Maternal Fetal Medicine Specialists.

Shortage of Pregnancy Care Providers

- CNMs project a 32% increase from 9830 – 12950

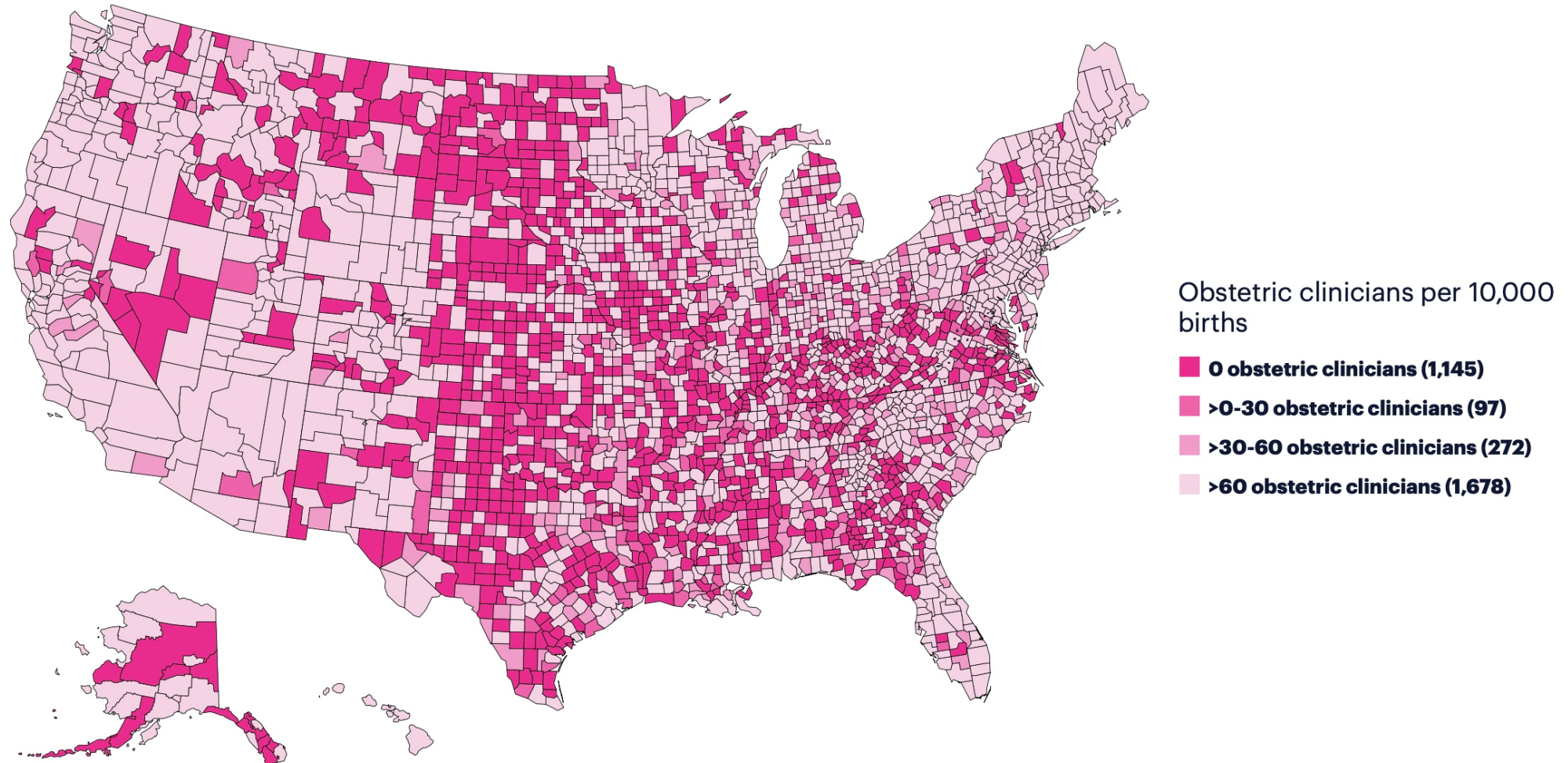
While demand is expected to increase by 4%

- NPs project a 89% increase from 10,610 → 20,020 While demand is expected to increase by 4%
- Women's health PAs are expected to increase by 56% from 1480 → 2310

Shortage of Pregnancy Care Providers

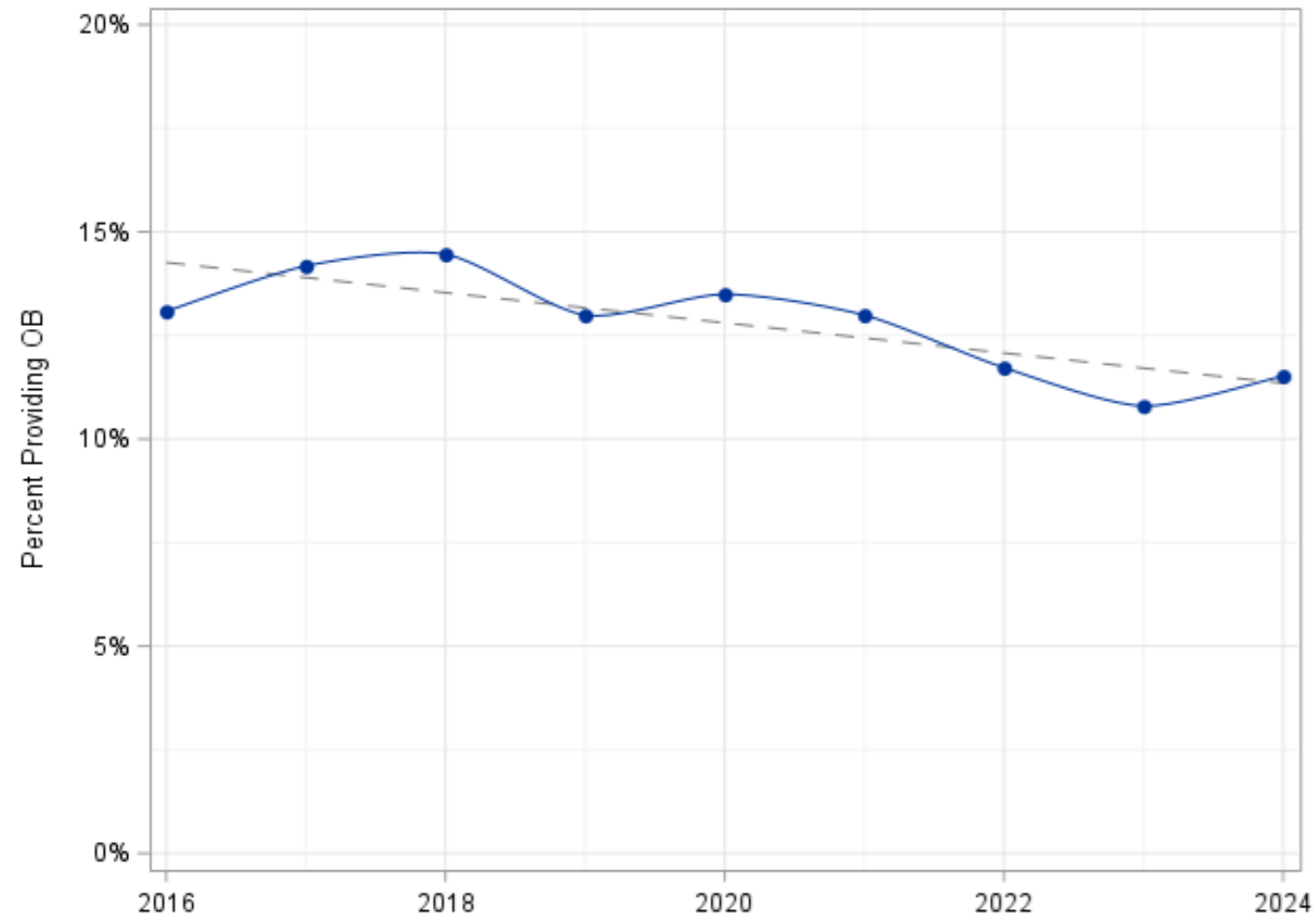
Family Physicians

Distribution of obstetric clinicians by county





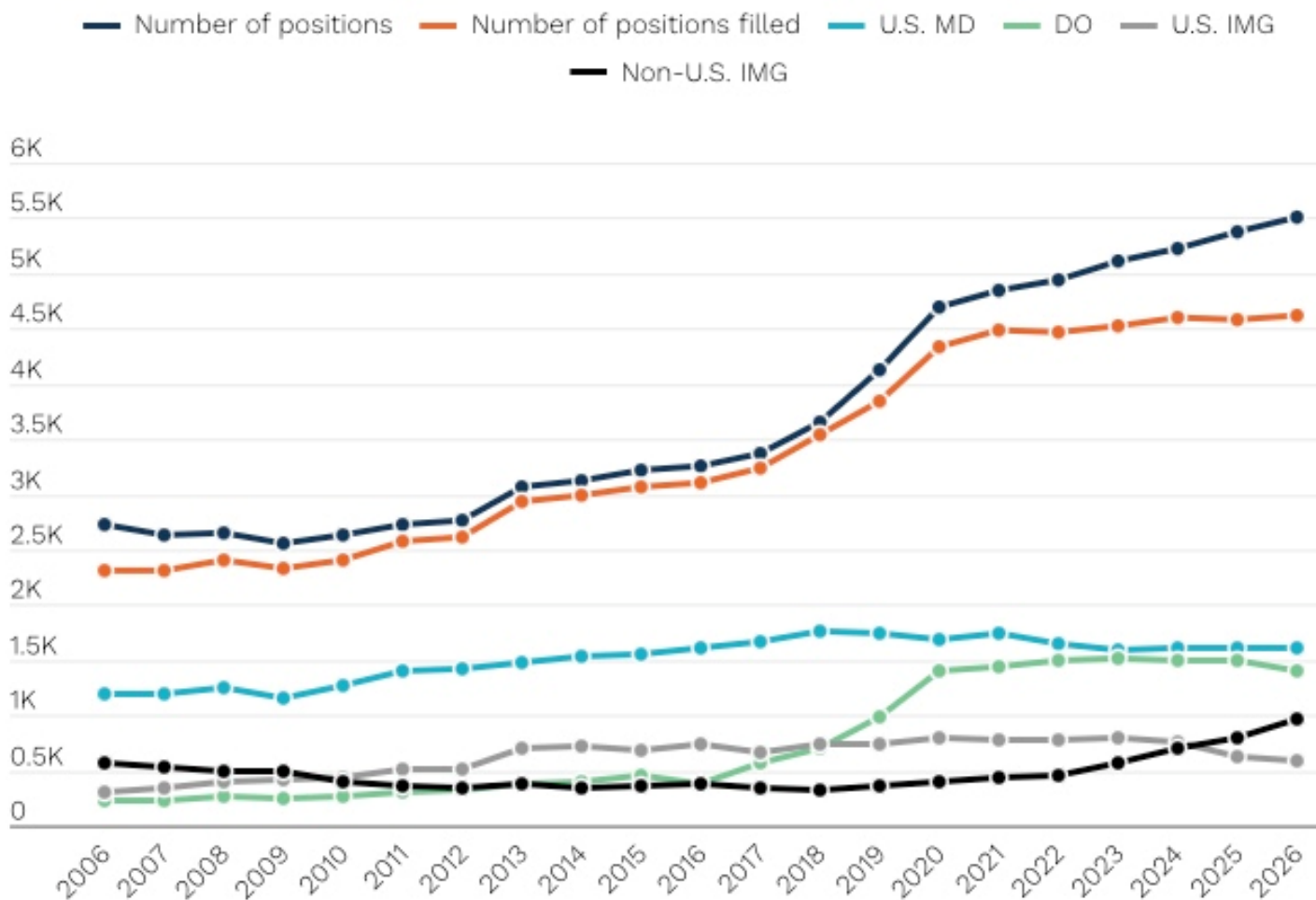
Percent of FPs Who Provide Pregnancy Care



Source: 2016-2024 ABFM NGS

Family medicine in the NRMP Match 2006-2026

PGY-1 residency positions offered and filled by applicant type



ARS Question



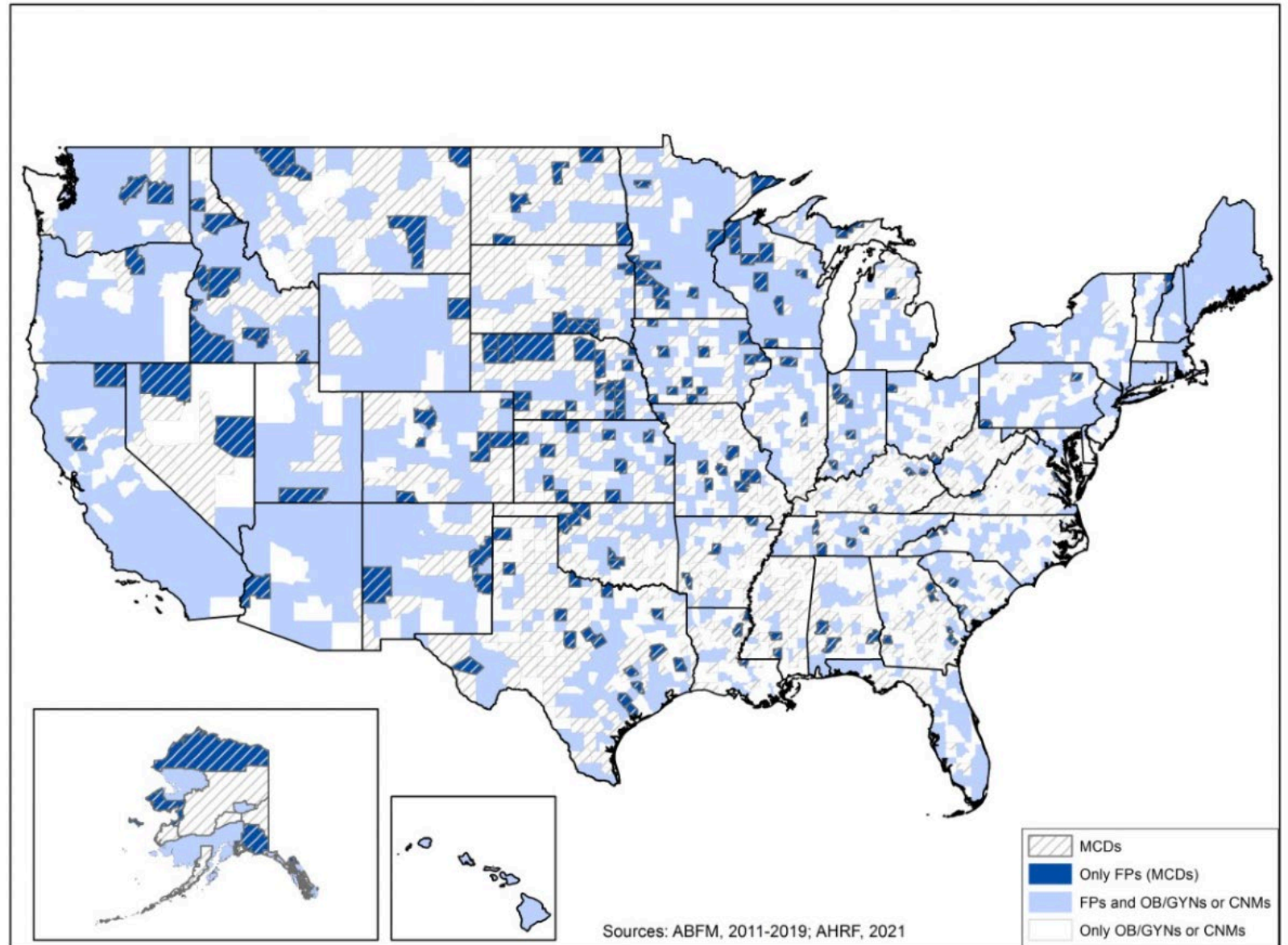
Question 3

Who delivers the majority of babies in Rural Communities

- A. OB/GYNs
- B. Family Physicians
- C. Nurse Midwives
- D. Lay Midwives

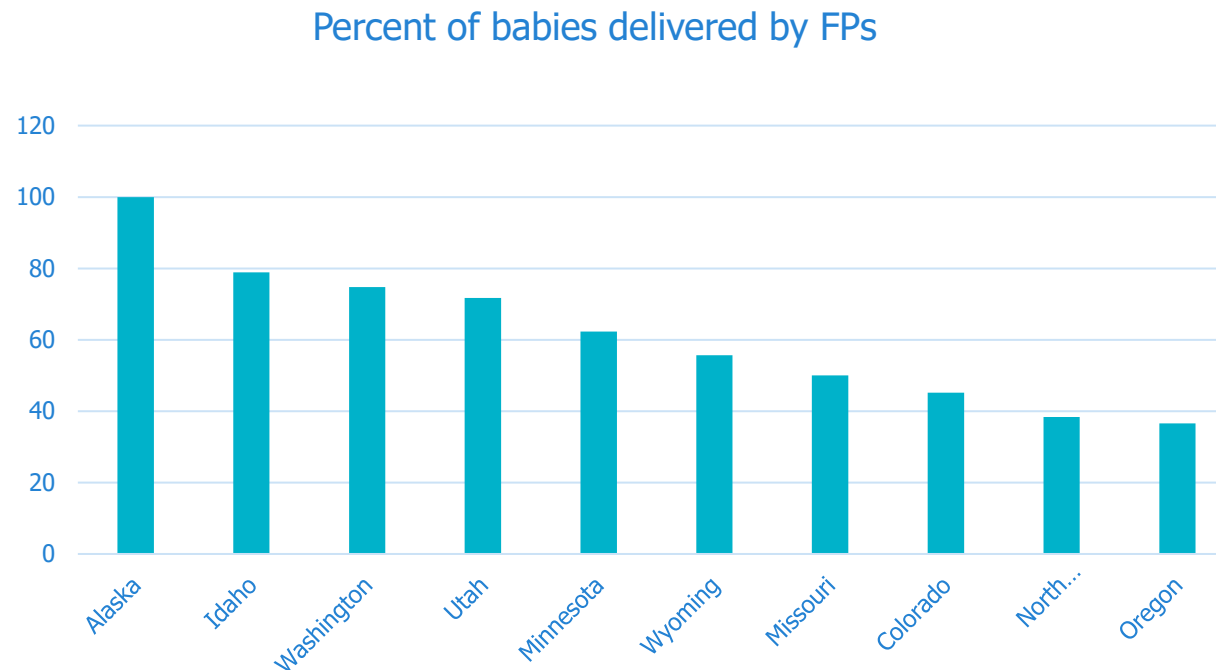
Counties with FP Deliveries

FPs deliver in more than 40% of US counties; more than 50% of these counties are non-metropolitan



FPs are the solution for Pregnancy care deserts.

- Majority of rural deliveries are attended by Family Physicians





States with Restrictive Laws

- More limited Access to affordable insurance
- Decreased access to health care providers
- Less Mental health care
- Worse outcomes

States with Abortion Bans

- 12 states with near total abortion bans
- 6 states with limitations to 6 – 12 week gestation
- 22,000 additional births
- 59 excess maternal deaths
- 478 excess infant deaths
- 11% increase in foster placements in states with TRAP* laws

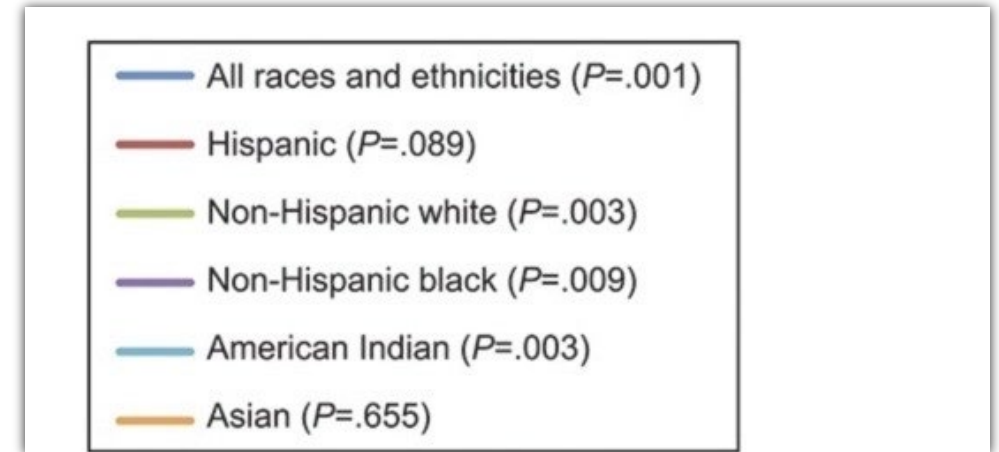
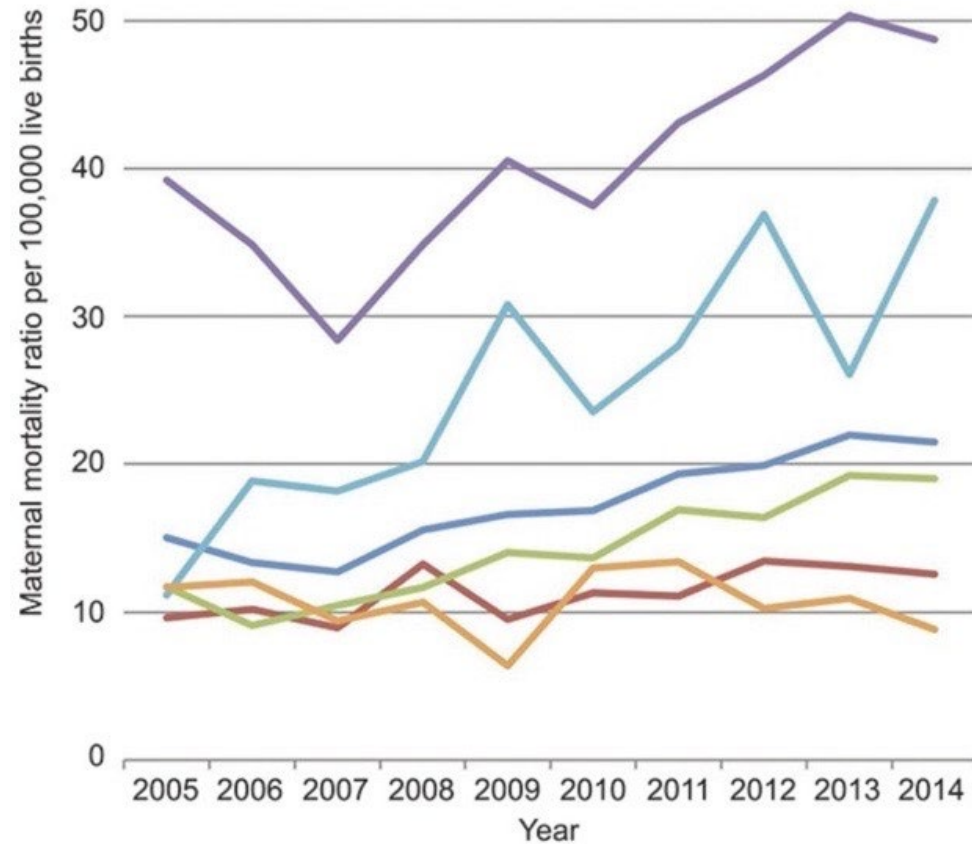
*Targeted Regulation of Abortion Providers



Data

- Maternal death data often lags **2–3 years**, making it hard to respond in real time.
- Underreporting and inconsistent definitions of “maternal mortality” across states mask the true scale of the crisis.
- *Current administration has cut data acquisition*

Pregnancy Related Mortality by Race and Ethnicity



Trends in maternal mortality ratio (maternal deaths/100,000 live births) by ethnic group and race: United States, 2005–2014. Numbers in parentheses represent P values for the Jonckheere-Terpstra test. *Moaddab. Trends in Maternal Mortality: 2005–2014. Obstet Gynecol 2018.*

Institutional Racism

Number of Preparedness Elements Based on Percent of Women Giving Birth who were African American

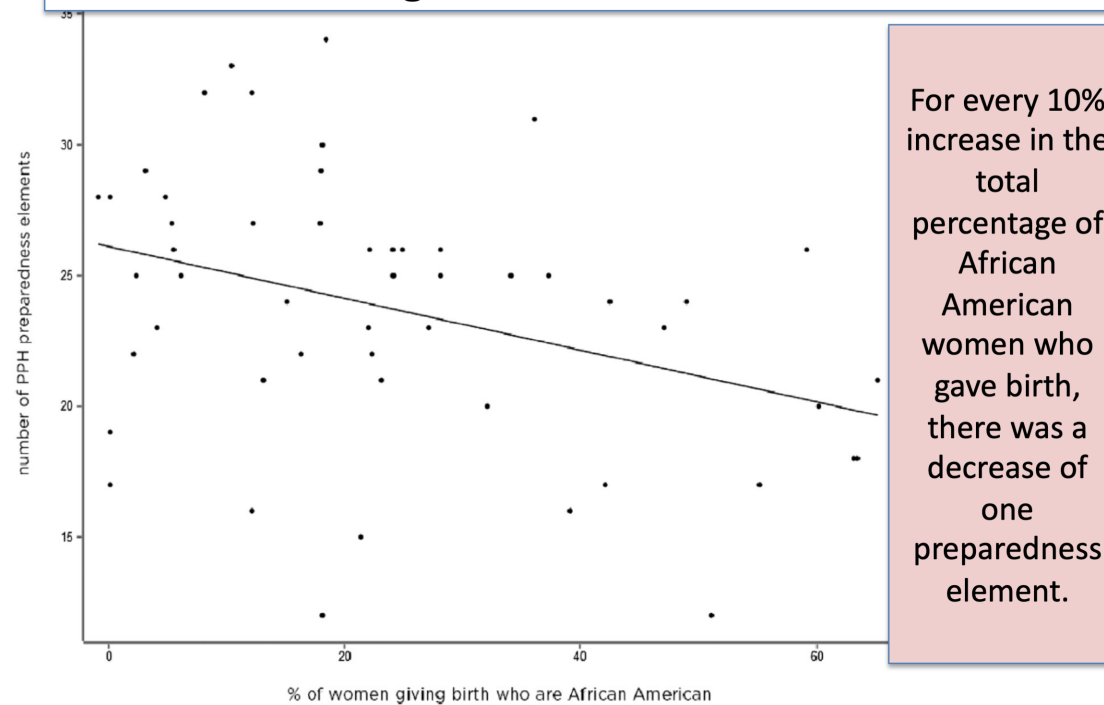
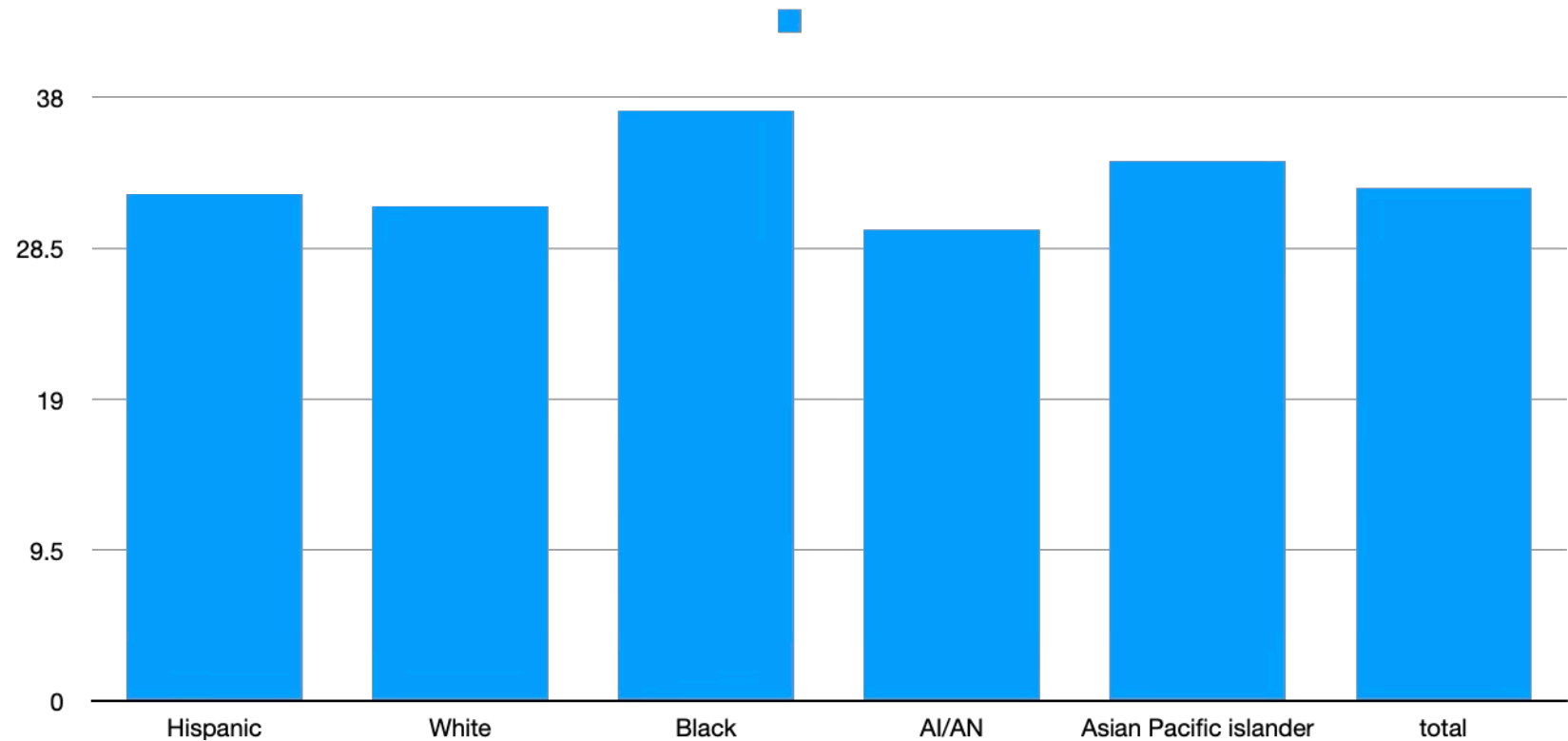


Figure 3. Number of preparedness elements based on percentage of African American women ($N = 53$). Regression model: $y = 26.3 - 0.10x$; $p < .01$; $r^2 = 0.11$.

Bingham, D., Sceheich, B., Byfield, R., Wilson, B., and Bateman, B.T. (2016). Postpartum hemorrhage preparedness elements vary among hospitals in New Jersey and Georgia. *Journal of Obstetrics, Gynecologic, and Neonatal Nurses*, (45) pp. 227-238.

Total Cesarean Deliveries by Race/Ethnicity: United States 2022 - 2024



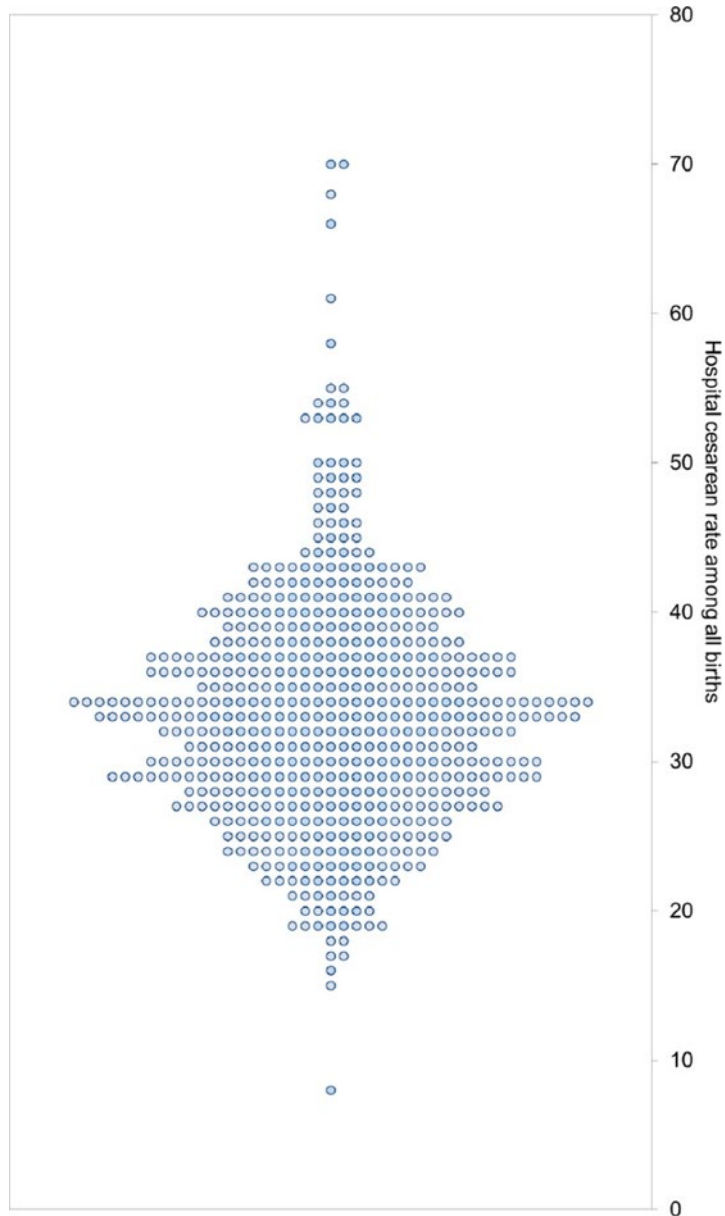
“The AAFP opposes all Forms of institutional racism and supports Family Physicians to actively dismantle racist and discriminatory practices and policies in their institutions and communities.”



Lack of Standardized Protocols

- The U.S. lacks **standardized, enforced protocols** for managing obstetric emergencies across all hospitals.
- Some facilities are ill-equipped to manage hemorrhage, preeclampsia, or cardiac arrest in pregnant patients.

Cesarean Section Rates Vary Wildly Between Hospitals



Source/Notes: SOURCE Authors' calculations based on data from the 2009 Nationwide Inpatient Sample of the Healthcare Cost and Utilization Project (HCUP). NOTES Distribution of cesarean delivery rates in a representative sample of US hospitals with at least 100 births in 2009 (N = 593). Hospital cesarean rates ranged from 7.1 percent to 69.9 percent--a tenfold variation across hospitals.

[Kozhimannil](#), Cesarean Delivery Rates Vary 10-Fold Among US Hospitals; Reducing Variation May Address Quality, Cost Issues
[Health Aff \(Millwood\)](#). 2013 Mar; 32(3): 527-535.
[doi: 10.1377/hlthaff.2012.1030](#)

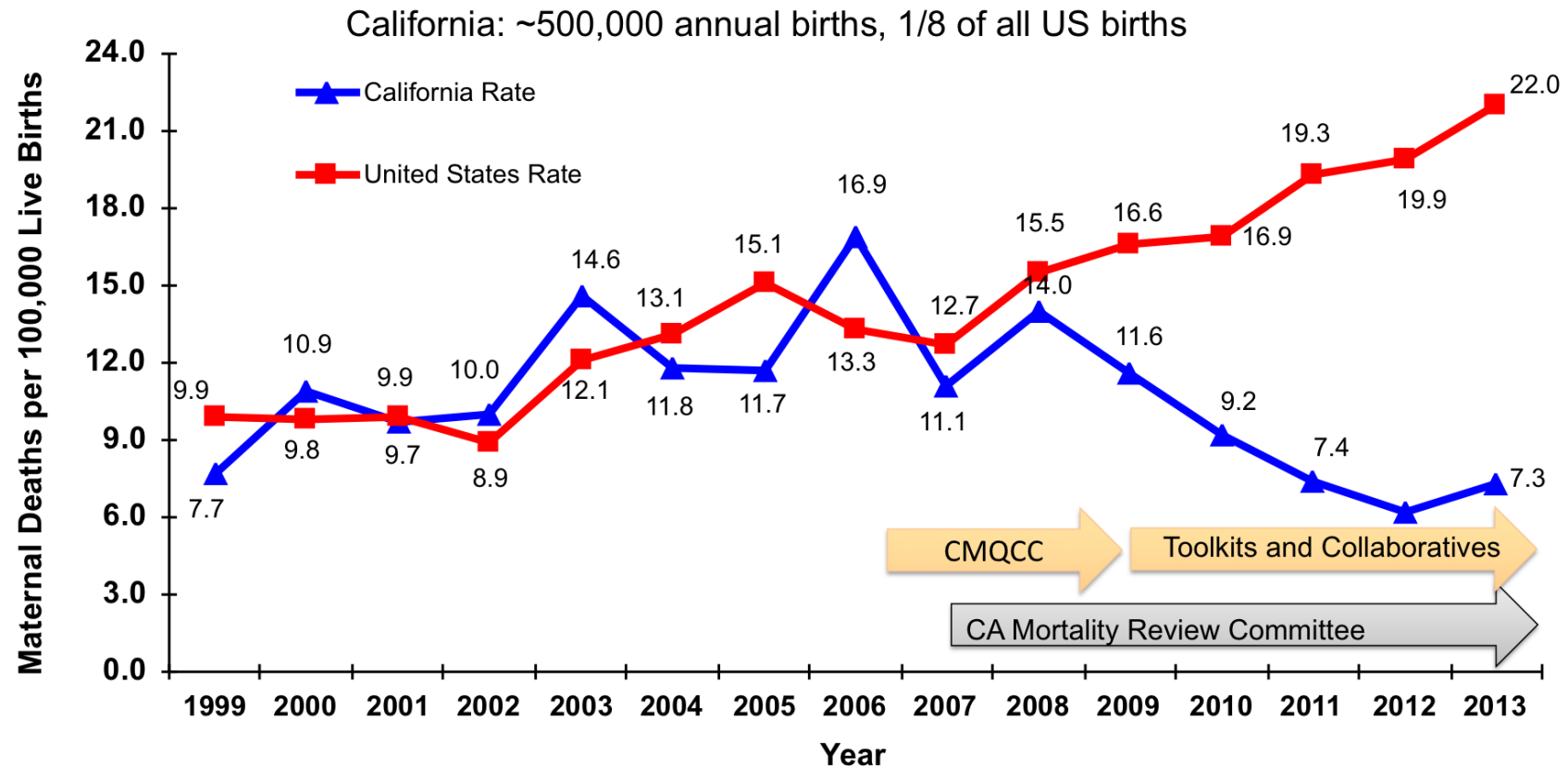
Practice Recommendations

- Standardized approach to pregnancy and labor that decrease bias.
 - ALSO
 - CMQCC
- CMQCC Toolkits



Maternal Mortality Rate California and United States; 1999-2013

CMQCC



Practice Recommendations

- Universal screening and referral or treat for IPV, SUD, depression, and anxiety. Grade B
- Improve identification of those who are postpartum who are going to the ER Grade B
- Treatment of Opioid Use Disorder during pregnancy and after. Grade B
- Early treatment of post partum depression Grade B

Practice Recommendations

- Encourage Family physicians to pursue obstetrical training and to consider rural practice. Grade C
- Apply for rural transformation grants to improve family medicine with OB training. Grade C
- Bias training for your team. Grade C
- Develop standardized, culturally appropriate patient education materials that explain the link between mental health conditions, IPV and SUD with pregnancy-associated deaths Grade B



Advocacy

It is your first amendment
right to petition your
government to address
grievances

Advocacy

- Advocate for Family Medicine OB
- Medicaid expansion for all states
- Extend Medicaid coverage to 1 year post delivery for all states (Arkansas)
- Advocate against punitive laws around pregnancy
- Dismantle Racist and Discriminatory practices wherever they are found

Advocacy

- Say her Name!
- Improve national surveillance for pregnancy related deaths
- Advocate for change of hospital payment methodologies
 - Rural hospitals should be paid for capacity in addition to deliveries Standby
 - Capacity Payments
 - Delivery and procedural payments.



Thank you

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Family Medicine and the Rural Pregnancy Landscape

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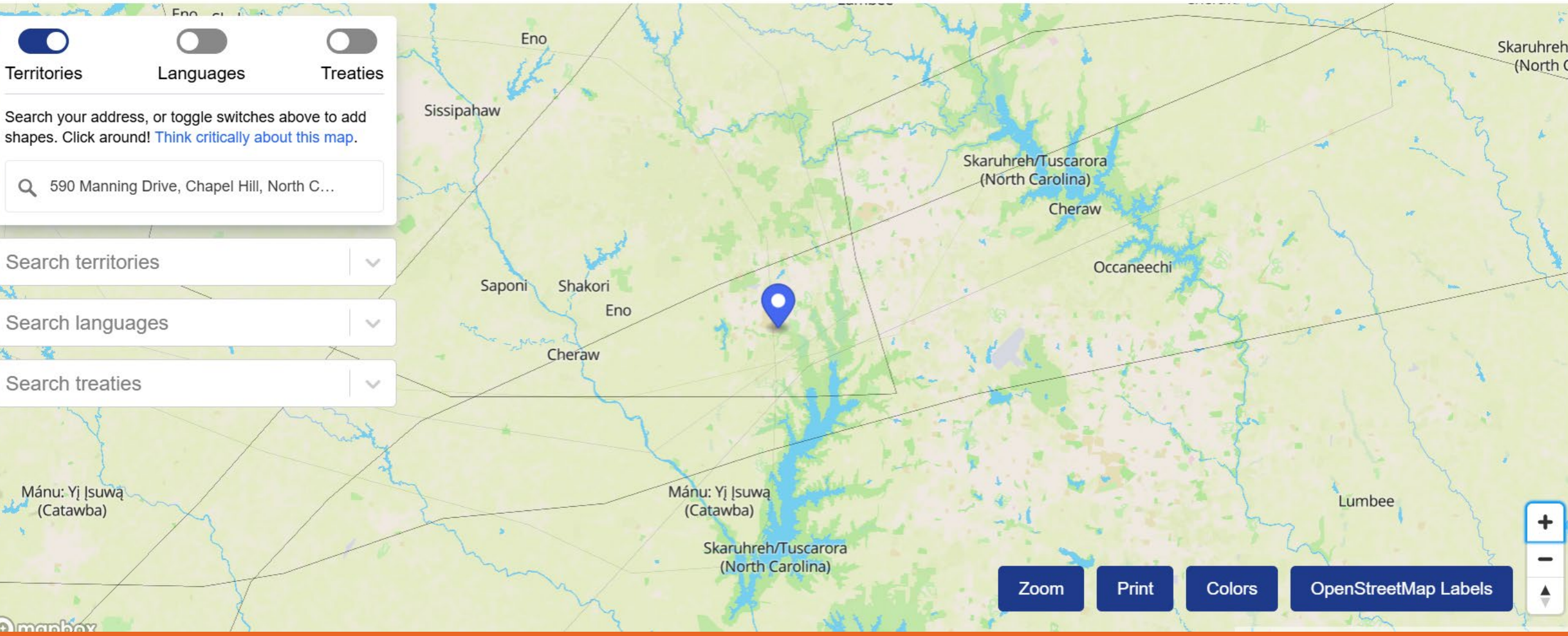
☐ Treaties

Search your address, or toggle switches above to add shapes. Click around! [Think critically about this map.](#)

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Learning Objectives

1. Discuss the epidemiology of maternity care access in rural areas and the associated outcomes.
2. Describe specific educational needs for rural maternity care to improve maternal outcomes, examples include preeclampsia management, uterine dehiscence, cesarean delivery, etc.).
3. Explain the needed screening and ongoing monitoring of women with high-risk pregnancies with consideration for available local resources to prevent adverse maternal and infant outcomes.
4. Identify possible strategies to increase rural access to maternity care and improve outcomes.

Terminology

- Rural
- Rurality
- Maternity desert
- Levels of care of maternity care (consensus document by ACOG/SMFM)
- Maternal mortality and morbidity
- Critical access hospital

Rural maternity landscape

(Timeframe 2010 – 2022)

- 200 = # of Rural hospitals lost maternity care
- More than half of US rural communities are without services
- More than 2.6 million rural woman of reproductive age (15-44)
 - Without local hospital based maternity care
- Increased Travel distance to access services

Outcomes concerns

- Increases in preterm birth
- 1.7x higher rates of pregnancy related mortality
 - Than those in larger urban areas
- Pronounced disparities for
 - Rural residing black and indigenous women
 - Medicaid beneficiaries

Distance to Travel

- Fewer clinic visits and delayed initiation to care
 - Unplanned out of hospital birth
 - Increased emergency room births
-
- Higher rates of severe maternal and neonatal morbidity
 - Longer travel burden = reduced access
 - Longer travel burden = elevated risks during delivery

ARS Question



Question 1

What percentage of rural births are attended by Family Medicine physicians ?

- A. 1%
- B. 10%
- C. 50%
- D. 67%

Family Medicine in rural communities

- Our strongest presence remains in rural maternity care
- Attending births in 67% of rural hospitals
- The sole delivering physician in 27% of these hospitals
- Provide VBAC and c/section access
- Possibility lower c/section rates with comparable outcomes to obstetricians

ARS Question



Question 2

Why are rural hospital closing their maternity units?

- A. Declining birth rates
- B. Hospital leaderships believe it is a loss leader
- C. It is easier for woman to drive to larger hospitals
- D. It is complicated

Maternity Closures

Causes are multiple, complex and due to interconnected factors

- Workforce
- Payor mix and higher Medicaid paid births
- Healthcare Leadership and larger systems support
- Volume ?...
- Provider training and skill confidence
 - Simulations, drills, interprofessional support
- Professional costs

Policy and payment

FEE FOR SERVICE

- Reimbursement based on quantity
- Disease model, fee for service, billed by birth procedure
- Mostly procedure & visit based model, weighted heavily to the outcome procedure
- Few reimbursement opportunities for community based care and supports
- Unequal non-outcome based reimbursement for professions

QUALITY AND VALUE BASED

- Reimbursement based on quality
- Physiologic process, prevention model and outcomes based
- Reformed reimbursement, value based on outcomes, inclusive care coordination and QI
- Increased payment for integrative care, doulas, education and innovative models of care delivery
- Reimbursement parity across professions driven by outcomes

Sustaining rural maternity care

- Address reimbursement and cost burden for rural facilities
- Maintaining quality care through evidence based practice and regional perinatal quality collaboratives
- Robust transfer systems of care
- Maintaining access, increasing access, and keep care local
 - Community engagement
 - Leadership champions and support

ARS Question



Question 3

The number of Family Medicine physicians attending births (out of residency and years in practice) is...

- A. Increasing
- B. Decreasing
- C. Staying the same
- D. Poorly attributed due the way we count attending birth providers

Quality Training and Collaboration

- FM workforce development and FM residency training
- FM is well positioned for interprofessional models of care
 - Midwifery collaboration to support safe birthing practices
 - Sustainable and cost effective strategy
 - Amplify primary care model of care
- Simulations and drills

Quality Care

- Engage state-regional perinatal quality collaboratives
- Quality Improvement initiatives
- Adopt quality measures for clinics and hospitals
 - Blood pressure, QBL, Low risk, ERAS post op c/section
- Maintenance of skills
 - All team members practicing to the edge of their scope of practice
 - Evidence based skills training for all team members providing maternity care (facility wide)
 - ALSO, ACLS, NRP, STABLE, Team STEPPS

Quality care for Improve Outcomes

- Improve care coordination across the pregnancy spectrum
 - Address social determinants of health
 - Increase postpartum and behavior health support
 - Screen for mental health and substance use
- Evidence based models of care
 - Integrated primary care and Group care
- Utilize telehealth for prenatal and specialty care
 - Reduces travel burden and improved access to specialists
- Community engagement and person-centered care

Transfer systems

- Regionalized safety networks focused on maternal medical risk based needs are not well defined
- Establish bidirectional communications between systems
 - Continuous risk assessment and defined thresholds for higher level of care transfer
 - Facilities should openly accept transfers
 - All systems should have documented pathways to facility transfer and **transport**
 - Guideline based care can help develop mutual understanding
- Resources collaboration for consultation, education and review

Increase Access and Sustainability





Innovative models



Transforming Maternal Health (TMaH) Model

Jaya's Pregnancy Journey with TMaH

Jaya, 25, is currently enrolled in Medicaid. Jaya has a high risk pregnancy due to her Type 2 diabetes, and has food and housing insecurity.



PRENATAL

Jaya meets with a **midwife** who learns about her **health, wellbeing and social needs**.

Jaya is then connected with a care team that includes :

- **Doctor** who collaborates with the **midwife** to manage her type 2 diabetes and support her pregnancy.
- **Doula** who provides information and encouragement throughout pregnancy and helps her prepare for birth.
- **Social Worker** who helps Jaya move to a secure home and enroll in a healthy food program.

Jaya works with her care team to create a birth plan that feels right for her.



Jaya feels safe and supported, and controls her diabetes with a healthy diet throughout her pregnancy.



BIRTH

Jaya and her care team discuss where she will give birth and Jaya decides on a hospital. They work together to follow through on Jaya's birth plan.

Jaya's **midwife and doula** are with her at every step in the birth process. After birth, her doula helps Jaya to feel comfortable caring for her new baby.

Jaya's **social worker** visits her at the hospital to help with the childcare plan and make sure Jaya's housing is secure.

Jaya and her baby are scheduled for follow up medical appointments with her **midwife** before they leave the hospital. Jaya's **doula** has already helped her prepare her home for the baby's arrival.



Jaya feels supported by her care team and prepared to go home. She and her baby are doing well because of the person-centered, team-based care she has received.



POSTPARTUM

Jaya has 12 months of Medicaid coverage including access to her doctor, midwife, and doula. Jaya and her baby receive regular postpartum care and monitoring of her diabetes via telehealth and office visits throughout the year.

Jaya's **doula** visits her and the baby several times at their home. The doula answers questions, checks on their wellbeing, and helps Jaya know the signs of postpartum depression.

Jaya's **social worker** connects her to virtual group parenting classes and ensures that she continues to have healthy food and a stable home.



One year later, Jaya and her baby are thriving, eating well, and live at home. Jaya successfully cares for her baby and herself, thanks to the ongoing support she received from her care team.

Goodall-Witcher Health

Bosque county, TX, population 18,235

2012 to present, new CEO steps in...



- Community hospital losing revenue, uninsured rate is 25%
- Designation change to critical access hospital
 - Medicaid cost based reimbursement
- New dietary manager + expanded specialist care
 - low cost dining drawing in Seniors
- New property tax levy passed by residents
- Intentionally hired FM w/ Ob to re-open L&D

Cahaba Medical Center

Centreville, AL, pop 2,800



2012 to present, FM doc moves to town...

- HRSA grants for health center expansion
- Bibb Medical Center (35 beds) agrees to reopen L&D in 2015
- Health center commits FM physicians and FM residents staffing
 - Provides malpractice + HRSA GME teaching health center program
- Emergency room staff trained to handle routine pregnancy problems, keeps costs down
- Restores maternity services to 4 rural counties

Practice Recommendations (C)

- Increase rural maternity workforce through collaborative care models and pipeline development.
- Improve access through regionalized systems of care with standardized referral pathways.
 - Support transportation programs to reduce missed appointment
- Implement evidence-based maternal safety and quality improvement programs
 - Adopt standardized obstetric safety protocols
- Integrate and expand telehealth for prenatal and postpartum care

Answers

1. D
2. D
3. B

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Thank you



Before & Beyond: Care Across the Reproductive Life Course

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Disclosure Statement

It is the policy of the AAFP that all individuals in a position to control CME content disclose any relationships with ineligible companies upon nomination/invitation of participation. Disclosure documents are reviewed for potential relevant financial relationships. If relevant financial relationships are identified, mitigation strategies are agreed to prior to confirmation of participation. Only those participants who had no relevant financial relationships or who agreed to an identified mitigation process prior to their participation were involved in this CME activity.

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Learning Objectives

1. Define preconception care and explain its importance beyond standard prenatal care.
2. Recognize preconception care as primary care, and the role of primary care in leading care delivery and transformation to address preconception and interconception health needs.
3. Utilize a life course approach that benefits health and well-being for people of reproductive age, regardless of current pregnancy intentions.
4. Apply current evidence-based guidelines for preconception and interconception care.
5. Incorporate innovative tools and models for optimizing preconception and interconception health in clinical practice.

Meet Sophia: A Case to Consider

- 32-year-old woman, established patient
- Type 2 diabetes (A1c 8.1%), BMI 34, on lisinopril for hypertension
- Here today for a medication refill — not a “preconception visit”
- Gave birth 14 months ago; pregnancy complicated by preeclampsia
- Has not been asked about future pregnancy plans since her postpartum visit

Common themes in primary care:

- **Chronic disease management**
- **A prior adverse pregnancy outcome**
- **Unclear reproductive intentions**

We'll return to Sophia...

Defining Preconception Care

What is Preconception Care?

"Personalized care for individuals of reproductive age. Its goal is to reduce maternal and fetal morbidity and mortality, increase the chances of conception when desired, and prevent unintended pregnancies by modifying biomedical, behavioral, and social risks."

AAFP Preconception Care Position Paper

"A set of interventions that identify and modify biomedical, behavioral, and social risks to a person's health or pregnancy outcomes through prevention and management."

CDC Select Panel on Preconception Care

The World Health Organization emphasizes the importance of preconception care as a way to optimize health and improve maternal and fetal outcomes — a policy priority WHO reaffirmed as recently as 2024.

Key distinction:

Preconception care is more than a single pre-pregnancy visit. It is a continuous, preventative approach.

- Bridges the gap between general wellness and pregnancy-specific preparation
- A proactive, relationship-based lens woven into routine primary care.

Beyond the Prenatal Visit

Prenatal Care

- Begins after conception is confirmed
- Focused on a single, known pregnancy
- Misses the first weeks of organogenesis — before most people know they're pregnant
- Limited to those already planning or confirmed pregnant

Preconception / Interconception Care

- Ongoing, throughout the reproductive years
- Addresses risk before conception occurs, when intervention can still change outcomes
- Reaches everyone of reproductive age — intending pregnancy or not
- Extends into interconception care between pregnancies

The Critical Window Before Pregnancy is Known

Major organ systems form in the first 3–8 weeks after conception — often before a positive pregnancy test.

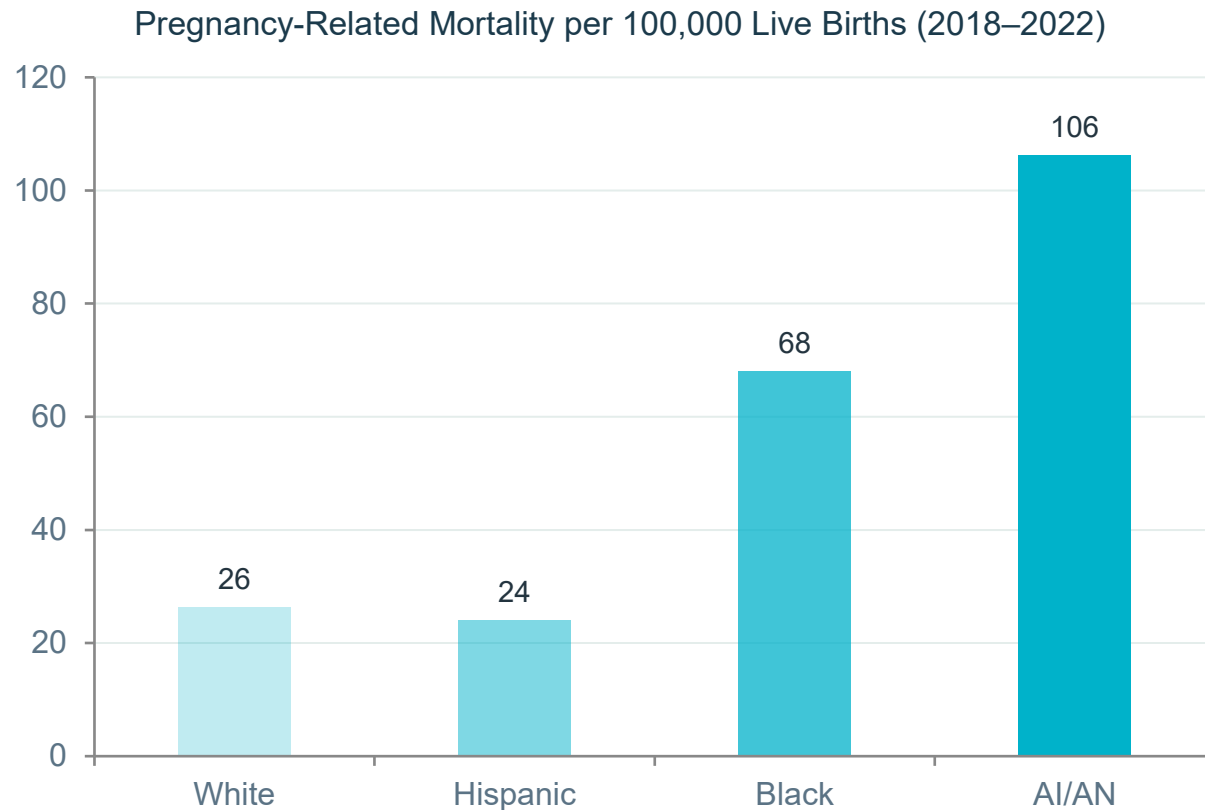


Neural tube defect risk is being determined before the first prenatal visit occurs



~45% of U.S. pregnancies are unintended — prenatal care alone cannot reach people during this earliest, most consequential window.

The Stakes: Preventable Harm, Inequitable Distribution



87%

of pregnancy-related deaths are considered preventable

3×

higher mortality for Black and Indigenous women

70–80

near-miss severe morbidity events for every maternal death

ARS Question

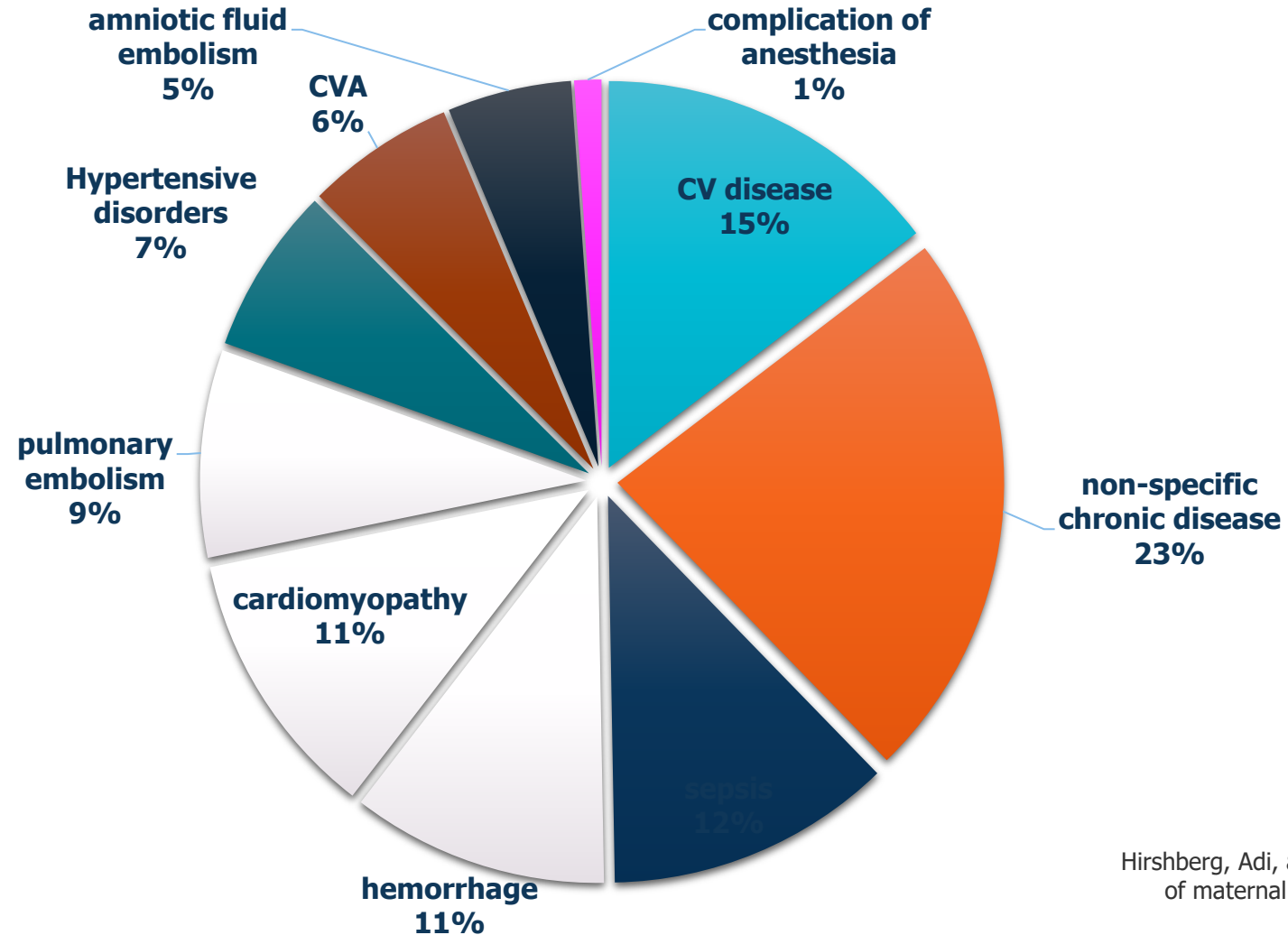


Question 1

Which underlying cause accounts for the majority of pregnancy-related deaths in the U.S.?

- A. Hemorrhage
- B. Venous thromboembolism
- C. Infection
- D. Maternal chronic conditions (cardiovascular and non-cardiovascular)

Causes in the USA:



ARS Question



Question 2

Which underlying cause accounts for the majority of infant deaths in the first year of life in the U.S.?

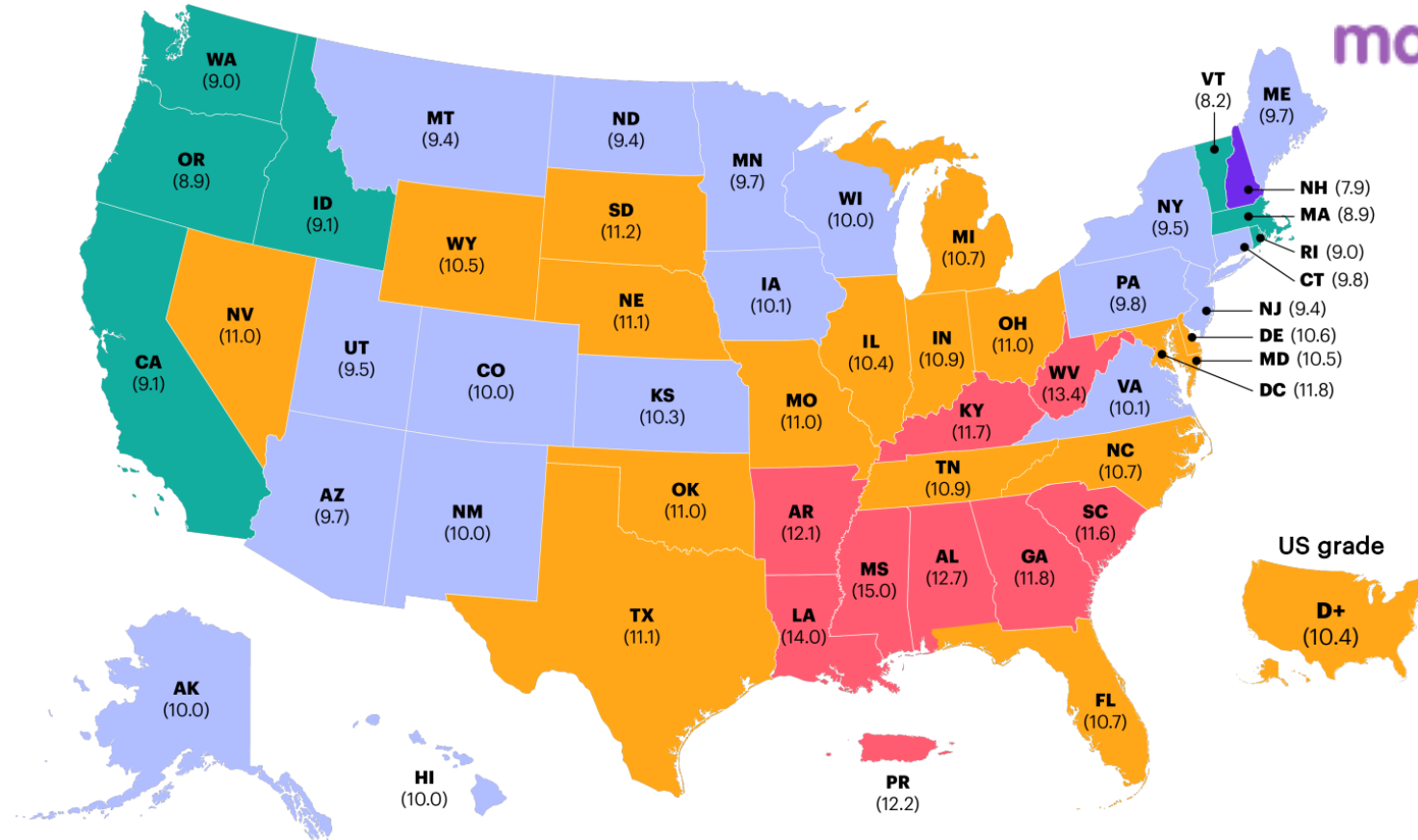
- A. Birth defects
- B. Preterm birth related
- C. SIDS
- D. Maternal complication

2025 Preterm Birth Report Cards

Preterm birth rate (born before 37 weeks gestation) and grade by state, 2024



GRADE	PRETERM BIRTH RATE RANGE SCORING CRITERIA
A	Less than or equal to 7.7%.
A-	Preterm birth rate of 7.8 to 8.1%.
B+	Preterm birth rate of 8.2 to 8.5%.
B	Preterm birth rate of 8.6 to 8.9%.
B-	Preterm birth rate of 9.0 to 9.2%.
C+	Preterm birth rate of 9.3 to 9.6%.
C	Preterm birth rate of 9.7 to 10.0%.
C-	Preterm birth rate of 10.1 to 10.3%.
D+	Preterm birth rate of 10.4 to 10.7%.
D	Preterm birth rate of 10.8 to 11.1%.
D-	Preterm birth rate of 11.2 to 11.4%.
F	Preterm birth rate greater than or equal to 11.5%.



11 states met the Healthy People 2030 target for preterm birth of 9.4% of all live births.

Where to focus? Go **UPSTREAM**

- The best prenatal care cannot effectively reduce many maternal or infant risks
- Key drivers of maternal and infant health must be addressed before pregnancy
- *By going upstream, we prioritize health before, between and beyond pregnancy*

Preconception Care Is Primary Care

“Preconception Care is Primary Care”



Preconception health risks should be assessed routinely — during chronic disease visits, acute care, and wellness visits alike — not reserved for a dedicated preconception appointment.

— AAFP, Preconception Care Position Paper

Because reproductive risk isn't static — it changes with every new diagnosis, medication, and life event — every primary care encounter is a preconception care encounter.



Chronic disease visit

Diabetes, hypertension, thyroid, mental health



Acute care visit

Any encounter is a chance to screen



Wellness / annual visit

Not the only entry point — just one of many

The Opportunity: Why Primary Care is Positioned to Lead



Longitudinal relationships

PCPs see patients repeatedly across years, not just during a pregnancy episode



Multiple touchpoints

One-third to one-half of women have more than one primary care physician — many chances to reach them



Whole-person view

Chronic disease, mental health, and social context are already part of the visit



Reach beyond obstetric patients

Includes people not currently seeking pregnancy — the majority of reproductive-age patients

The Opportunity is Being Missed

14%

**OF VISITS
INCLUDE
COUNSELING**

Ambulatory visits with non-pregnant women that include preconception or contraceptive counseling

1 IN 6

**PHYSICIANS
REPORT ROUTINE
PRECONCEPTION
CARE**

To most patients they later see for prenatal care

45%

**OF PREGNANCIES
ARE UNINTENDED**

Every visit — not just planned ones — is an opportunity

From Individual Counseling to Practice Transformation

Leading means changing the system around the visit, not just the conversation within it.



Build it into the EHR

Standing order sets, banners, and prompts for reproductive life planning



Distribute across the team

Nurses, MAs, and behavioral health can screen — not physicians alone



Redesign the workflow

Screen at intake, not as an afterthought dependent on time remaining



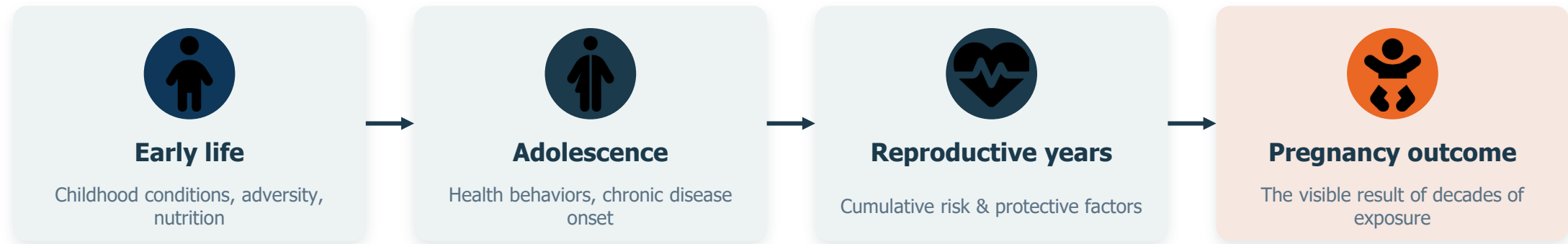
Measure and iterate

Track screening and counseling rates like any other quality metric

A Life Course Approach

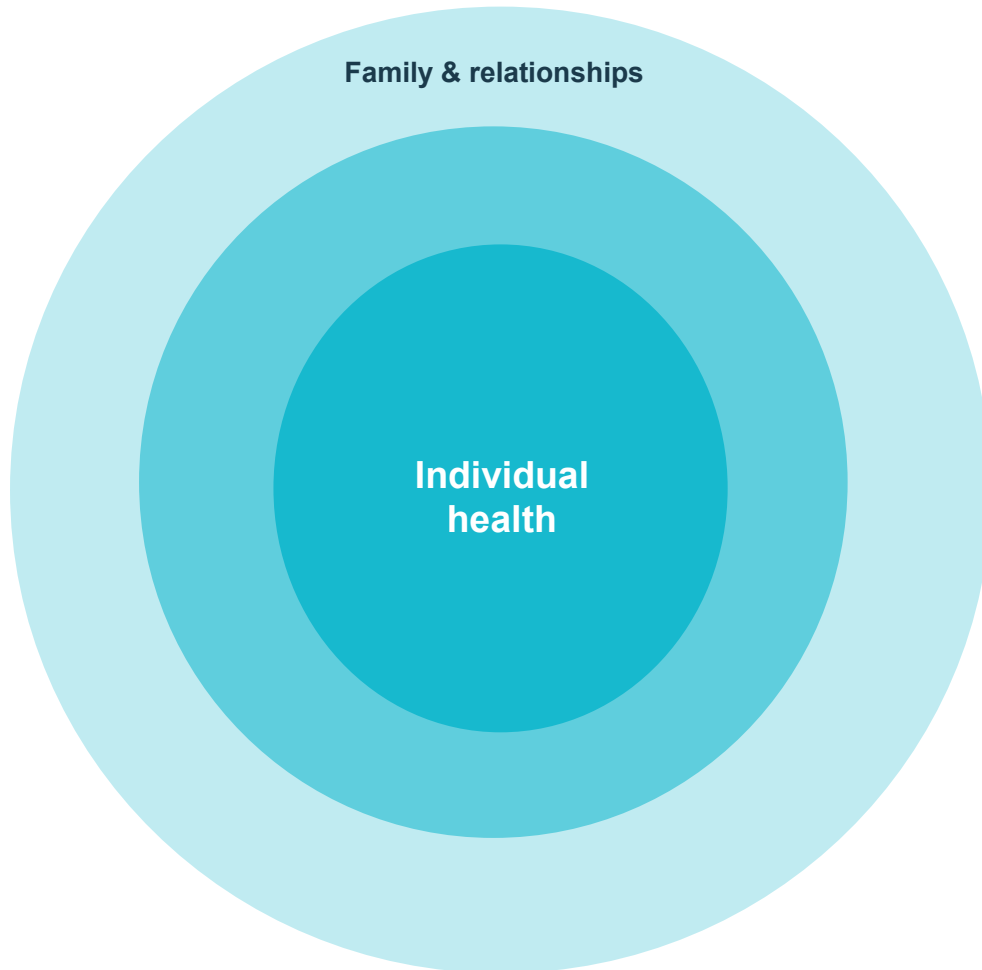
The Life Course Health Development Model

Lu & Halfon (2003): birth outcomes reflect cumulative biological, behavioral, and social exposures across an entire lifetime — not just the 9 months of pregnancy.



Cumulative pathway: risk and protective factors compound over time and across generations

A Life Course Approach Benefits Everyone — Not Just Those Trying to Conceive



Trying to conceive now

Optimize chronic disease control, nutrition, medications before conception. Folic acid, immunizations, and genetic risk screening are time-sensitive

Not currently seeking pregnancy

Effective contraception, chronic disease management, and risk reduction still matter for lifelong health

Unsure / ambivalent

The most common reality — and the strongest case for building healthy habits into every visit, regardless of plans

Reframing Preconception Health Through a Reproductive Justice Lens



Traditional Preconception Care Model

- Centers optimizing pregnancy outcomes and reducing “unintended pregnancy”
- Attributes disparities primarily to individual behavior and risk factors
- Under-engages the structural and social determinants that drive poor outcomes and disparities



Life Course + Equity Model

- Moves beyond “unintended pregnancy” as the measure of success, toward whether people achieve the reproductive lives they want
- Traces cumulative effects of chronic stress, structural racism, and unequal access across a lifetime
- Points toward upstream, structural interventions — not just individual counseling

ARS Question



Question 3

A life course approach to preconception health is best applied to:

- A. Only patients actively trying to conceive this year
- B. Only patients with a prior adverse pregnancy outcome
- C. All people of reproductive age, regardless of current pregnancy intention
- D. Only patients under age 25

Evidence-Based Guidelines

Multiple Societies, One Consistent Framework

Physical Assessment	Risk Screening	Vaccination	Counseling
Vitals, BMI, chronic disease status, medication review	Genetic, infectious, behavioral, and social risk factors	Rubella, varicella, Tdap, influenza, COVID-19 status	Reproductive life plan, nutrition, substance use, mental health
CDC • ACOG • AAFP	ACOG • SMFM • WHO	CDC • ACOG	AAFP • WHO • SMFM

Key Clinical Priorities: Metabolic & Nutritional

FOLIC ACID

At least 400 mcg/day for all with reproductive potential — many pregnancies are unplanned

HEALTHY PRE-PREGNANCY BMI

Target 18.5–24.9 kg/m²; after bariatric surgery, delay conception ≥12 months

DIABETES OPTIMIZATION

Tight glycemic control before conception substantially lowers risk of congenital anomalies (SMFM, ADA). Evaluate medication safety.

HYPERTENSION MANAGEMENT

Switch to pregnancy-compatible agents (e.g., labetalol, nifedipine) before conception

Key Clinical Priorities: Behavioral & Preventive

SUBSTANCE USE

Screen and offer brief intervention for tobacco, alcohol, and other substances at every visit

MENTAL HEALTH

Screen for depression and anxiety — both a maternal mortality risk factor and a treatable condition

IMMUNIZATION

Confirm rubella/varicella immunity; update Tdap, influenza, COVID-19

INFECTIOUS SCREENING

STI screening per CDC guidelines

GENETIC SCREENING

Carrier screening as clinically indicated, per ACOG/SMFM guidance

Interconception Care



Interconception care: management of medical conditions between pregnancies — a time-sensitive window to reduce maternal morbidity and mortality before the next conception.



ACOG: Fourth Trimester

Initial postpartum contact within 3 weeks; comprehensive biopsychosocial visit within 12 weeks — covering mood, chronic disease, contraception, and infant care



SMFM: High-Risk Comorbidities

Continuous counseling across the reproductive life course for patients with medical comorbidities; consider immediate postpartum LARC for those at high risk of complications who desire this method of contraception



Cardiovascular Transition

~50% of maternal deaths occur 1–42 days postpartum — baseline ASCVD risk assessment after hypertensive or diabetic pregnancy complications

ARS Question



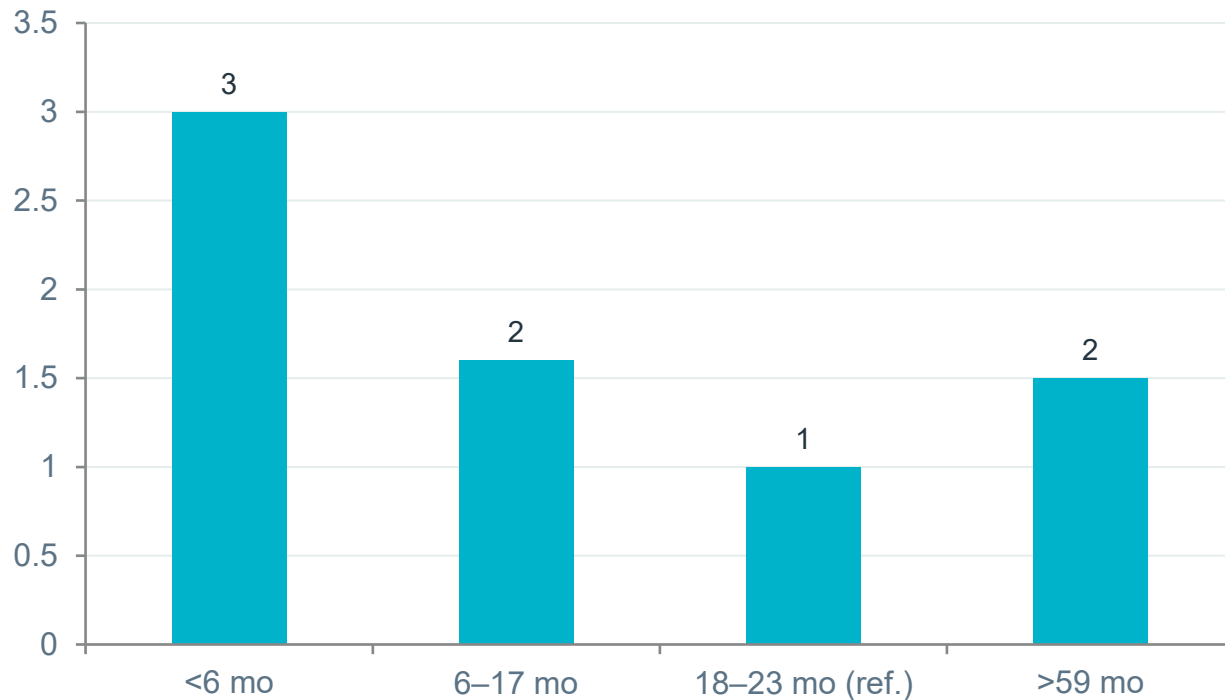
Question 4

According to ACOG and SMFM, which interpregnancy interval is associated with the lowest risk of adverse outcomes?

- A. Less than 6 months
- B. 6–17 months
- C. 18–23 months
- D. More than 5 years

Interpregnancy Interval Matters

Illustrative Risk Pattern: Preterm Birth / Low Birthweight by Interval



Both very short and very long interpregnancy intervals carry increased risk — the relationship is U-shaped

ACOG / SMFM

Avoid conception <6 months after delivery; use caution with intervals >5–10 years, which also carry elevated risk

WHO

Historically recommended ≈24 months between delivery and next conception to support maternal recovery and optimal outcomes

In practice

~35% of U.S. pregnancies occur within 18 months of a prior birth — making postpartum contraceptive counseling a core interconception task

Innovative Tools & Models

Models for Preconception and Interconception Care

- One Key Question and Reproductive Health Plan
- Transitioning from 4th Trimester to ongoing continuum of care
- IMPLICIT Interconception Care Model
- Women's Health Assessment Scale

One Key Question ®

“Would you like to become pregnant in the next year?”

Developed by the Oregon Foundation for Reproductive Health as a primary care screening tool.

Four response pathways:

1. Yes → preconception counseling
2. No → contraceptive counseling
3. Unsure → explore both, revisit later
4. OK either way → both preconception and contraceptive counseling.

Rethinking this model – preconception counseling as a part of all 4 pathways

**Endorsed by the American
Public Health Association.**

**ACOG recognizes
pregnancy-desire screening
as a core component of
high-quality primary
preventive care.**

The Reproductive Life Plan

A brief, structured conversation — not a form to complete alone — that helps patients articulate goals they may never have been asked about.

1

Ask

Do you hope to have (more) children, now or in the future?

2

Explore

How many, how far apart, and by when? Plans may be uncertain — that's expected

3

Align care

Tailor contraception, chronic disease management, and screening to the stated goal

4

Revisit

Plans change — reassess at future visits rather than treating this as one-and-done

Challenges with One Key Question

- Has been most successful in identifying women in need of contraception
- More challenging to provide quality preconception care for women who desire pregnancy
- Even more challenging to have the patient-centered discussion on reproductive life choices/options – Not sure, I'm okay either way
- Risk of just being another “checkbox”
- Important to include another question – How important is it to you to prevent a pregnancy?
- Consider bias: patients' preferences must come first, and bias can lead to unbalanced counseling or coercive practices

Pair with Shared Decision-Making Model

- Preferred by patients
- Associated with method continuation and satisfaction with method
- Associated with patient satisfaction with provider

Shared decision making brings two experts to the table: the patient and the provider

The provider is the expert in the **clinical evidence**

The patient is the expert in **her experiences and values**

Paternalistic



Information
& recommendations



Informative



Information



Shared



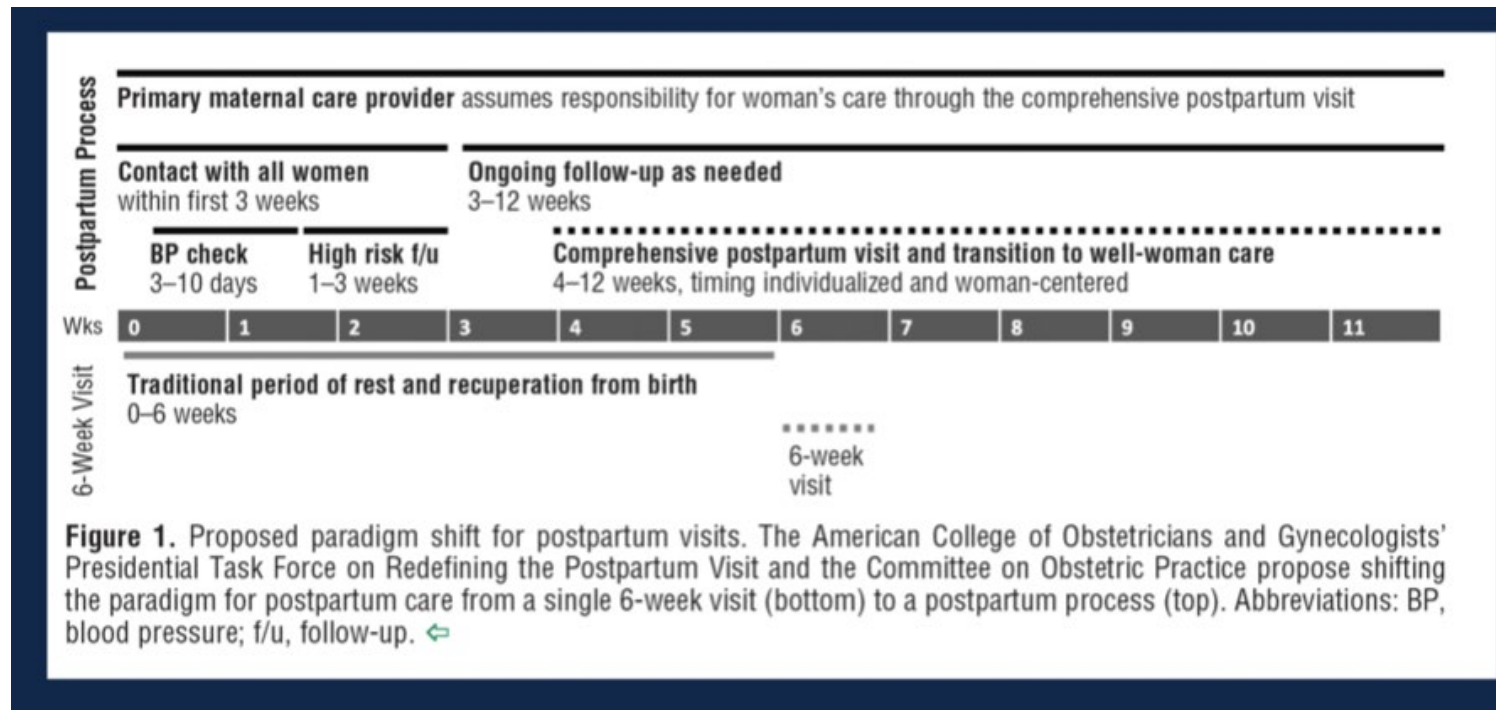
Values & preferences

Information
& recommendations



4th Trimester Care

- Shift away from thinking about postpartum care as a single postpartum visit at 6 weeks
- **Transition to well-woman care is essential**



Postpartum Care and Transition to Ongoing Primary Care

- Comprehensive assessment includes:
 - Physical Recovery from Childbirth (bleeding, pain etc.)
 - Infant care and feeding
 - Sexual function
 - Reproductive life desires and plans
 - Bowel and bladder function
 - Mood
 - Patient safety
 - Smoking and substance use
 - Overall health and well-being (exercise, healthy eating)

Address medical complications of pregnancy and chronic medical conditions

This comprehensive care doesn't end at 12 weeks postpartum

Pregnancy-Related Disorders and Long-Term Chronic Disease Risk

- GDM:
 - >50% lifetime risk of developing Type 2 Diabetes
 - Increased risk of CV disease (in absence of T2DM)
 - Women should be screened for DM 4-12wks PP and at least q3years if normal
- Pre-eclampsia: a major risk factor for CV disease (AHA)
 - In a 2017 systematic review (Wu et al.), women with pre-E were at increased risk for future:
 - Heart failure (RR 4.19, 95% CI 2.09-8.38)
 - Coronary heart disease (RR 2.50, 95% CI 1.43-4.37)
 - Death from cardiovascular disease (RR 2.21, 95% CI, 1.83-2.66)
 - Stroke (RR 1.81, 95% CI 1.29-2.55)

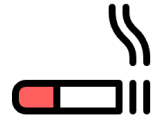
IMPLICIT Interconception Care (ICC) Model

- **Rationale:** *Incorporate Maternal Assessments into Well-child Visits*
 - Mothers bring children to well-child visits though may not seek care for themselves
 - Mother's health and behaviors directly impact child's health – positively and negatively
 - Women accept inquiry and advice about own health at pediatric visits, even if not their provider
 - Implicit ICC model focuses on 4 modifiable risk factors



IMPLICIT ICC

The Four Risk Factors



Smoking

Only 20% of smokers quit during pregnancy, many see it as a “time limited restriction.” 70% who quit during pregnancy, started smoking again within 6 months. Prenatal smoking is associated with:

Prenatal smoking is associated with increased rates of:

- Preterm births
- Low birth weight infants
- Sudden infant death syndrome (SIDS)



Depression

1 in 8 mothers/birthing people is affected by perinatal depression.

- Major depression peaks 6 weeks after birth, but may occur at any time in between pregnancies.
- Postpartum depression is one of the most underdiagnosed obstetric complications in America



Family Planning

Birth spacing of less than 18 months increases the risk of preterm birth and other adverse outcomes.

- Over 40% of pregnancies are described as unintended
- Patient-centered contraception counseling helps patients identify and obtain a contraceptive method that fits their values, preferences, and lifestyle



Multivitamin with Folic Acid

Preconception and interconception consumption of folic acid helps reduce neural tube defects

- 70% of mothers/birthing people do not consume a multivitamin with folic acid in the month prior to pregnancy
- It is recommended for all mothers/birthing people of reproductive age to take 400 mcg of folic acid each day

An IMPLICIT Story

- 9-month WCC
- IMPLICIT ICC risks performed – all 4 positive
 - Restarted smoking
 - Stopped birth control pill
 - Screened positive for depression with increased stress at home
 - Stopped multivitamins
- Same-day interventions: MVIs, connected with behavioral health for assessment and support, reinforced smoking cessation, discussed reproductive goals
- Came in 2 weeks later for Nexplanon placement
- *At 15 month WCV all 4 screens now negative*

A Different Approach to Well Woman Visits

The Preconception CoIIN:

develop, implement, and disseminate a **woman-centered, clinician-engaged, community-involved** approach to the **well-woman visit** to improve the preconception health status of women of reproductive age, particularly low-income women and women of color.

Incorporating All This into a Routine Women's Health Screening

Topic	Screening Tool Examples	Intervention Examples
Pregnancy intention/family planning	OKQ, RLP, PATH	Quick Start, PCC review
MVI with Folate	Do you take a MVI with folate daily?	Education, provision
Weight/BMI	How do you feel about your weight?	Patient centered counselling, referral to nutrition
Physical activity levels	Frequency, type of exercise	Goal 150 minutes/week
Tobacco use	Current, Former, Never	5-As
Alcohol misuse screening	AUDIT	SBIRT
Substance abuse	CRAFFT, NIDA, DAST	SBIRT
Depression screening	PHQ2/9, Edinburgh	Safety assessment, structured diagnostic interview, referral to behavioral health
Intimate Partner Violence screening	HARK, HITS	DA-5, Safety plan, domestic violence program referral
Safe sex and STI screening	Sexual activity, condom use, STI risk	Education, condoms, STI screening
Vaccines	Assessment of age/disease appropriate status	Encourage and provide
Any chronic disease screening or follow up	Medication review, goals, primary and secondary prevention, QI measures	Disease specific management

Only some screenings have evidence-based screening tools

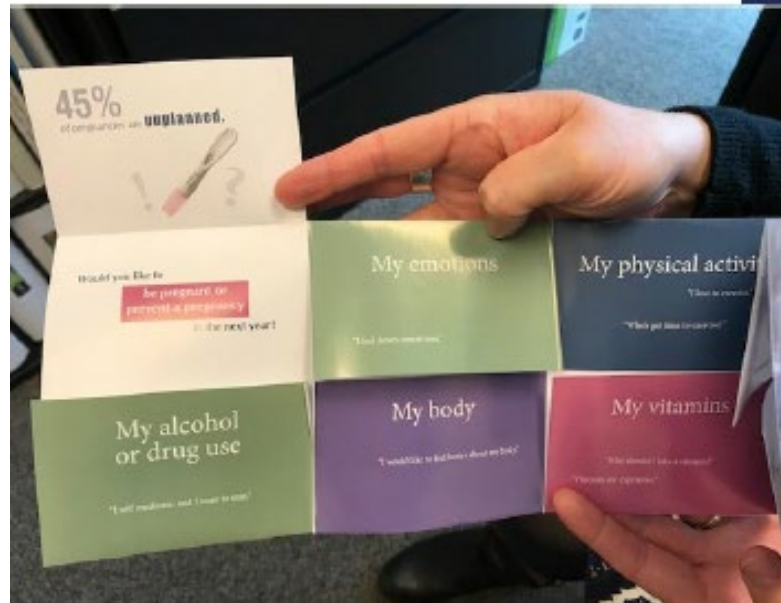
The Challenge with Screening Questions

- Many evidence-based screening questionnaires
- No evidence on what happens when “bundled”
 - What happens to the validity of the results when a variety of evidenced-based tools (e.g., PHQ9, AUDIT, DAST, and HARK) are all asked together?
- Question fatigue
- Lack of trust about what will be done with the responses
 - Are we just “checking the box?”
 - “I don’t have time for this.” (patient and/or provider)

How we ask/perform screening questions MATTERS.

Women's Health Assessment Tool

Developed through human centered design



Supportive messages, facts on why certain issues are important



Patient Engagement Tool

Provider screening tool



I know I need to be healthy in mind, body and spirit to reach my goals. All of these topics are important for my total health.

Pregnancy

Would you like to be pregnant in the next year?

☐ Yes ☐ No ☐ Okay, either way ☐ Unsure

Body Weight

☐ I would like to gain weight.
☐ I would like to lose weight.
☐ I would like to stay at my current weight.
☐ I don't care about my weight.

Physical Activity

How often do you exercise?

☐ None ☐ 1-2 times a week ☐ 3-4 times a week ☐ 5-7 times a week

How long do you exercise?

☐ Less than 15 min. ☐ 15-30 min. ☐ 30-45 min. ☐ 60+ min.

How intense is the exercise?

☐ None ☐ Low intensity ☐ Moderate intensity ☐ High intensity

What type of exercise do you do?

Multivitamin + Folic Acid

Are you taking a multivitamin with folic acid?

☐ Yes ☐ No

Tobacco

☐ Never smoked
☐ Former smoker
☐ Previously quit but smoking again
☐ Currently smoking and never quit
☐ I chew or smoke tobacco
☐ I vape or use e-cigarettes

Alcohol/Drugs

I drink or use:

1 drink or use 12 oz beer 5 oz wine 1.5 oz liquor

How many times in the past year have you had 4 or more drinks in a day?

☐ None ☐ 1 or more

How many times in the past year have you used a prescription medication for reasons not intended?

☐ None ☐ 1 or more

Depression

Over the past 2 weeks, how often have you been bothered by any of the following problems?

Little interest or pleasure in doing things

☐ Not at all ☐ Several days ☐ More than half the days ☐ Nearly every day

Feeling down, depressed or hopeless

☐ Not at all ☐ Several days ☐ More than half the days ☐ Nearly every day

Intimate Partner Violence

Within the last year, have you been harassed or emotionally abused in other ways by your partner or ex-partner?

☐ Yes ☐ No

Within the last year, have you been afraid of your partner or ex-partner?

☐ Yes ☐ No

Within the last year, have you been raped or forced to have any kind of sexual activity by your partner or ex-partner?

☐ Yes ☐ No

Within the last year, have you been kicked, hit, slapped, or otherwise physically hurt by your partner or ex-partner?

☐ Yes ☐ No

Sexuality

Are you currently having sex?

☐ Yes ☐ No

Are your sex partners:

☐ Male ☐ Female ☐ Both

Do you and your partner(s) use condoms to protect against sexually transmitted infections?

☐ Yes ☐ No

Do you enjoy sex?

☐ Yes ☐ No ☐ Sometimes

Laminated, reverse side in Spanish

Sample Women's Health Assessment Workflow

- Educational engagement tool – “why are we screening?”
- Connected one page screening
- Start with OKQ
- Acknowledgement of responses by staff and provider
- Use of the physical tools to reflect upon
- Connect to overall goals of health

Innovations Beyond the Individual Visit

EHR CLINICAL DECISION SUPPORT

Banners and pop-up prompts measurably increase delivery of preventive counseling

IMPLICIT INTERCONCEPTION TOOLKIT

Screens maternal risk (smoking, mood, contraception) during the infant's well-child visits

INTERDISCIPLINARY CARE TEAMS

Midwives, community health workers, and behavioral health extend reach across the life course

WHO: LEVERAGE EXISTING PLATFORMS

Deliver preconception interventions through programs already in place

TRACK AND ITERATE

Treat screening and counseling rates as a quality-improvement metric, not a one-time initiative

A Starter Checklist for Your Practice



Add One Key Question to intake or rooming workflows for all patients of reproductive age



Build an EHR prompt for reproductive life planning into chronic disease visit templates



Standardize a postpartum “4th trimester” follow-up sequence: 3 weeks and 12 weeks



Flag patients with adverse pregnancy outcomes for interconception cardiometabolic follow-up



Identify one team member (MA, nurse, care manager) to own reproductive life plan screening



Review interpregnancy interval and contraceptive plans at every well-child and postpartum visit

Applying Today's Framework to Sophia

Ask One Key Question

- “Would you like to become pregnant in the next year?” — takes moments, changes the visit

Treat this as interconception care

- 14 months postpartum, prior preeclampsia — she's in the highest-yield window for cardiometabolic risk reduction
- Incorporate evidence-based screenings, behavioral health, nutrition, folic acid supplementation and preventive care

Optimize now, regardless of her answer

- Tighter glycemic control and a pregnancy-compatible antihypertensive benefit her whether or not she conceives again

Key Takeaways

DEFINE IT BROADLY

Preconception care is more than a single visit — a lens applied throughout the reproductive years

IT'S PRIMARY CARE

Delivered at chronic disease, acute, and wellness visits alike — PCPs lead this work

THINK LIFE COURSE

Benefits everyone of reproductive age, regardless of pregnancy intention

FOLLOW THE EVIDENCE

CDC, ACOG, AAFP, SMFM, and WHO converge on the same core components

USE SIMPLE TOOLS

One Key Question, EHR prompts, and structured follow-up make this practical

Practice Recommendations

FOLIC ACID (SOR A)

Recommend 400 mcg/day folic acid for all patients with reproductive potential to reduce neural tube defect risk.

GLYCEMIC CONTROL (SOR B)

Optimize glycemic control before conception in patients with pregestational diabetes to reduce risk of congenital anomalies.

**CV RISK ASSESSMENT
(SOR B)**

Assess cardiovascular risk after a pregnancy complicated by preeclampsia or gestational diabetes; future CVD risk is consistently elevated.

**INTERPREGNANCY
INTERVAL (SOR B)**

Counsel against conception less than 6 months after delivery; both short and long intervals carry increased risk.

**UNIVERSAL SCREENING
(SOR C)**

Screen every patient of reproductive age with a single question (e.g., One Key Question) to guide counseling, regardless of visit type.

AAFP Strength of Recommendation Taxonomy (SORT): A — consistent, good-quality patient-oriented evidence. B — inconsistent or limited-quality patient-oriented evidence. C — consensus, usual practice, or expert opinion. (Ebell MH, et al. Am Fam Physician. 2004;69:548–556.)

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Contact Me!



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Answers

1. D
2. B
3. C
4. C



Thank you



Laboratory Tests, Genetic Screening and Imaging in Pregnancy

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Disclosure Statement

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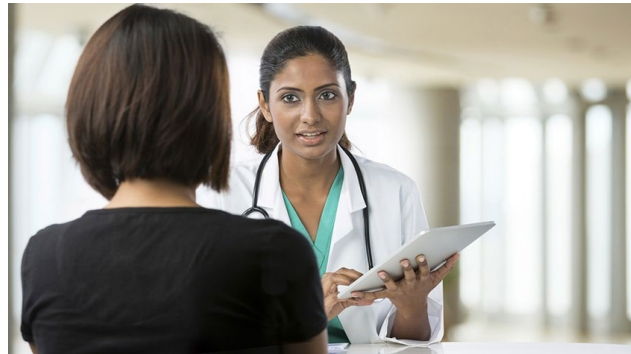
Learning Objectives

1. Explain the evidence and reasoning behind the use of a standard prenatal laboratory testing panel.
2. Provide sound genetic screening choices for patients and describe the utility of screening.
3. Utilize first-trimester ultrasound for dating; identify when early fetal surveys and NT scans are indicated; distinguish between a mid-trimester fetal survey and a level-2 ultrasound; and determine when serial growth scans are warranted.

Why is this so important?

Patient

- Provide widest scope of reproductive options
- Help parents prepare, set expectations
- Identify risks to parents' own health and future pregnancies
- Intervention: fetal surgery or specialty pediatric referrals



Provider

- Practicing patient-centered medicine
- Malpractice avoidance
- ACOG mandates a genetic screening discussion



Dobbs vs. Jackson Women's Health Organization

- 1973-Roe v. Wade was passed
 - 50 years of protection for persons choosing this option
- 2013-North Dakota passed a law banning abortion motivated by a diagnosis of a genetic anomaly
 - Similar laws passed in 13 other states subsequently
- 2022-Roe v. Wade overturned
 - States can now ban abortion
- Significant effect on practice of medicine including the use of genetic screening/ documentation of genetic counseling sessions, etc.

Shared Decision-Making Model is IMPERATIVE!

- We cannot screen for all potential conditions
 - Autism
- There is a broad range of phenotypes for a particular genetic disorder
- Considerations:
 - Patient's preferences
 - Reassurance when testing is normal (low odds)
 - Identifying conditions for which prenatal intervention can occur
 - Optimizing neonatal outcomes
 - Location of delivery/ staff presence
 - Supporting pregnancy termination where appropriate

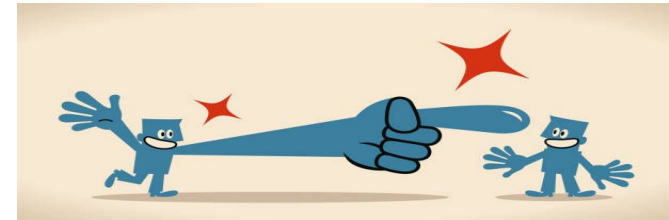
Inheritance is Complex-No Test is Perfect



- Epigenetics
 - Genes can be activated or silenced by modifications
- Chromosome abnormalities and gene disorders cannot always be identified by fetal tissue analysis
- 1:150 live births will have some type of chromosomal abnormality

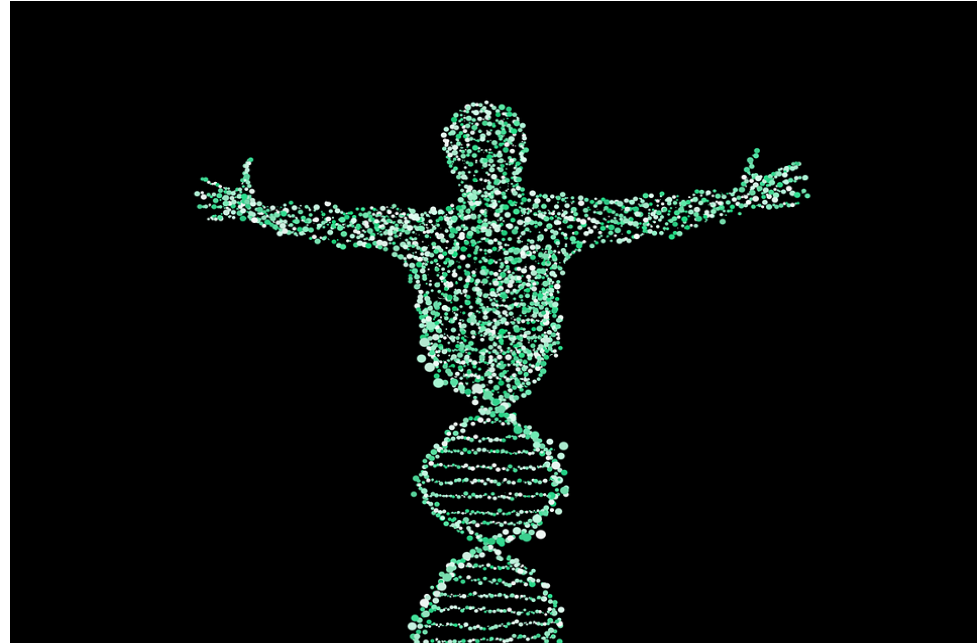
When to Begin the Discussion?

- Begins preconception-- eg, during annual physical visit
- **ONE KEY QUESTION**
 - "DO YOU PLAN TO BECOME PREGNANT IN THE NEXT CALENDAR YEAR?"
- Many implications:
 - Adequate family planning services if needed
 - Begin process of risk stratifying for the patient
 - **SOME OF THIS RISK ASSESSMENT WILL BE AROUND RISK OF GENETIC DISORDERS IN OFFSPRING SHOULD PREGNANCY OCCUR IN THE COMING YEAR**
 - **PREGNANCY WILL OCCUR FOR 90% +/- not using reliable birth control**



Impact Chromosomal Disorders

- Responsible for:
 - 2/3 spontaneous abortions
 - 50% first trimester loss
 - 5% stillbirth
 - 5-7% deaths in childhood



Definitions are Important!

Diagnostic Tests

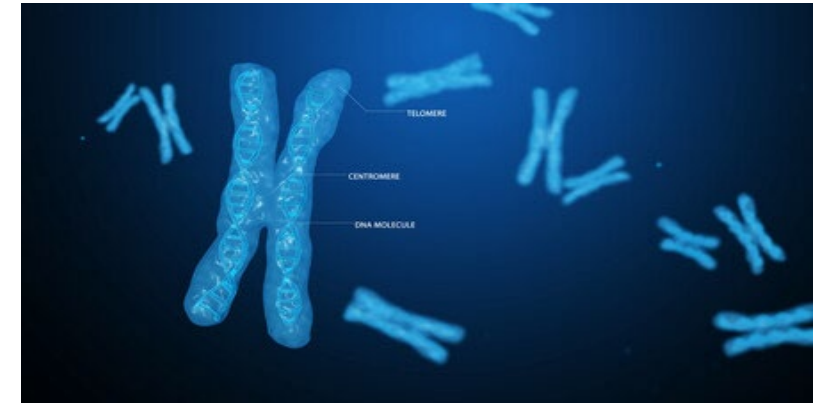
- Determine with certainty (ideally) whether a condition is present in the fetus

Screening Tests

- Determine whether the individual at increased risk for a disorder
 - Traditionally, focused on Trisomy 21

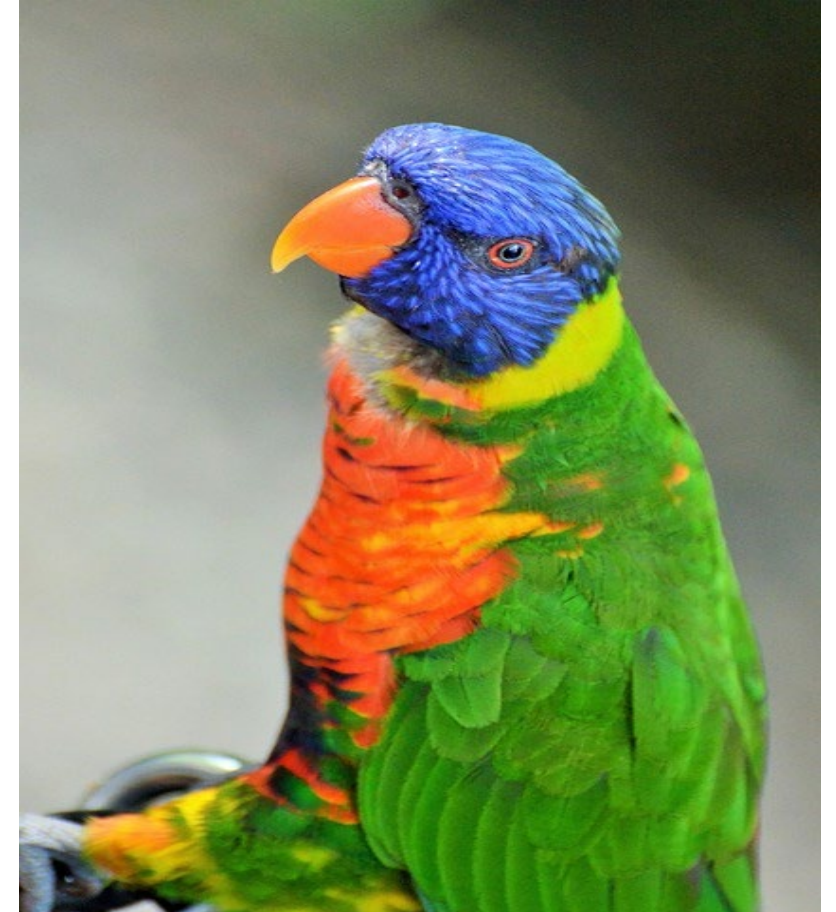
More Definitions

- Aneuploidy
 - Aberrations in number or structure
- Mosaic
 - Two or more sets of cells that differ
- Karyotype
 - Chromosomal analysis for number and large deletions/additions
- Microarray
 - Small aberrations may be discovered
 - Deeper dive



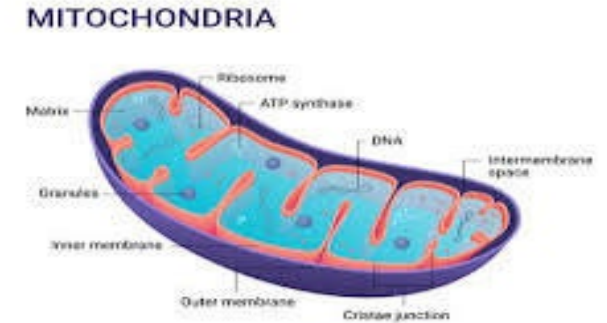
Point Mutation

- Change in a single nucleotide within a gene
 - Sickle cell
 - Osteogenesis Imperfecta
 - Hemophilia
 - Tay Sachs
- Target the genetic testing of fetal cells
 - Easier if family member has known mutation



What about Mitochondria?

- All inheritance from birthing person
 - Inherited from cytoplasm of oocyte
- Mitochondria has its own distinct genome
- Mitochondrial diseases affect tissues with large energy requirement
- Prenatal diagnosis very difficult
 - Ptosis, external ophthalmoplegia, proximal myopathy
 - Cardiomyopathy, sensorineural deafness
 - Optic atrophy, pigmentary retinopathy
 - Type 1 Diabetes mellitus



Genetic TESTING



Definitions

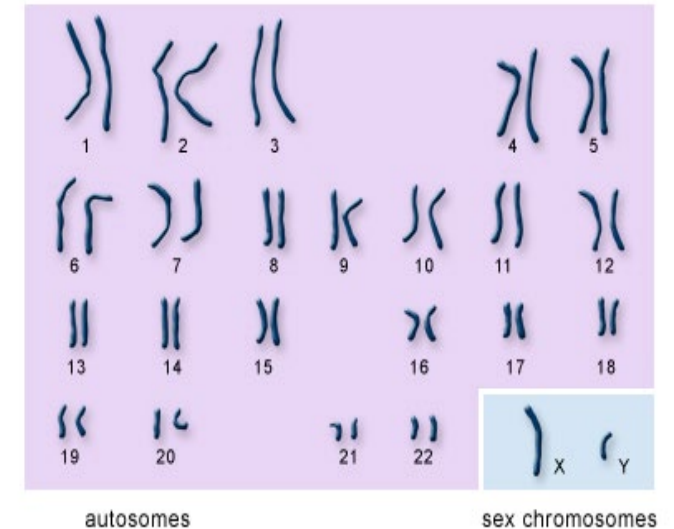
- Karyotype
 - Full complement of chromosomes
 - The number and visual appearance of the chromosomes in the cell nuclei of an organism or species.
 - Isolated from an individual cell and arranged in numerical order.
- Mosaicism
 - A person has two or more genetically different sets of cells in their body
 - If abnormal cells begin to outnumber the normal cells, it can lead to disease that can be traced from the cellular level to affected tissue
 - May be caused by an error in mitosis

Genetic TESTING

- Why test?
 - Amniocentesis vs. chorionic villous sampling (CVS)
 - Can identify 45 XO, 47 XXY, large rearrangements
 - Mosaicism
 - If the mosaic doesn't occur in every cell it could be missed, because the sample might not contain one of those cells showing the mosaicism
- Karyotype relies on metaphase analysis cultured cells
 - 7-14 days to grow
 - Diagnostic accuracy is high for aneuploidy

FISH

- Fluorescent labeled probes for specific chromosomes
- Can be performed on uncultured cells
- Results in 2 days for
 - 13
 - 18
 - 21
 - XY
 - (22 q 11.2 deletion (DiGeorge syndrome) possible
 - must be requested)
- False positive / false negative < 1%



U.S. National Library of Medicine

Microarray

- Can identify nearly all abnormalities
 - Microdeletions, duplications, mosaicism
- Can be done on cultured and/or uncultured cells
- Results in 3-7 days
- Can use non-viable cells
 - Stillbirth/fetal death
- Used frequently when sample collected after a structural anomaly found on ultrasound



Chorionic Villus Sampling vs. Amniocentesis

CVS

- 10-13 weeks
- Culture fail 0.5%
- TV or Trans Abdominal
 - No difference in accuracy
- Risks
 - Loss rate 0.22% (Akolekar 2015)
 - Limb reduction (very low)
 - Spotting –32% TC sample patients (Benn 2016)

Amnio

- 15-20 weeks
- 20-30 cc fluid
- Culture fail 0.1%
- Loss rate 0.13-0.27% (Odibo 2008)

Which patients are at increased risk?

- Age birthing patient
- Age partner/donor
- Carrier state parent
- Aneuploidy/mosaicism in parent
- Prior child with structural birth defect
- Parental carrier genetic disorder
- Structural defect on ultrasound



What are the ACOG recommendations?

- If any of the risks listed:
 - Offer CVS or Amnio for microarray/karyotype
 - Also offer to all with:
 - Positive serum screening
 - Birthing person positive for single gene disorder
 - Chromosomal aneuploidy
- In stillbirth : microarray is recommended
 - Can use any fetal or placental tissue or amniotic fluid not contaminated with blood from the birthing person



Special Situations

- Blood borne infections
 - Hep B
 - Depends on viral load. High load is 21-fold increased risk for infecting newborn
 - Hep C
 - Less risk
 - HIV
 - cART (combination antiretroviral therapy)—no increased risk of HIV transmission to the fetus after amniocentesis

Special Situations

- Multiples
 - Formulas available
 - Increased risk loss with amnio (2%)
 - With CVS, might be sampling both fetus' villi
 - Cross contamination more likely
 - Monochorionic—rate discordance likely very low



TWINS – IONA Test

- Khalil et al 2021
 - Primary outcome: screening performance and test failure rate of cell-free DNA using next generation sequencing (the IONA test).
 - 1003 women with twin pregnancies were recruited
 - 961 (95.8%) completed
 - 276 were monochorionic and 685 were dichorionic.
 - The failure rate was 0.31%.
 - The mean fetal fraction was 12.2% (range, 3%-36%)
 - All 9 samples with a 3% fetal fraction provided a valid result.
 - There were no false-positive or false-negative results for trisomy 21 or trisomy 13, whereas there was 1 false-negative and 1 false-positive result for trisomy 18.

TWINS – IONA Test

The IONA test had a detection rate of 100% for trisomy 21 (n=13; 95% confidence interval, 75-100), 0% for trisomy 18 (n=1; 95% confidence interval, 0-98), and 100% for trisomy 13 (n=1; 95% confidence interval, 3-100).

The corresponding false-positive rates were 0% (95% confidence interval, 0-0.39), 0.10% (95% confidence interval, 0-0.58), and 0% (95% confidence interval, 0-0.39), respectively.

Mosaicism

- 0.25% amnio
- 1% CVS
 - Discard first 1-2 mL to avoid birthing person contamination and therefore false positives
 - If mosaicism found in CVS, amnio is recommended to avoid placental mosaicism
 - Mosaicism is much lower in CVS samples that are cultured vs. directly tested
 - In 90% cases where amnio is used to confirm CVS-found mosaicism, there will be no mosaicism in the amnio sample
 - The mosaicism is therefore combined to placental trophoblasts

Rh Negative



- 40% of RhD-negative pregnant women will carry an RhD-negative fetus
- Cell-free DNA has assay for RHD as part of their noninvasive prenatal testing assay
- Can determine whether Rhogam administration is needed for the birthing parent
- Recent national shortage Rhesus immune globulin
 - Although current ACOG guidance does not recommend routine use of noninvasive prenatal testing (NIPT) to determine fetal Rh(D) status based on cost-effectiveness analyses
 - the use of NIPT to prioritize use of RhIg and conserve RhIg supply is a reasonable consideration in the practice setting that is experiencing RhIg shortages.

Rh Negative

- 655 pregnant patients with serologic results for RhD antigen (74.0% White, 13.7% Hispanic, 7.0% Black, and 2.1% Asian).
 - There were zero false-negative cases
 - 356 of 356 fetuses were correctly identified as fetal RhD positive (sensitivity 100%, 95% CI, 98.9-100%).
 - Of the 297 RhD-negative fetuses, 295 were correctly identified as RhD negative (specificity 99.3%, 95% CI, 97.6-99.8%).
- 401 non-alloimmunized RhD-negative pregnant individuals
- The D antigen cfDNA result was 100% concordant with the neonatal serology
 - resulting in 100% sensitivity, 100% positive predictive value (95% CI, 98.6-100% for both), 100% specificity, and 100% negative predictive value (95% CI, 97.4-100% for both).

Risk of Chromosomal Abnormalities by Age

Maternal Age Related Risk for Chromosome Abnormalities

Maternal Age	First Trimester		Second Trimester		Live-birth	
	Down Syndrome	All	Down Syndrome	All	Down Syndrome	All
20	1 in 1152		1 in 1211		1 in 1477	
21	1 in 1125		1 in 1184		1 in 1461	
22	1 in 1110		1 in 1168		1 in 1441	
23	1 in 1090		1 in 1147		1 in 1415	
24	1 in 1064		1 in 1120		1 in 1382	
25	1 in 1032		1 in 1085		1 in 1340	1 in 476
26	1 in 978		1 in 1029		1 in 1287	1 in 476
27	1 in 928		1 in 997		1 in 1221	1 in 455
28	1 in 856		1 in 901		1 in 1141	1 in 435
29	1 in 775		1 in 827		1 in 1047	1 in 417
30	1 in 868		1 in 733		1 in 939	1 in 385
31	1 in 591		1 in 632		1 in 821	1 in 385
32	1 in 494		1 in 536		1 in 696	1 in 323
33	1 in 401		1 in 435		1 in 572	1 in 286
34	1 in 315		1 in 346		1 in 456	1 in 244
35	1 in 240	1 in 114	1 in 265	1 in 141	1 in 353	1 in 179
36	1 in 179	1 in 87	1 in 197	1 in 111	1 in 267	1 in 149
37	1 in 131	1 in 66	1 in 147	1 in 88	1 in 199	1 in 123
38	1 in 96	1 in 51	1 in 108	1 in 70	1 in 148	1 in 105
39	1 in 71	1 in 38	1 in 80	1 in 56	1 in 111	1 in 81
40	1 in 53	1 in 28	1 in 60	1 in 44	1 in 85	1 in 63
41	1 in 41	1 in 22	1 in 47	1 in 35	1 in 67	1 in 49
42	1 in 32	1 in 17	1 in 38	1 in 28	1 in 54	1 in 39
43	1 in 27	1 in 13	1 in 31	1 in 22	1 in 45	1 in 39
44	1 in 22	1 in 10	1 in 26	1 in 18	1 in 39	1 in 31
45	1 in 19	1 in 8	1 in 23	1 in 14	1 in 35	1 in 24

ARS Question



Question 1

Which one of the following chromosomal abnormalities is unrelated to the age of the birthing parent?

- A. Trisomy 21
- B. Trisomy 18
- C. Trisomy 13
- D. XXY (Kleinfelters)
- E. XO (Turners)
- F. None of the above
- G. All of the above

Rates of Chromosomal Abnormalities

- 21
 - 1:700
- 18
 - 1:3000
- 13
 - 1:6000
- XXY
 - 1:500 males
- XO
 - 1:2500

Genetic SCREENING



Prenatal Screening Choices

- Serum Screening
 - With or without nuchal translucency u/s
- Cell Free DNA
- Diagnostic Testing



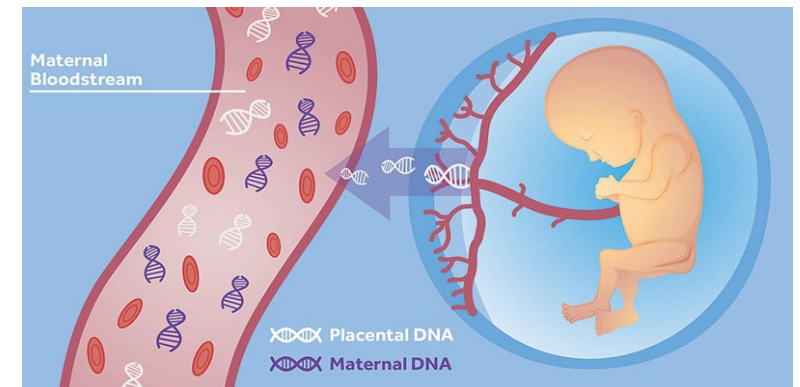
- **DOCUMENT DISCUSSION AND PATIENT CHOICE**
 - Consider quick text creation for EMR

What are the available diagnostic/screening tests?

Chromosomes	Cell Free DNA	Maternal Serum Screening + FT ultrasound	Maternal Serum Screening Alone	Level 2 ultrasound Nasal bone ultrasound	Carrier Status
CVS 11-13 weeks, amniocentesis 15-18 weeks	After 10 weeks	10.3-13.6 weeks for u/s and PAPP-A, 15- 22 6/7 weeks for serum	10.3-13.6 weeks for PAPP-A and AFP quad at 15- 22 6/7 weeks	Level 2:18-20 weeks Nasal bone:11-13 weeks	Any gestational age including preconception
Diagnostic gold standard Used in high risk population Microarray possible	Highest PPV for high risk populations DR- 94-99%	Can be reported individually or integrated	Can also order AFP Quad alone at 15-22 6/7 weeks	Not technically genetic screening test, some aneuploidy markers can be seen on u/s	Partner testing required for interpretation

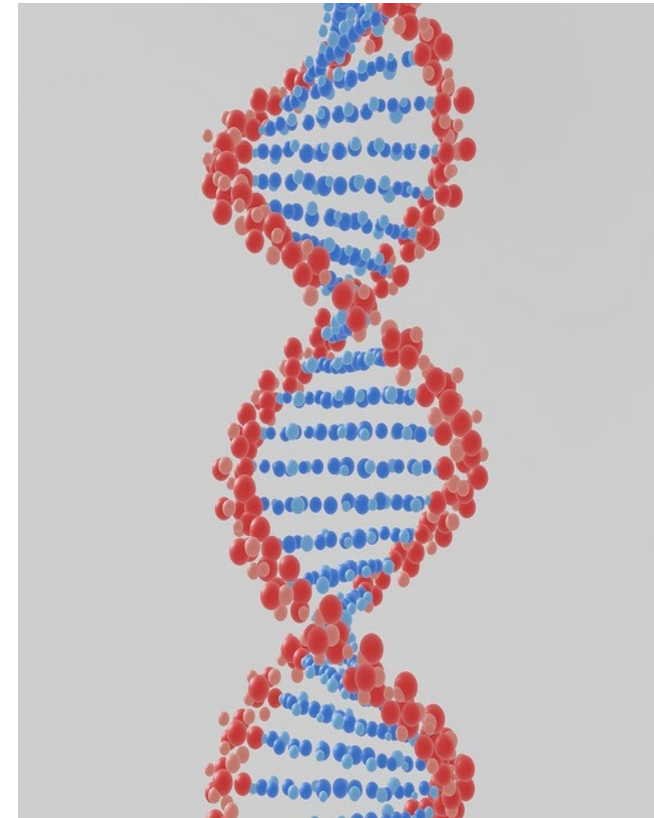
Cell Free DNA (NIDT, NIPT)

- Fragments of placental cells in birthing person's circulation after 9-10 weeks gestation
- Derived from placental trophoblasts
- Fetal fraction
 - 3-13% of total cell free DNA in blood and increases throughout gestation
- Quantity depends on:
 - Gestational age
 - Birthing person BMI
 - Birthing person medications
 - Single vs. Multiple
 - Increasing fetal fraction means less failure
 - DR:99% T21, 98% T18 99% T13/ FP rate 0.13%



NO CALL RESULT for Cell Free DNA

- Increased risk aneuploidy
- What can affect this?
 - Misdating the pregnancy
 - Found to be a factor in 16% no call results
- Vanishing twin
 - If vanishing twin and viable pregnancy, do not use cell free DNA



Other Results Available with cf DNA

- Trisomy 16
- Trisomy 22
- 22 q 11.2 microdeletion



**ALL POSITIVE SCREENING SHOULD BE CONFIRMED WITH
DIAGNOSTIC TESTING**

Serum Screening

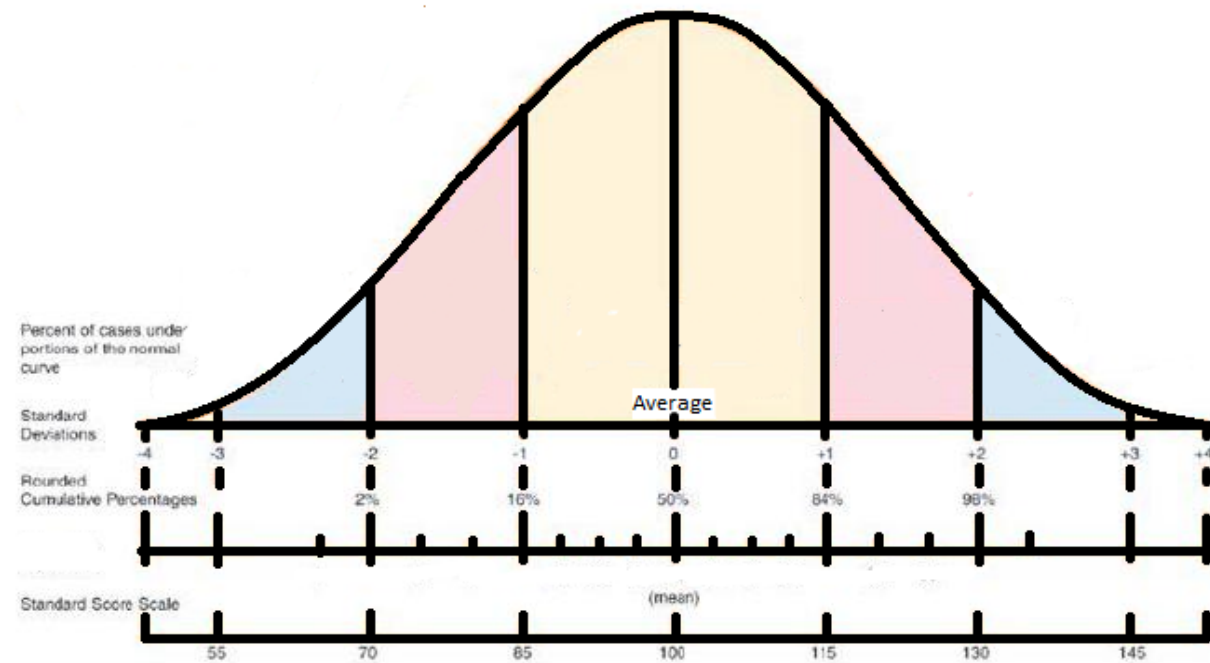
First Trimester

- PAPP-A: protein encoded by the PAPPA gene. Low levels can be found in cases of Trisomy 13, 18 or 21, or placenta abnormalities
- REPORTED AS MoM (Multiples of the median)

Second Trimester

- AFP: protein made by the yolk sac, fetal GI tract and fetal liver. Peaks in amniotic fluid by 12-14 weeks, detectable in serum by 15-18 weeks, until 23 weeks
 - Low in trisomies, elevated in NTDs
- Inhibin: protein made by the placenta and inhibits FSH secretion
- hCG
- uE3 (estradiol)
- REPORTED AS MoM (Multiples of the median)

Multiples of the Median



Ultrasound Screening

NT Ultrasound

- Ideally around 12 weeks gestation
- Thickness < 3.0 mm is normal
 - Normal NT rules out 85% Trisomy 21
- > 3.0 mm suggestive of chromosome abnormality or neural tube defect

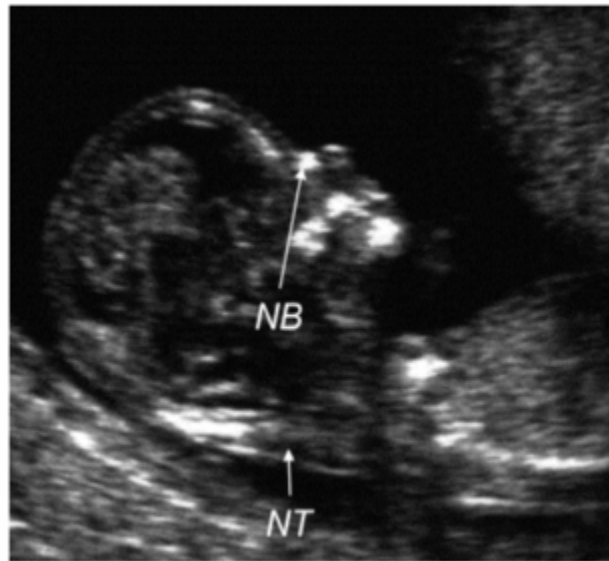
Nasal bone

- Absence in first trimester is suggestive but not diagnostic of Trisomy 21
- Used in conjunction with NT-90% detection rate, false positive rate 2.5%

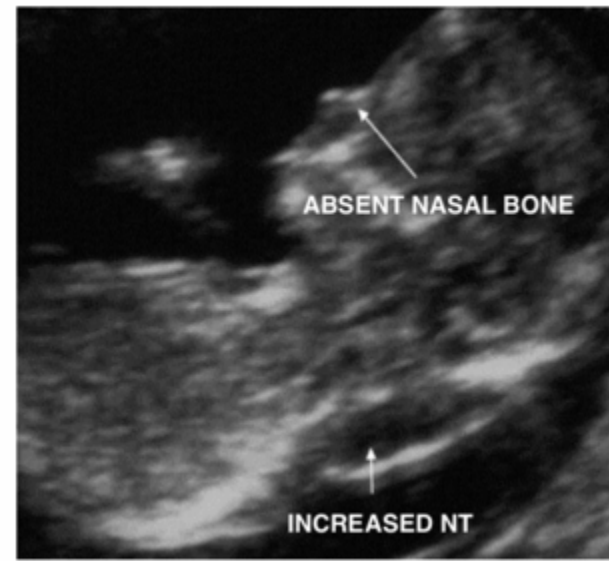
Fetal Survey/Level 2

- Not meant to be a screening tool
- Isolated abnormal findings not worrisome
- Offered to those with abnormal serum screening tests to confirm potential presence of ultrasound markers that coincide with aneuploidy
 - echogenic foci in bowel or heart
 - choroid plexus cysts
 - ventriculomegaly
 - shortened long bones
 - Hydronephrosis

Nasal Bone Ultrasound (+ Nuchal Translucency)



NORMAL



DOWN SYNDROME

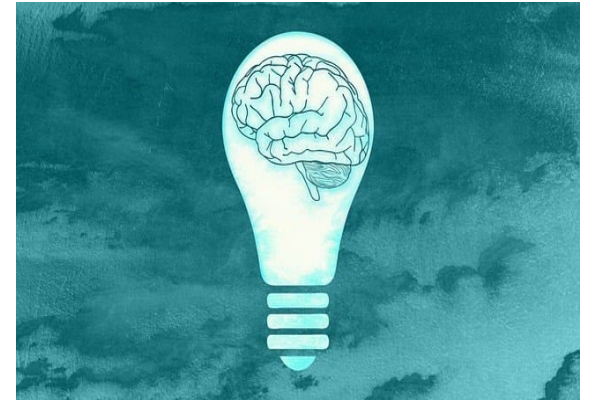
Use of Fetal Survey as Screening

- All patients offered 18-22 weeks gestation
- Soft markers
 - Echogenic bowel
 - Intracardiac echogenic focus
 - Renal pelvis dilation
 - Choroid plexus cysts
 - All together much more likely to point to a possible genetic abnormality
 - Isolated: Common !



How should we counsel?

- Start with relative risk due to age of birthing person
 - Family history/genetic history, one vs. multiple fetuses
 - DIAGNOSTIC vs. SCREENING
 - Physical vs. emotional risk
-
- ACOG recommends discussing all options despite difference in detection rate



How does Cell Free (cf) DNA compare to serum screening?

- Norton et al 2015
 - 15841 patients with cell free DNA results
 - Compared first trimester screening in general population
 - cfDNA had lower false positive rate (0.06% cf DNA vs. 5.4% serum screening)
 - Higher PPV (80.9% vs. 3.4%)
 - Mean age patient 30.7 years
- Hui et al 2019
 - >60,000 patients, mean age patient 32 years
 - Sensitivity first trimester screening 89.6% (screen positive rate 2.9%)
 - First trimester cfDNA sensitivity 100% (screen positive rate 2.4%)

What next?



- Positive Screen
 - Offer diagnostic testing
 - Offer level 2 ultrasound
- The PPV (chance that a screen positive = disease state) depends on the population prevalence of disorder

ARS Question



Question 2

Since Trisomy 21 is less common in the younger population a positive screen is more likely to be a false positive.

- A. True
- B. False
- C. Not sure
- D. Statistics terminology is hard
- E. C and D

cfDNA Calculator by Birthing Person Age

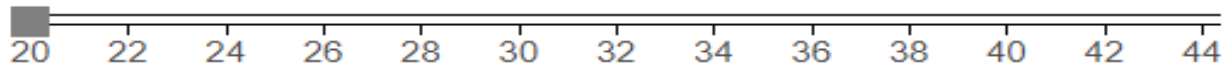
University of North Carolina at Chapel Hill

Positive Predictive Value of Cell Free DNA Calculator

Baseline Risk

☒ Age-related risk ☐ A priori risk

Maternal Age (20)



Gestational Age in Weeks (18)



Test

☒ Harmony® ☐ Materniti 21® ☐ Panorama® ☐ Verifi®

	Trisomy 21	Trisomy 18	Trisomy 13
Age-related risk	1:1117	1:4215	1:12795
Test Sensitivity	99	98	80
Test Specificity	99.97	99.93	99.9
PPV	75%	25%	6%

ARS Question



Question 3

Residual Risk after abnormal traditional screening followed by cfDNA is _____%.

- A. 2%
- B. 5%
- C. 10%
- D. None of the above

False positive cfDNA

- Mosaicism
- Duplicated chromosome region
- Vanishing twin
- Birthing person malignancy



Low Fetal Fraction

- It's actually PLACENTAL
 - Results are more reliable with higher fetal fraction
- Need 2-4%
 - Median at 10-14 weeks is 10%
- WHY?
 - Lab error
 - BMI
 - Trisomy 13 and 1 more common in persons with high BMI
 - Increasing age birthing person
 - IVF
 - LMW heparin exposure
- Options if low:
 - Repeat vs. refer for diagnostic testing

What might low fetal fraction mean?

- Norton et al 2015
- 16000 patients
- 3% rate FF failure
 - Aneuploidy in failure patients was 2.7% vs. 0.4% in overall cohort

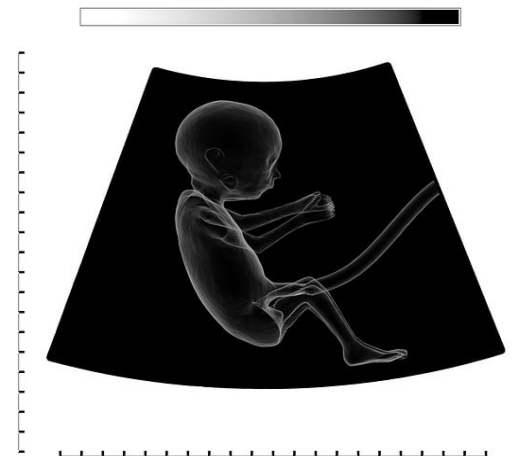
OPTIONS ARE REPEAT VS. DIAGNOSTIC TESTING

if sonographic evidence anomaly or advanced gestational age —no repeat

success repeat overall 75-80%, lower in patients with elevated BMI

Ultrasound – First Trimester

- NT—traditionally corresponds to genetic syndromes
 - ALSO:
 - Heart defects
 - Abdominal wall defects
 - Diaphragmatic hernia
- If cystic hygroma and septations –more likely to be anomaly
 - Bull 2016
 - 944 fetuses
 - 55% had chromosomal anomaly on diagnostic testing
 - Major congenital malformation in 29%



Elevated NT > 3 mm: diagnostic testing and level 2 referral

Ultrasound – Second Trimester

- All patients offered fetal survey
- T18 / T13—Likely to see anomalies:
 - T18 cardiac anomalies, microcephaly/abnormally shaped head, micrognathia, clenched fists with overlapping fingers
 - T13 microcephaly, cleft lip and/or cleft, omphalocele, spina bifida, microphthalmia, anophthalmia (absent eyes), scalp anomalies (aplasia cutis)
- T21—only 27% have anomalies on ultrasound

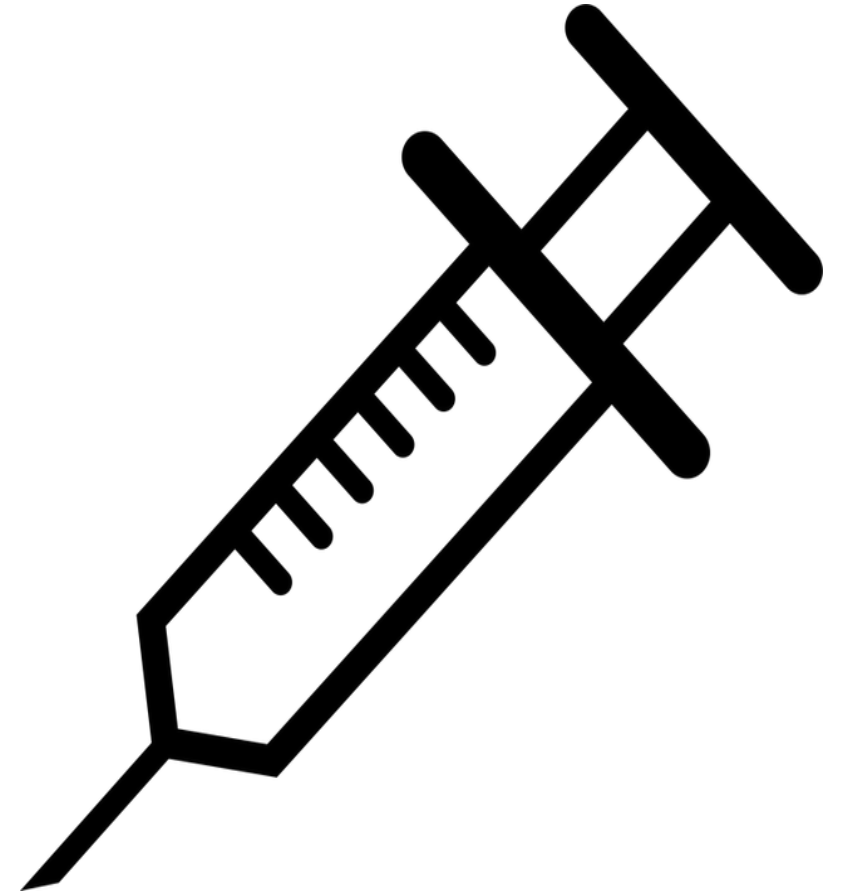
TWINS and cf DNA

- Not same accuracy as singletons
- Presumably monozygotic same genetics
 - Differences have been reported
 - Dizygotic + means at least one affected
 - Possibly—aneuploid fetus gives less DNA to the sample
- Sensitivity for T21 same as singletons
- Failure rate higher
 - 30% higher with monozygotic/3X higher with dizygotic
- If IVF with PGT (preimplantation genetic testing)
 - Offer anyway: PGT not always accurate



cf DNA Positive/Diagnostic Testing Normal

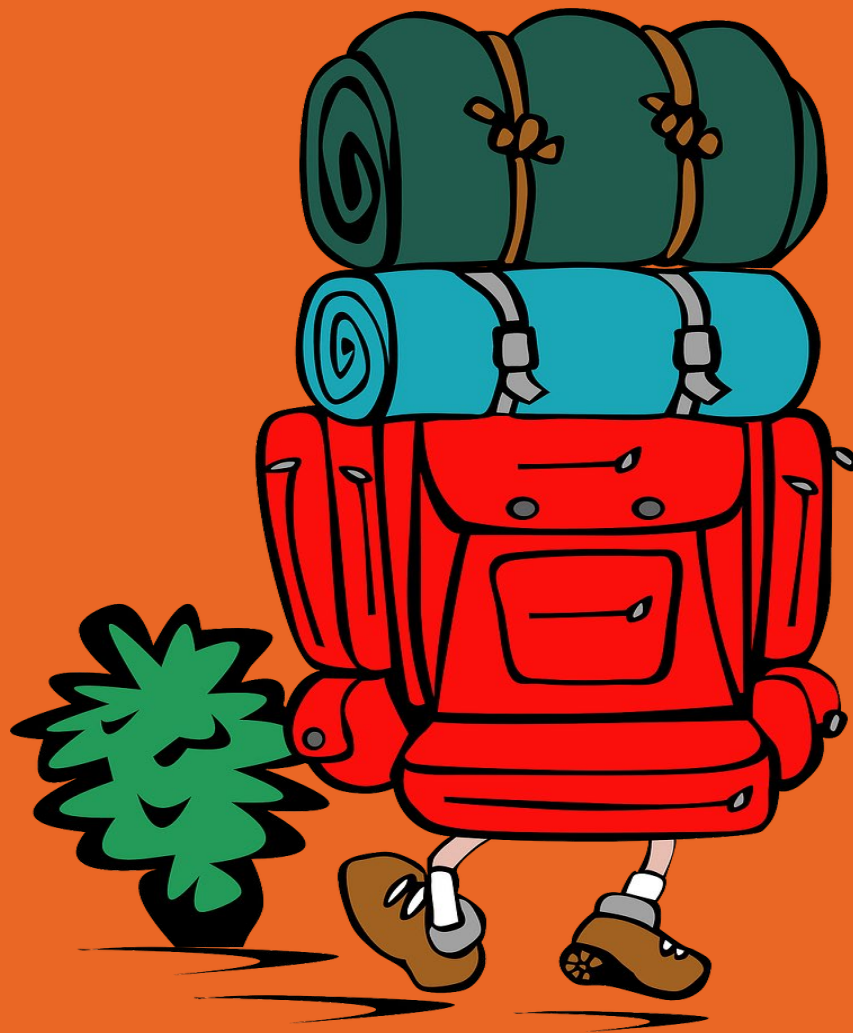
- Birthing person malignancy
- 1/1000 within a year will test positive
 - Family History
 - Cervical
 - Colorectal
 - Thyroid



What do other results contribute?

- AFP at 16-18 weeks can help in the diagnosis of body wall defects prior to the fetal survey ultrasound
 - An abnormal result might move the treatment team to recommending a level 2 u/s instead of standard fetal survey
- False positive abnormal serum screening
 - Low PAPP-A
 - Fetal loss
 - PEC
 - Abruption
 - High hCG/AFP
 - Fetal death
 - PEC
 - IUGR

Carrier Screening



Carrier Screening

- Looking for a person who has a variant allele within a gene associated with a diagnosis
- If carrier positive –test reproductive partner
- If both positive-genetic counseling
- Tell relatives
- Perform once



SMA

- SMN1 deletion
- Carrier rate 1:40
 - Type 1 and Type 2
 - Werdnig-Hoffman –most severe
- Residual risk approx. 2%
- *10-15% of all functional SMN protein are produced in the SMN2 gene
 - If more of the SMN2 is expressed, the symptoms of SM will be less severe

CF

- Complete analysis CFTR gene not possible/appropriate
- If family member affected, try to learn their mutation
- 1:2500 disease incidence
- 23 most common mutations come in a panel
- Residual risk present

Hemoglobinopathies / Fragile X

- CBC in all pregnant patients
- If suspicion (low MCV or MCH) consider electrophoresis
- ACOG recommends Universal screening for hemoglobinopathies
- Fragile X
 - FMR1 mutation where FMRP is not made.
- If unexplained developmental delay especially in male offspring in family
- If pre-mutation or full mutation – send to genetic counseling

Tay Sachs

- Caused by the absence of an enzyme that helps break down gangliosides
 - Build up to toxic levels in the brain and spinal cord
 - Affect the function of the nerve cells
 - Slowing of development begins 3-6 months of age
 - Seizures, vision/hearing loss, paralysis, death
- Eastern European descent
- Ashkenazi Jewish
 - High risk partner should be offered screening
 - Rescreen only done if a new family member is identified with a specific mutation not previously known

Expanded Carrier Screening (ECS)

- American Genetics Society (AGS):
 - ECS should be available for all individuals considering reproduction and all pregnant reproductive pairs
 - ECS presents an ethnicity-based carrier screening alternative
 - does not rely on race-based medicine.
 - Decision to pursue carrier screening should be directed by shared decision-making, which takes into account specific features of patients as well as their preferences and values.
 - ECS is superior compared to ethnicity-based carrier screening
 - identifies more carriers of AR and XL conditions
 - eliminates a single race-based medical practice

Practice Recommendations

SORT A

Screening vs diagnostic testing discussion for all pregnant people

If one test accepted, cfDNA most sensitive

All patients should receive ultrasound at 18-22 weeks

Low fetal fraction = increased risk aneuploidy

If + serum screen, consider cfDNA, but delays diagnosis

Microarray detects a pathogenic variant in 1.7% patients with normal ultrasound and normal karyotype

Practice Recommendations

SORT B

Abnormal FISH is not diagnostic

Pregnancy loss is 0.1-3% with CVS vs. amnio

HIV transmission unlikely with cART if viral load undetectable

Practice Recommendations

SORT C

Use of multiple tests for screening is not recommended

Fetal demise of a twin yields potentially inaccurate results

Example Genetic Screening Counseling

- Deciding whether to pursue genetic screening is a personal one. None of the tests are required. For some patients, because the available blood tests are not DIAGNOSTIC, the stress over whether the results are “correct” is too much to bear.
- For others, it helps them decide whether they would want to look more thoroughly, even sometimes invasively, for a potential problem
- Your insurance may cover cell free DNA testing This test can detect placental cell fragments in your blood stream, and then a probability of whether the fetus may be affected with a chromosomal issue is reported. It doesn't test for every chromosomal abnormality, but it has a less than 1% false positive rate. And it detects 99.5% of Down's syndrome cases correctly, for instance.
- If you are younger than 35 or your insurance does not cover cell free DNA, some decide on the serum integrated screen. This test may require a special ultrasound of the baby's neck as well as blood tests at two different times in the pregnancy, once in the first trimester and once in the second. The tests look to see whether your hormones are in range compared to other similar persons at the same gestational age. Results can tell you your potential chance for a problem compared to other persons who look like you, are of similar weight, ethnicity, gestational age, etc. This test is less accurate at predicting the likelihood of a diagnosis than cell free DNA, as only one in 10 that screen positive will have an affected fetus with a chromosomal issue.
- True accurate *diagnosis* of a chromosomal abnormality requires chorionic villus sampling or amniocentesis, which requires sampling of tissue that will eventually become the placenta, or amniotic fluid from the sac surrounding your baby, respectively. These tests are nearly 100% accurate in determining the presence of an affected fetus, but have more risk, anywhere from a 1/100 to 1/400 rate of pregnancy loss associated with obtaining the material for the test.
- Other conditions that may be inherited such as cystic fibrosis (a condition that can make it difficult for babies to breathe) , spinal muscular atrophy (a condition associated with very poor muscle tone in the baby) or abnormalities of hemoglobin (which can make it difficult for a baby's blood to carry oxygen to his or her tissues), can also be tested for in pregnancy. In most cases, both parents must carry an abnormal gene to have an affected baby. We can test you to see if you are a carrier. If you indeed are, we would recommend carrier testing for the partner/donor to predict the chance of the baby inheriting the condition in question.

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Answers

1. E

2. A

3. A



Thank you





Influential Obstetric Publications in the Past Year

Benjamin J.F. Huntley, MD, FAAFP

Yukon Kuskokwim Health Corporation

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Learning Objectives

1. Discuss recent publications in the obstetric literature clearly and accurately with patients and consulting clinicians.
2. Apply new insights from emerging obstetric literature to critically appraise evolving evidence and its relevance to direct patient care.

Road Map

1. **Analyze** 3 publications from **the past year** that influence current obstetric practice
2. **Review** 3 publications from **the past year** that influence current obstetric practice
3. **Highlight** 3 publications that introduce **new concepts** or provide **fast knowledge acquisition**
4. **Acknowledge** a snapshot of updates and publications from **the past year** by professional societies and governing bodies

Steps of Evaluating an Article

- **PICO (Population, Intervention, Control, Outcome) question**
- Hypothesis
- Study type
- Sample size calculation / power analysis
- Results
- Strengths and limitations
- Bias/confounders
- Clinical implication



Pivotal Obstetric Publications of 2025-2026 – Article 1

ARS Question



Question 1

When treating BV...

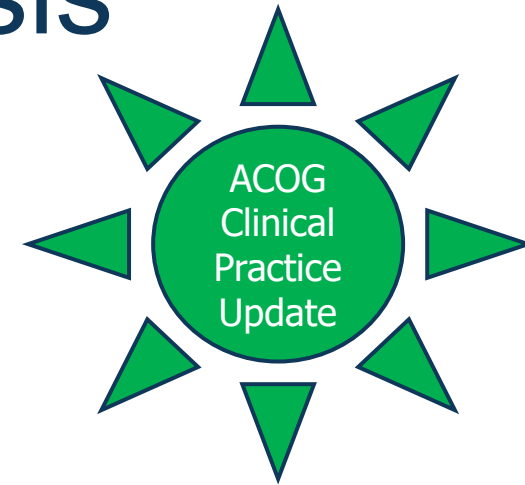
- A. I only treat the patient
- B. I treat both the patient and the partner
- C. Initially I only treat the patient; with recurrent BV, I offer to treat the partner as well

Male Partner Treatment to Prevent Recurrence of Bacterial Vaginosis

March 2025, The New England Journal of Medicine

Facts:

- BV prevalence ~ 25%, 11-33% in pregnancy (Peebles, 2019)
- BV recurrence ~ 50% (Bradshaw, 2006)
- BV Odds Ratio for preterm birth = 1.60 (Hadhoun, 2025)

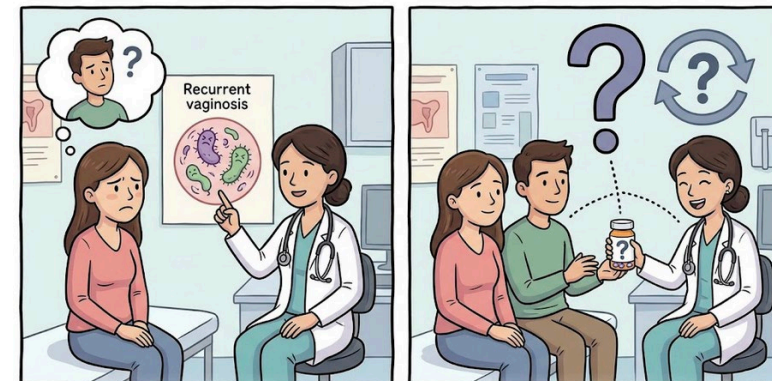


Clinical Question:

- Does treating male partners reduce recurrent BV in female patients?

Study Type:

- Multicenter Randomized Controlled Trial



PICO: Male Partner Treatment for BV

Sample size: 184 couples

PICO:

Population:

Monogamous premenopausal Australian women/partners
≥18yo with symptomatic BV on standard therapy

Exclusion:

- Multiple partners
- Sex worker
- HIV

Intervention / **C**omparison: 1:1 Standard Care vs Partner co-treatment

Outcomes:

- 1° Recurrence of BV within 12 weeks
- 2° Recurrence of BV within 4 weeks

Definitions and Diagnostic Criteria: Male Partner Treatment for BV

Dx BV:

≥ 3 of four Amsel criteria

- characteristic discharge
- vaginal pH > 4.5
- positive amine test (fishy odor)
- clue cells

AND

Nugent score of 4–10 / 10
(intermediate or indicative of BV on
standardized gram stain interpretation)

Monogamous: regular male partner for at
least 8 weeks before enrollment

Standard care (woman only):

- MTZ 400mg PO BID x7d, OR
- Clinda 2% cream PV QHS x7 nights, OR
- MTZ 0.75% gel PV QHS x5 nights

Partner synchronized co-treatment:

- MTZ 400mg PO BID x7d AND
- Clinda 2% cream topically BID x7d

Study Design and Protocol: Male Partner Treatment for BV

Block Randomization

- Site
- IUD
- Circumcision

Open label

- Researchers and participants knew which group was assigned

No placebo

- Altered Microbiota

Follow up:

- Questionnaires and vaginal samples at time 0, 8d (home), 4wk, 8wk (home), 12wk
- Microscopists blinded to allocation

Modified Intention to Treat vs Intention to Treat

Male Partner Treatment for BV

164 Randomized 1:1

83 into Control arm:
Standard of Care
- Female: Oral MTZ
- Male: none

81 into Intervention arm:
Male Partner Treatment
- Female: Oral MTZ
- Male: Oral MTZ + Topical Clinda

11 Lost to follow
up, withdrew, etc

11 Lost to follow
up, withdrew, etc

68 in modified intention to treat

69 in modified intention to treat

0 women excluded due to
nonadherence
1 woman excluded due to
lack of adherence data

9 men excluded due to
nonadherence
13 men excluded due to lack
of adherence data
(0 women excluded)

67 took > 70%
of medications

47 took > 70%
of medications

Sample Size Calculation

80% Power

40% Reduction

40% Recurrence

15% loss to follow up

Goal: 342 couples (172 per group)

<https://clincalc.com/Stats/SampleSize.aspx>

Planned interim analysis at 150 couples

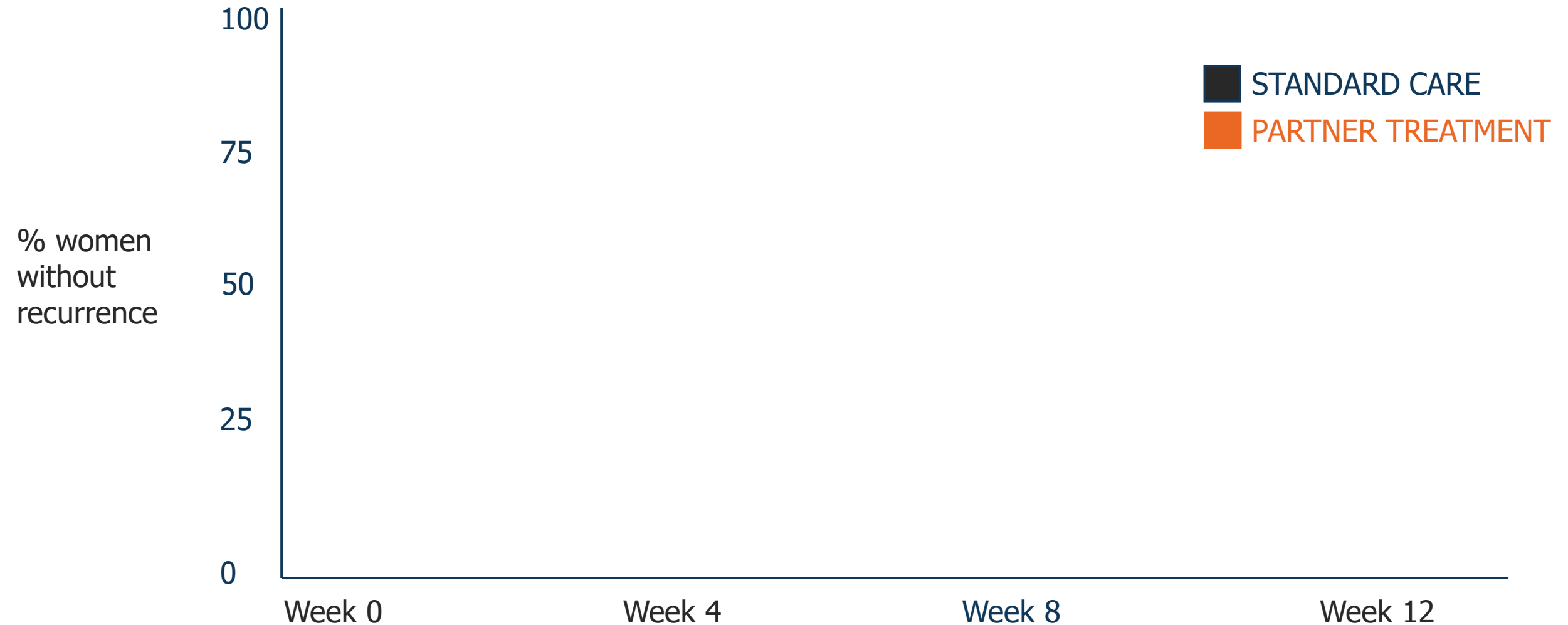
“The trial was stopped by the data and safety monitoring board at the interim analysis of the first 150 couples because of the inferiority of standard care.”

Maternal Primary and Secondary Outcomes

PRIMARY Outcome	Standard Care (n=68)	Male Partner (n=69)	Difference
mITT BV Recurrence 12 weeks	43 / 68 (63%)	24 / 69 (35%)	
Recurrence rate (person-years)	4.2 (95% CI 3.2 – 5.7)	1.6 (95% CI 1.1 -2.4)	–2.6 recurrences per person-year (95% CI –4.0 to –1.2)
Mean time to recurrence (days)	54.5	73.9	19.3; 95% CI 11.5 - 27.1; P<0.001)

Secondary & sensitivity analyses: if all missing data is assumed non-recurrent or if all missing data is assumed recurrent, either way there is clinically and statistically significant improvement with synchronous partner co-treatment. Likewise, no change with IUD use or circumcision status

Kaplan-Meier Curve for Time to BV Recurrence



Male Partner Treatment for BV

Results:

Recurrence of bacterial vaginosis within 12 weeks was observed in 24 of 69 women (35%) in the partner-treatment group... and in 43 of 68 women (63%) in the control group. The mean time until recurrence was 73.9 days in the partner treatment group and 54.5 days in the control group.

Strengths:

First trial on topic to assess adherence

Topical antibiotic to address penile carriage of BV-associated orgs

Limitations:

Recruitment from Sexual Health Centers (higher risk patient population?)

Recruitment of monogamous, non-pregnant, heterosexual couples

Unblinded

Clinical implications:

Treating male partners significantly lowers BV recurrence rate over 12 weeks compared with treating women only

ACOG Clinical Practice Update Dec 2025:
"Concurrent sexual partner therapy with a combination of oral and topical antimicrobial agents should be considered for male sexual partners of adult patients with recurrent, symptomatic bacterial vaginosis.
Shared decision making regarding concurrent sexual partner therapy is recommended for adult patients with recurrent, symptomatic bacterial vaginosis who have same-sex partners and for patients with a first occurrence of symptomatic bacterial vaginosis."

Take home point: Co-treat male partners for BV

Male Partner Treatment for BV

- Why did ACOG limit recommendations to recurrent BV?
- Why did ACOG limit recommendations to heterosexual couples?

ACOG Clinical Practice Update, Concurrent Sexual Partner Therapy to Prevent Bacterial Vaginosis Recurrence (Dec 2025):

"Although these results are significant, the study did have several limitations. Only monogamous heterosexual couples were enrolled, and most female participants had at least one risk factor for recurrent infection (eg, history of bacterial vaginosis, intrauterine device use, uncircumcised male partner), which may limit the generalizability of the results. Longer-term studies are needed to determine, for example, whether male partner maintenance therapy is needed and whether sexual partner treatment is effective in broader populations, including women who have sex with women, individuals in nonmonogamous relationships, and patients with incident or asymptomatic bacterial vaginosis."



Pivotal Obstetric Publications of 2025-2026 – Article 2

ARS Question



Question 2

Goal blood pressure for patients with hypertension and diabetes in pregnancy is:

- A. <160/110
- B. <140/90
- C. <130/80

Blood Pressure Goals for Chronic Hypertension & Diabetes

May 2025, AJOG

Facts:

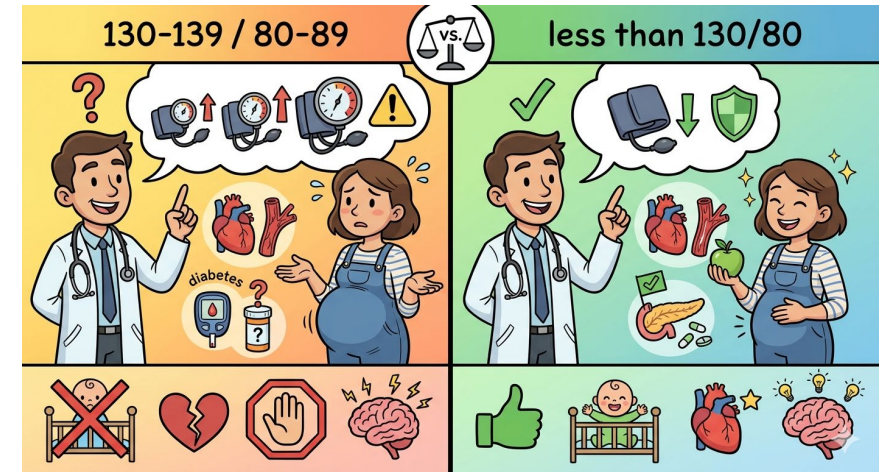
- Before CHAP, ACOG and SMFM goal BP for cHTN: 120-159 / 80-109 (ACOG PB 203, 2019)
- ACOG and SMFM recommend goal BP for cHTN in pregnancy: < 140/90 (SMFM cHTN, 2022)
- ACC/AHA and ADA recommend goal BP for cHTN outside pregnancy: <130/80 (Whelton, 2018)

Clinical Question:

- Do patients with both cHTN and Diabetes who achieve BP < 130/80 do better than those who achieved 130s / 80s?

Study type:

- Secondary Analysis of Randomized Control Trial



PICO: Blood Pressure Goals for cHTN and DM

PICO:

CHAP Population: ≥ 18 yo cHTN with non-anomalous singleton IUP at $< 23^0$
 SECONDARY ANALYSIS Population: subset of CHAP with DM

ORIGINAL Intervention / Comparison: Goal BP $< 140 / 90$ vs $< 160 / 105$

2° ANALYSIS Intervention / Comparison: $< 130 / 80^*$ vs BP 130s / 80s

* despite being randomized to higher BP targets

CHAP Exclusion:

- $> 160/110$ mmHg
- On multiple anti-HTN Rxs
- 2° HTN
- CKD
- DM > 20 yr duration
- DM dx < 10 yo
- Diabetes-related EOD

Secondary Analysis Outcomes:

1° Composite: Preeclampsia with severe features, Medically-indicated PTB < 35 wk, Placental Abruption

2° Individual elements of primary composite, cesarean rate, IUFD/NND, NICU admission, SGA

Study Design and Protocol: Blood Pressure Goals for cHTN and DM

Excluded Enrollment and Delivery BPs

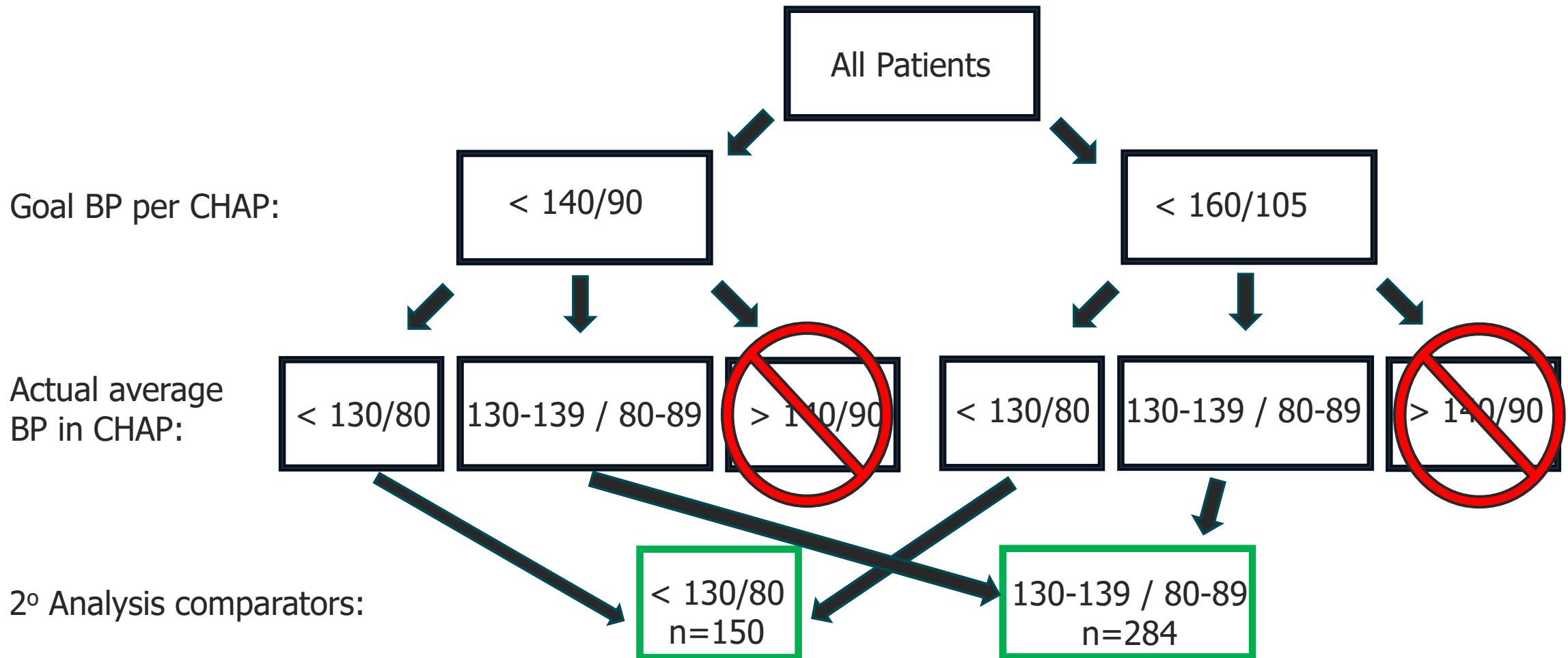
- avoid pre-treatment BPs and possible intrapartum super-imposed PreE

Excluded DM > 20yr duration and/or dx at < 10yo

- Functionally: mostly T2DM

Excluded avg BP > 140/90

Study Design and Protocol: Blood Pressure Goals for cHTN and DM



Characteristics by Group:

Characteristics	BP <130/80 n=150	BP 130s/ 80s n=284	P value
Diabetes type:			<0.01
Preexisting	98 (65%)	220 (78%)	
Newly diagnosed (<20wk)	52 (35%)	64 (23%)	
Chronic HTN type:			0.03
Newly diagnosed	26 (17%)	58 (20%)	
Known, on medication at enrollment	99 (66%)	151 (53%)	
Known, not on medication at enrollment	25 (17%)	75 (26%)	
Treatment group:			0.03
Active (<140/90)	90 (60%)	139 (49%)	
Standard (<160/105)	60 (40%)	145 (51%)	
BP at randomization:			
Average sBP	122	135	<0.01
Average dBP	74	82	<0.01

Blood Pressure Goals for cHTN and DM: Primary Outcome

Outcomes		< 130/80 n=150	130-139 / 80-89 n=284	Adjusted Risk Ratio (95% CI)	P value
2° outcomes {	Primary Composite	19.3%	46.5%	0.43 (0.30 – 0.61)	<0.01
	• PreE with SF	14.0%	40.5%	0.35 (0.23 – 0.54)	<0.01
	• Indicated PTB < 35wk	8.0%	20.1%	0.44 (0.24 – 0.79)	<0.01
	• Placental abruption	1.3%	2.1%	0.51 (0.10 – 2.57)	0.36

Adjusted for new dx of cHTN, new dx of DM, and treatment group

CI, confidence interval; PreE with SF, preeclampsia with severe features; PTB, preterm birth

Blood Pressure Goals for cHTN and DM: Secondary Outcomes

Outcomes	< 130/80 n=150	130-139 / 80-89 n=284	Adjusted Risk Ratio (95% CI)	<i>P</i> value
Birth weight < 10 th %ile	3.3%	8.8%	0.37 (0.14 – 0.96)	0.04
Birth weight (g)	3210	2948	1.09 (1.02 – 1.17)	<0.01
NICU admission	36%	51%	0.74 (0.59 – 0.94)	0.01
Days in the NICU	7	11	0.54 (0.49 – 0.59)	<0.01

P>0.5: Birth weight < 5th %ile, Cesarean Delivery, Perinatal Death
Adjusted for new dx of cHTN, new dx of DM, and treatment group
CI, confidence interval; PreE with SF, preeclampsia with severe features; PTB, preterm birth

Outcomes in Context of Prior Secondary Analysis

Outcomes *2023 <130 % _{active} 58 *2025 < 130 % _{active} 60	< 130/80 n=150 n=768	130-139 / 80-89 n=284 n=1328	Adjusted Risk Ratio (95% CI)	P value
2023 PreE with SF 2025 PreE with SF	11.2% 14.0%	29.9% 40.5%	0.37 (0.30–0.46) 0.35 (0.23 – 0.54)	<0.05 <0.01
2023 Indicated PTB < 35wk 2025 Indicated PTB < 35wk	5.6% 8.0%	13.9% 20.1%	0.43 (0.31–0.59) 0.44 (0.24 – 0.79)	<0.05 <0.01
2023 Placental abruption 2025 Placental Abruption	1.3% 1.3%	1.5% 2.1%	0.81 (0.38–1.74) 0.51 (0.10 – 2.57)	> 0.05 0.36
2023 Birth wt < 10 th %ile 2025 Birth wt < 10 th %ile	8.7% 3.3%	10.9% 8.8%	0.77 (0.58–1.02) 0.37 (0.14 – 0.96)	> 0.05 0.04
2023 NICU admission 2025 NICU admission	23.8% 36%	33.0% 51%	0.74 (0.64–0.86) 0.74 (0.59 – 0.94)	<0.05 0.01
2023 Perinatal Death 2025 Perinatal Death	1.7% 1.3%	2.6% 2.5%	0.72 (0.38–1.37) 0.59 (0.12-2.92)	> 0.05 0.51

2023 = secondary analysis of CHAP of all patients with cHTN; 2025 = secondary analysis of CHAP of all patients with cHTN and DM

Blood Pressure Goals for cHTN and DM

Results:

In secondary analysis of large RCT, parturients with cHTN and (predominately Type 2) DM who achieved average BP < 130/80 were **less likely** to have preE with SF, medically-indicated PTB at < 35wk, and NICU admission without increased risk of SGA infants

Strengths

1. Large sample size for narrowly defined population (cHTN and DM)
2. Generalizable

Limitations:

1. Patients were not randomized to < 130/80
-> may be inherently lower risk for adverse outcomes
2. Rx was not initiated unless BP > 140/90

Clinical implications:

In patients with chronic hypertension and type 2 diabetes, those who achieved an average BP < 130/80 experienced fewer adverse outcomes compared with those who did not, but due to study limitations, the impact of initiating treatment to achieve BP < 130/80 has not been determined

Take home point: Do not change your BP goals or prescribing habits. Further research is needed to understand if treating to a goal BP < 130/80 is beneficial



Pivotal Obstetric Publications of 2025-2026 — Article 3

Prophylactic Oral Cephalexin and Metronidazole Compared With Placebo After Cesarean Delivery to Reduce Infection Complications in Women With Obesity: RCT

July 2025, Obstetrics & Gynecology

Facts:

- Cesarean SSI rate ~ 1.8% (Jang, 2023)
- Preop Azithro (in labor or with ROM) ↓ infectious complications (Tita, 2016)
- Post-op Cephalexin and Metronidazole (MTZ) ↓ Surgical Site Infection (SSI) among BMI ≥ 30 (Valent, 2017)

Clinical Question:

- Does 48hr post-op Cephalexin and Metronidazole reduce post-op infection complications among patients with BMI ≥ 30 undergoing cesarean delivery who receive (now) standard preop antibiotics?

Study type:

- Randomized, Double-Blind, Clinical Trial



PICO: Post-op Antibiotics for SSI Reduction

Sample size: 321

PICO:

Population: Prepreg BMI > 30, and unsuccessful IOL, ROM > 4hr, undergoing cesarean, preop with Cefazolin and Azithromycin

Exclusion: <18yo, ROM > 24hr, immunosuppression, stillbirth, anomalies, chorioamnionitis

Intervention / Comparison: MTZ and Cephalexin 500mg PO q8hr x 48hr vs Placebo

Outcomes:

1° 30d Infectious composite: endometritis, SSI, other (septic pelvic thrombophlebitis, abscess)

2° Cellulitis, Hematoma, Seroma, Wound Separation, Endometritis, Wound Infection, Abscess, Pneumonia, Pyelonephritis, Breast Infection, Fever > 100.4 within 24hr or > 101 anytime thereafter, ER and OB Triage visits for wound evaluation, readmission, maternal death

Sample Size Calculation

80% Power

25% Estimated Incidence in Placebo Group

50% Relative Risk Reduction (25% $\rightarrow$ 12.5%)

Goal: 302 patients

Of 321 enrolled, 37 voluntarily withdrew before completion or had a deviation in medication administration (usually discharge home before final dose)

Loss to follow up not statistically different between groups.

Protocol: Post-op Antibiotics for SSI Reduction

Randomized double-blind - both participants and health care professionals were blinded to treatment allocation.

Enrolled pre-op or, if emergent, post-op in PACU after anesthesia wore off, before transfer to postpartum and within 8hr from preop IV cephazolin administration

Evidence Based Cesarean principles followed

Post-op checks at 2 and 6wk, telephone calls and rescheduling for missed appointments

Cohort Characteristics:

Characteristic	Post-op Abx (n=160)	Placebo (n=161)
Maternal age (y)	27.4	27.6
Race/ethnicity	Same	Same
BMI	38	38
TOLAC	12%	11%
HDP	29%	27%
GA at delivery	38.3	38.3
AROM	81%	75%
IUPC	70%	67%
CD Indication: arrest	44%	39%
CD Indication: malpresentation	6%	6%
LOS (d)	3.6	3.4

Outcomes: Post-op Antibiotics for SSI Reduction

Outcome	Post-op Abx	Placebo	OR (95% CI)
1° Outcome: SSI Composite (ITT)	9/160 (5.6%)	11/161 (6.8%)	0.81 (0.33 – 2.02)
1° Outcome: SSI Composite (per protocol)	7/140 (5.0%)	10/144 (6.9%)	0.71 (0.26 – 1.91)
Secondary Outcomes			All spanned CI 1.0

Loss to follow up similar ($p > 0.05$)

Post-op Antibiotics for SSI Reduction

Results:

Primary composite (endometritis, SSI, relevant post-op infections) within 30d of delivery occurred in 6.23% (95% CI 3.84-9.46%) of the overall study population. In the Intention to Treat analysis, this occurred in 5.6% of patients who received antibiotics vs 6.8% on placebo (difference 1.2%, 95% CI -2.5 – 5.0%), OR 0.81 (95% CI 0.33 – 2.02; p 0.64). No change in per-protocol analysis. No change in secondary outcomes.

Strengths:

Randomized. Double-blind. Placebo—controlled. Drop the mic.
Composite primary incorporated broad array of clinically relevant infectious complications
Conducted with extended-spectrum preop antibiotics (reflects current practice)

Limitations:

High rate of voluntary withdrawal and nonadherence to medication regimen (d/c prior to 48hr)
Overestimated incidence of 1° outcome - sample size may have been too low (lacked power to detect change)
Underpowered to stratify classes of obesity

Clinical implications: 48hr post-op cephalexin and MTZ compared with placebo did not significantly reduce composite of infectious complications within 30d of delivery among pregnant patients with ROM who received standard preop abx (cefazolin and azithromycin)

Take home point:

**Post-op
Cephalexin/MTZ
not needed if preop
Cefazolin/ Azith
given**





Honorable Mentions

- RCT on IV Iron
- RCT on PPRM Antibiotics
- RCT on Bed Rest

Single-dose Intravenous Iron vs Oral Iron for Treatment of Maternal Iron Deficiency Anemia: a randomized clinical trial

August 2025, AJOG

Facts:

- Anemia increases risk for adverse perinatal outcomes
- Despite 1st line recs for PO repletion, anemia rates are not at goal and climbing

Question:

- Is IV iron more effective than oral iron at reducing Low Birth Weight and Maternal Anemia?

Trial: Parallel, 3-arm, semi-blind superiority randomized controlled multicenter trial in India; 4,368 singletons 14-

17wk GA with Hb 7.0-9.9 excluding hemoglobinopathies.
1:1:1 60mg PO iron BID vs two different kinds of IV Iron + Additional IV Iron or PRBC if < 7g/dL or interval response < 1g/dL improvement

Primary outcomes: Birthweight < 2500g, Maternal Hb

Results:

- BWt < 2500g: 29.3%_(PO) vs 29.1%_(IV 1) vs 25.2%_(IV 2)
- Maternal Hb $\geq$ 11.0g/dL – no statistically significant change
- Sensitivity analysis: Single-dose IV iron reduced blood transfusions and iron infusions

IV Iron for IDA in early 2nd trimester reduced Low Birthweight (NNT 25) and need for blood transfusions / additional IV Iron compared with PO Iron

Ampicillin and gentamicin prophylaxis is superior to ampicillin alone in patients with PROM at term: results of a RCT

October 2025, AJOG

Facts:

- Prolonged ROM is risk factor for infection
- Guidelines recommend Ampicillin to cover GBS
- Ampicillin-resistant Enterobacteriaceae also contributes to infection

Question:

- Does expanding coverage with adjunctive gent when GBS is unknown improve outcomes?

Trial: RCT singletons > 37wk, GBS unknown, PROM without active labor. Amp vs Amp & Gent, 102 in each group, enrolled/allocated 12hr after rupture, unblinded at 18hr after ROM, continued until delivery.

Primary outcome: Rate of Chorio

Results: Amp 8/102 (7.8%) vs Amp & Gent 1/102 (1.0%), $p < 0.05$

In term prelabor rupture of membranes with GBS unknown, ampicillin and gentamicin prophylaxis, compared to ampicillin alone, resulted in lower rates of clinical chorioamnionitis. Did not assess risk for ototoxicity, but NNT to prevent 1 chorio = 15

Activity Restriction in Pregnancy and the Risk of Early Delivery: The AWARE Study

April 2026, Obstetrics & Gynecology

Facts:

- “Therapeutic” bed rest in pregnancy: unethical and unsupported by data. Obstet Gynecol (McCall, 2013)
- Antenatal activity restriction increases bone loss, VTE, deconditioning, causes adverse psychiatric effects
- Not recommended by guidelines, costs billions of dollars in workforce reduction, bizarrely still prescribed in 15% pregnancies (all references embedded in this study)
- Prior data mostly retrospective

Question:

- What impact does activity restriction have on latency for patients at risk of preterm birth?

Trial: ancillary study of two RCTs on prevention of preterm birth for patients 16⁰-23⁶ with short cervix. Given Fitbit, observed activity until delivery, compared > vs < 3500 steps/d using PROSPECTIVELY collected data. Incidentally, 25% of 102 patients were prescribed activity restriction

Primary outcome: Latency

Secondary outcomes: PTB at < 32, 34, 37wk

Results:

No change in latency (HR 0.95, 95% CI, 0.88–1.03)

No change in steps/d stratified by CL

Patients with <3500 steps/d delivered earlier (34.9 vs 37.7wk, $p < 0.05$) & more likely to delivery < 34wk (47% vs 18%, $p < .05$)

In patients with short cervix at high risk for PTB, sedentary activity was **not associated with increased latency**; study does not support the use of activity restriction.

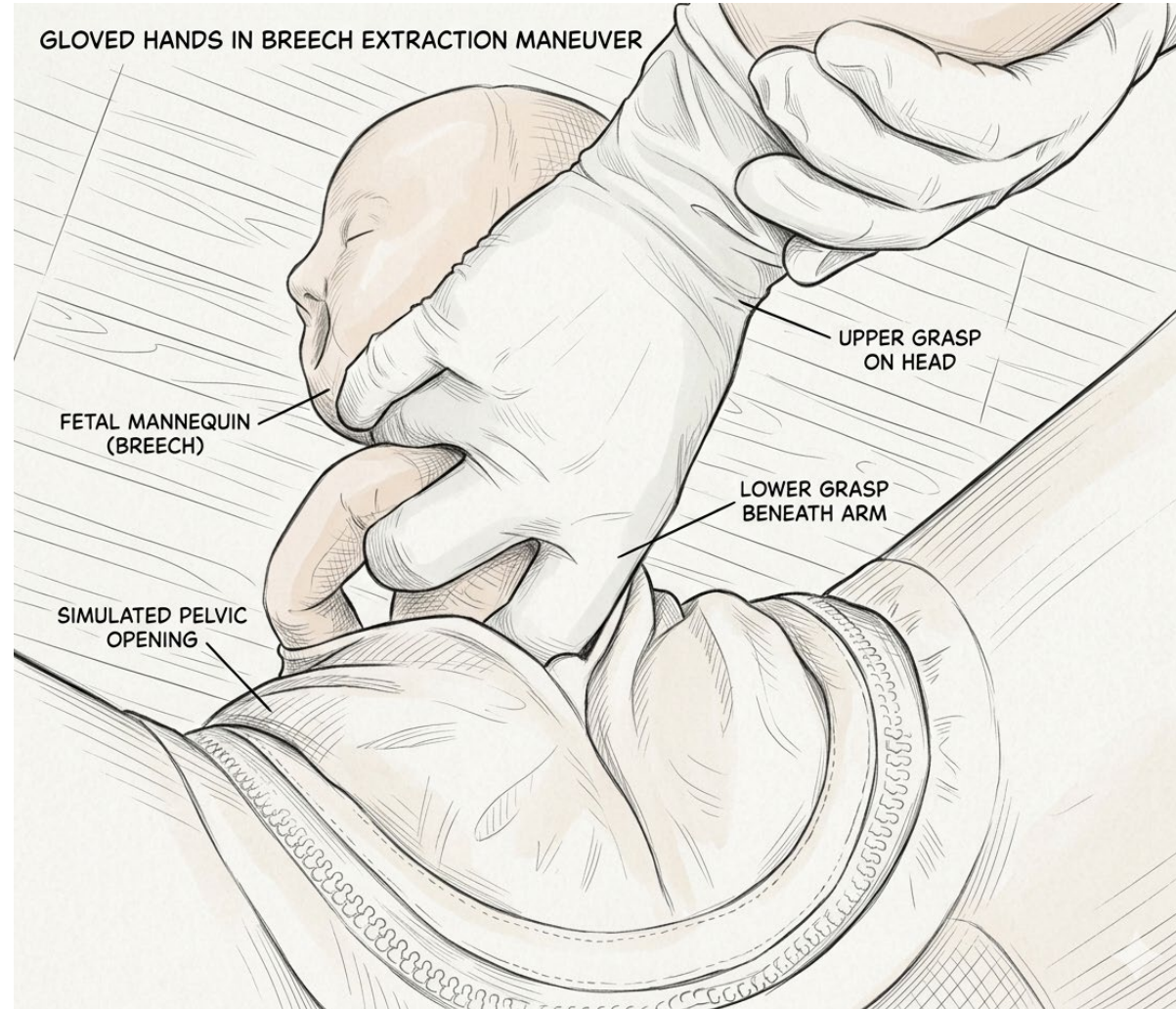
Fun Facts

- Hemorrhage management using a Foley catheter for uterine suction
- Reverse Løvset maneuver for shoulder dystocia
- Vaginal clamping of uterine arteries: a temporary intervention to stop bleeding in postpartum hemorrhage

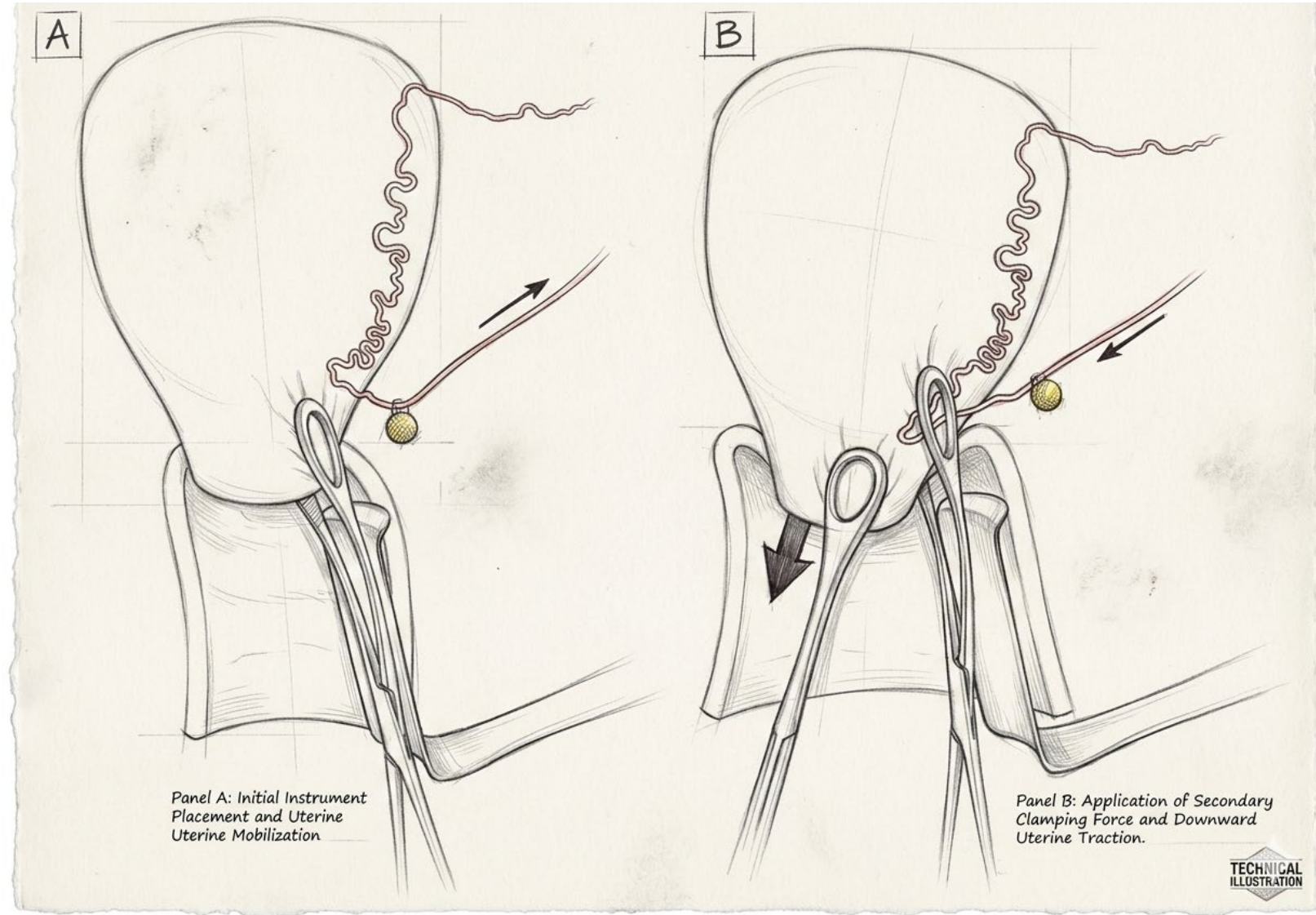
Fun Facts

Title	Learning point
Hemorrhage management using a Foley catheter for uterine suction (Jackson, 2025)	In a pinch, pass a foley through the cervix, hook up to wall suction for intrauterine tamponade to manage PPH. Video: https://www.ajog.org/article/S0002-9378(25)00447-8/abstract
Reverse Løvset maneuver for shoulder dystocia (Grindheim, 2025)	Reverse Løvset similar to Wood Corkscrew (rotate posterior shoulder backward) but differs in grip and force. Video: https://www.ajog.org/article/S0002-9378(25)00472-7/fulltext
Vaginal clamping of uterine arteries: a temporary intervention to stop bleeding in postpartum hemorrhage (Nieto-Calvache, 2025)	Transvaginal uterine artery clamping during PPH to decrease blood loss, reduce DIC, buy time for definite management, avert maternal death. Use ring-forceps to pull AP cervix caudal and contralateral, and a 3rd pair to clamp lateral vaginal fornix, occluding uterine artery. Caudal-lateral traction to uterus pulls uterine artery away from ureter. Give pain meds. Pictures and video: https://www.ajog.org/article/S0002-9378(25)00446-6/abstract

Reverse Løvset maneuver for shoulder dystocia



Vaginal Clamping of Uterine Arteries





2025-2026 ACOG / SMFM Snapshot

Notable 2025-2026 ACOG Publications

Clinical Practice Guidelines:

- October 2025: #10 Intrapartum FHR Monitoring Interpretation and Management (replaces PB 106, PB 116, Practice Advisory O₂ Supplementation in the Setting of Category II or III Fetal Heart Tracings)

 **Box 3: Characteristics ↑ likelihood fetal hypoxia/acidemia**

Practice Advisory:

- January 2026: Screening for Fetal Chromosomal Abnormalities
- September 2025: APAP Use in Pregnancy and Neurodevelopmental Outcomes
- August 2025: Influenza in Pregnancy: Prevention and Treatment

Committee Statement:

- February 2026: Advocating for Safe and Equitable Obstetric and Gynecologic Care for Immigrants
- June 2026: Measurement and Improvement Strategies for Reduction of Severe Maternal Morbidity

- January 2026: Ethical Considerations for Genetic Testing and Counseling in Obstetrics and Gynecology
- November 2025: Access to Contraception
- December 2025: Effective Patient-Physician Communication
- October 2025: Ethical Considerations With Telehealth in Obstetrics and Gynecology

Executive Summary:

- June 2025: Placenta Accreta Spectrum, Present and Future: The Eunice Kennedy Shriver NICHD Workshop Summary

Consensus Statement:

- April 2026: Prevention and Treatment of Maternal Stroke in Pregnancy and Postpartum: A Scientific Statement from the American Heart Association

Notable 2025-2026 ACOG Publications

Clinical Expert Series:

- Feb 2026: Risk Factors for and Repair of Obstetric Anal Sphincter Injuries
- March 2026: Diagnosis and Management of Syphilis in Pregnancy
- April 2026: Pregnancy in Patients with Cystic Fibrosis
- December 2025: Key Management Considerations in Obstetric Anesthesiology
- November 2025: Anatomic Foundations of Surgery on the Female Perineum
- October 2025: Etiology, Natural History, and Management of Recent Advances in Molar Pregnancy
- August 2025: Sepsis and Septic Shock During Pregnancy and Postpartum
- July 2025: Asthma in Pregnancy

Clinical Practice Update:

- April 2026: Breastfeeding in Patients With Human Immunodeficiency Virus
- January 2026: Zuranolone and Brexanolone for the Treatment of Postpartum Depression

- December 2025: Concurrent Sexual Partner Therapy to Prevent Bacterial Vaginosis Recurrence
- October 2025: ACOG Clinical Practice Update: Use of Nonsurgical Hemorrhage-Control Devices for Postpartum Hemorrhage Management (Update of PB 183 PPH)
- September 2025: ACOG Clinical Practice Update: An Update to Clinical Guidance for Delayed Umbilical Cord Clamping After Birth in Preterm Neonates

Procedures & Instruments:

- December 2025: Postcesarean Delivery Use of a Modified FAST Exam

Practice Bulletins, Committee Opinions, Obstetric Care Consensus:

- None

Notable 2025-2026 ACOG Endorsements

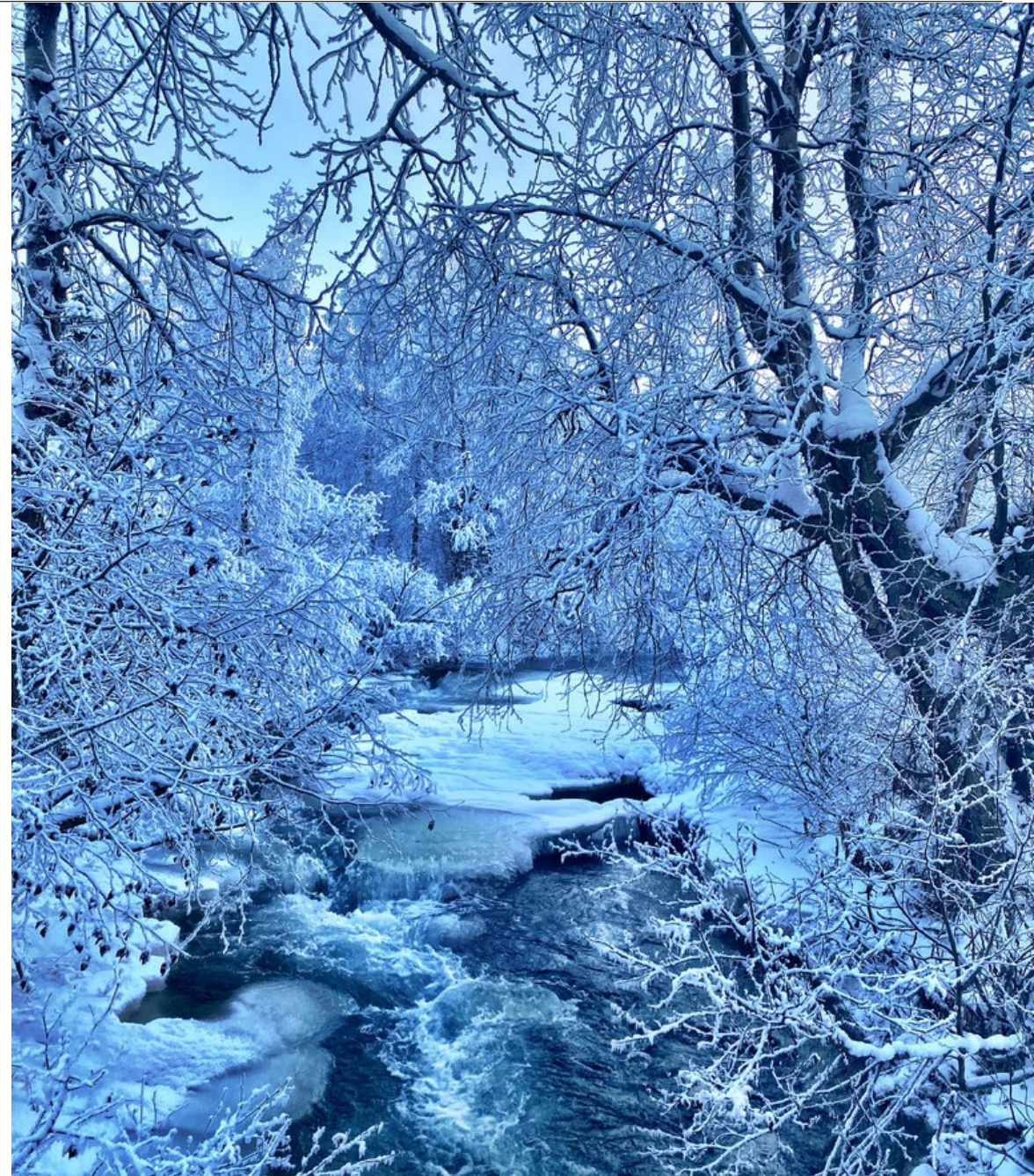
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- Multi-Society Guideline for Coding, Billing, and Clinician Training for Detailed Fetal Anatomy Ultrasound in the First Trimester. J Ultrasound Med 2025. doi: 10.1002/jum.16587. Epub ahead of print.
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2025-2026 SMFM Publications

- Consult Series #73: Diagnosis and Management of Right and Left Heart Failure During Pregnancy and Postpartum
- Consult Series #74: Cell-free DNA Screening for Aneuploidies: Updated Guidance
- Consult Series #75: Evaluation and Management of Non-immune Hydrops Fetalis
- Consult Series #76: Cancer in Pregnancy

Questions? Contact me

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ARS Answers

1. No right answer
2. Definitely B, maybe C





Supplemental Slides

- Additional honorable mentions and “fun facts”

Cerclage for singleton preg. with extremely short cervix (≤ 10 mm), no h/o spontaneous PTB: A multisite observational study

March 2026, The Pregnancy Journal

Facts:

- Clinical equipoise w/ CL < 10mm but no hx PTB

Question:

- Does cerclage confer increased latency in this setting?

Study:

- Observational study of asymptomatic singleton IUP without h/o spontaneous PTB, with an extremely short cervix (TVCL ≤ 10 mm), on PV Progesterone in 2nd trimester

Primary outcome: Latency (time interval from diagnosis to delivery or 37 weeks' gestation, whichever occurred first)

Secondary outcomes: GA at delivery, mode of delivery, neonatal outcomes

Results:

55/87 cerclage (avg CL 5.8mm, GA 21.0, latency 13.4wk)

32/87 no cerclage (avg CL 7.4mm, GA 22.1, latency 11.1wk)

Term delivery occurred 30% more often in cerclage vs none

Patients with CL <10mm without h/o PTB who receive cerclage had longer pregnancy latency than those who did not; high level of uncertainty, additional research needed

A Multicomponent Intervention to Improve Maternal Infection Outcomes

November 2025, NEJM

Facts:

- Sepsis is major cause of maternal death in LIC and MIC, and Inconsistent implementation of EBM recs delays detection and treatment, contributing to preventable deaths.

Question:

- Does implementation of a multipronged bundle aimed at prevention and treatment of sepsis reduce serious infection-related adverse outcomes?

Study: Cluster-randomized trial of multicomponent intervention for Active Prevention and Treatment of Maternal Sepsis (APT-Sepsis). Adherence to WHO hand-hygiene, EBM for infection prevention and management, and early

detection and management of sepsis FAST-M bundle (fluids, antibiotics, source control, transfer, monitoring). Usual care vs dissemination of guidelines in 59 facilities in Uganda and Malawi

Primary outcome: composite of infection-related maternal death, infection-related near-miss event (events in which women survived a life-threatening complication), or severe infection-related illness (deep surgical-site, deep perineal, or body-cavity infection) among women who were pregnant or had recently been pregnant

Results: of 431,394 deliveries, intervention reduced primary outcome by 0.5% (from 1.9% in usual-care to 1.4% in intervention group), Risk Ratio 0.68 (95% CI 0.55 to 0.83)

Implementation of the APT-Sepsis program led to a significantly lower risk of a composite of infection-related maternal death, infection-related near-miss event, or severe infection-related illness than usual care

Not Closing Compared With Closing the Endometrial Layer During Cesarean Delivery: A Systematic Review and Meta-analysis

September 2025, Obstetrics & Gynecology

Facts:

- Subsequent adverse outcomes due to cesarean are known but effective intraoperative strategies to ↓ risk remain unclear
- Peritoneal and single- vs double-layer uterine closures ≠ clinically important in surgical outcomes; closure of the endometrium is inadequately addressed
- Endometrial cells within the myometrium after cesarean delivery is associated with menstrual symptoms and increased inflammation at the site of the uterine scar

Question:

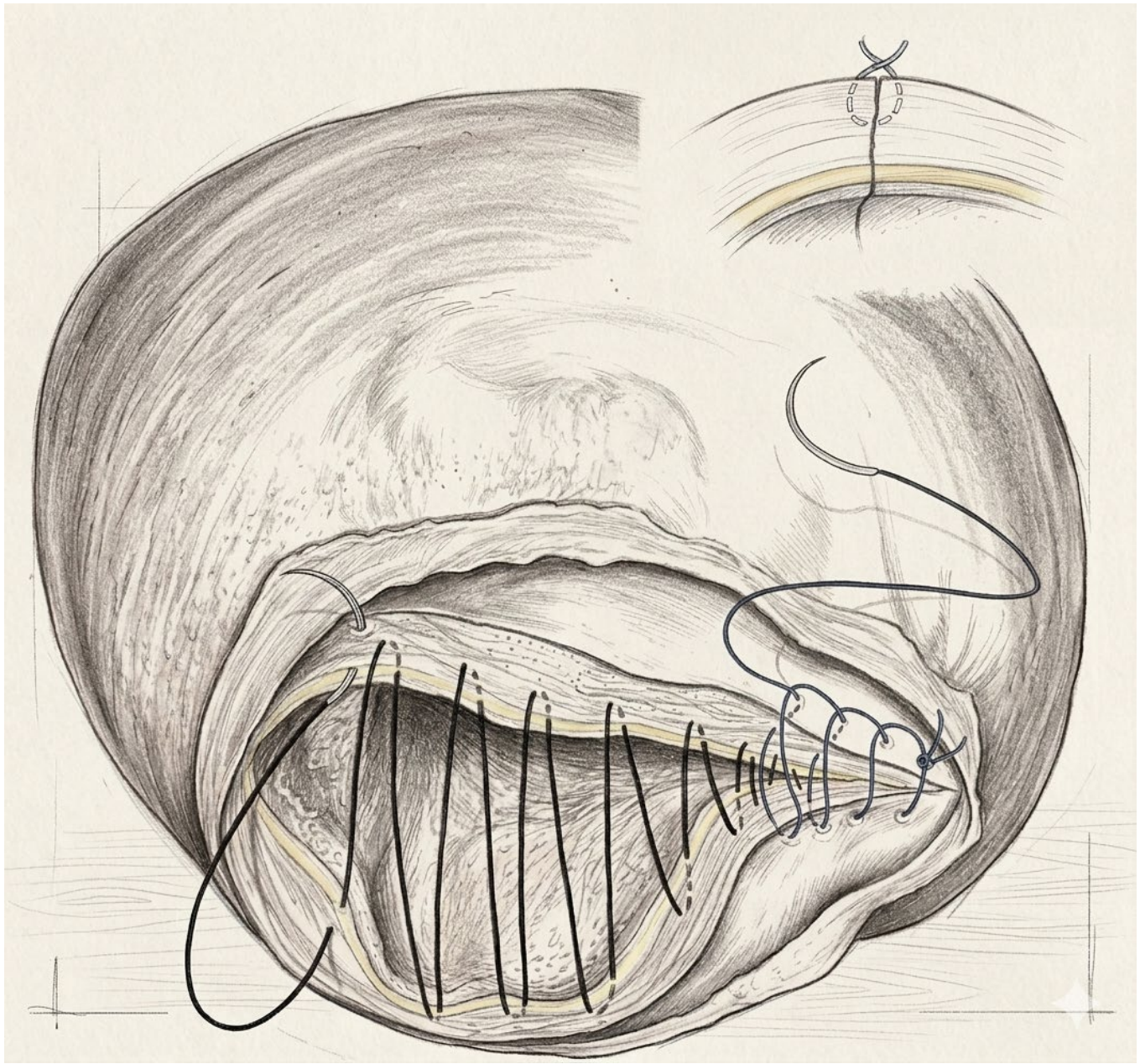
- Is endometrial closure associated with uterine scar defects, menstrual symptoms, or surgical morbidity?

Study: Systematic Review and Meta-Analysis of randomized and quasi-randomized trials

Primary outcome: inter-menstrual bleeding, uterine scar defect, heavy uterine bleeding, dysmenorrhea, pelvic pain, postpartum endometritis, and residual myometrial thickness

Results: 6 studies (4 RCTs) with high to medium risk of bias. Omitting endometrium ↓ intermenstrual bleeding (2 RCTs, RR 0.34, 95% CI 0.15-0.77, high certainty), ↓ heavy uterine bleeding (1 RCT, RR 0.66, 95% CI 0.21-2.16, low certainty), ↓ uterine scar defects (4 RCT, RR 0.53, 95% CI 0.34-0.82, high certainty), but no differences in residual myometrial thickness (0.5mm, 95% CI -0.31 – 1.35mm)

Not suturing the endometrium reduces the risk of intermenstrual bleeding and uterine scar defect after cesarean delivery.



Grouped Diabetes Papers

Title	Conclusion
Gestational and Pregestational Diabetes Screening Changes in Early Pregnancy and Perinatal Outcomes (Greenberg, 2026)	A ↓ in early GDM screening accompanied by ↑ early A1C testing did not influence perinatal outcomes.
Detection and treatment of early gestational diabetes mellitus: a systematic review and meta-analysis of RCTs (García-Patterson, 2025)	Detection and treatment of early GDM do not offer indisputable benefits either in treated women or at the population level.
Evaluating the clinical effectiveness of repeat screening for gestational diabetes mellitus following a diagnosis of large for gestational age and/or polyhydramnios (Lesser, 2026)	Pregnant patients who did not rescreen for GDM following the dx of LGA and/or polyhydramnios in 3 rd tri do not appear to have worse birth outcomes than those who did rescreen. Those dx with GDM after rescreening were not at an ↑ risk for adverse perinatal outcomes. Rescreening all individuals with LGA and/or polyhydramnios may not be warranted.
SMFM Special Statement: Revised updated checklist for antepartum care of pre-GDM (Hameed, 2026)	https://obgyn.onlinelibrary.wiley.com/doi/10.1002/pmf2.70264

Fun Facts

Title	Learning point
Myometrial marking to improve suturing of the uterine incision at cesarean delivery (Shibata, 2025)	Stripe uterus prior to incision to show LUS thinning. Video: https://www.ajog.org/article/S0002-9378(25)00575-7/fulltext
Surgical management of complex cesarean delivery (Fox, 2026)	Series of short videos for surgical management of complicated cases: https://www.ajog.org/article/S0002-9378(25)00225-X/fulltext#supplementary-material
The impacted fetal head at cesarean delivery, incidence, complications and management options, including a new device (van der Krogt, 2026)	Tydeman Tube for dislodging deep impacted fetal head. Pictures: https://www.ajog.org/article/S0002-9378(25)00412-0/fulltext
Maternal fever during labor and the risk of neonatal encephalopathy: duration and magnitude of hyperthermia (Cornet, 2025)	The higher the maternal temp and the longer the duration from fever onset to delivery, the higher the risk of HIE

Answers

1. No right answer
2. Definitely B, maybe C

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Practice Recommendations

Recommendation	SORT
Consider co-treating male partners for bacterial vaginosis	B
Refrain from targeting goal BP < 130/80 in patients with cHTN and DM, but be aware that those with target < 140/90 who happen to achieve < 130/80 may have more favorable peripartum outcomes	B
Consider omitting post-op Cephalexin and Metronidazole for obese patients who receive pre-Cesarean Cefazolin and Azithromycin	B



Thank you



Counseling Approach and Management Strategies for Pregnancy Losses

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Disclosure Statement

It is the policy of the AAFP that all individuals in a position to control CME content disclose any relationships with ineligible companies upon nomination/invitation of participation. Disclosure documents are reviewed for potential relevant financial relationships. If relevant financial relationships are identified, mitigation strategies are agreed to prior to confirmation of participation. Only those participants who had no relevant financial relationships or who agreed to an identified mitigation process prior to their participation were involved in this CME activity.

All individuals in a position to control content for this session have indicated they have no relevant financial relationships to disclose.

Learning Objectives

1. Discuss standards of care, approach to diagnosis and treatment using key publications in the obstetric literature clearly and accurately with patient and consulting physicians.
2. Counsel patients confidently on a range of diagnostic workup options by applying evidence-based guidance.

Lecture Outline

- Definitions
- Delivering the News
- Management of Pregnancy Loss
- Post Loss Care

ARS Question



Question 1

How many pregnancy losses have you managed from start to finish?

- A. 0
- B. 1-10
- C. 10-20
- D. >20



Definitions

Early Pregnancy Loss (Miscarriage)

- Nonviable intrauterine pregnancy
- < 20 weeks

Early Pregnancy Loss (Miscarriage)

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Stillbirth

- Loss of fetal cardiac activity
- > 20 weeks / 350 grams

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Ectopic

- Implantation outside the endometrial cavity
- Variable locations

Early Pregnancy Loss (Miscarriage)

- Nonviable intrauterine pregnancy
- < 20 weeks

Stillbirth

- Loss of fetal cardiac activity
- > 20 weeks / 350 grams

Ectopic

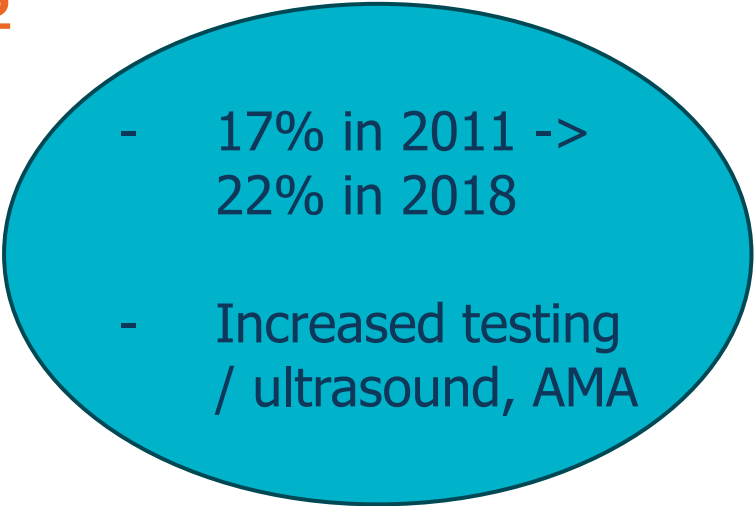
- Implantation outside the endometrial cavity
- Variable locations

Molar

- Aberrant fertilization
- Unregulated trophoblastic proliferation
- +/- co – fetus

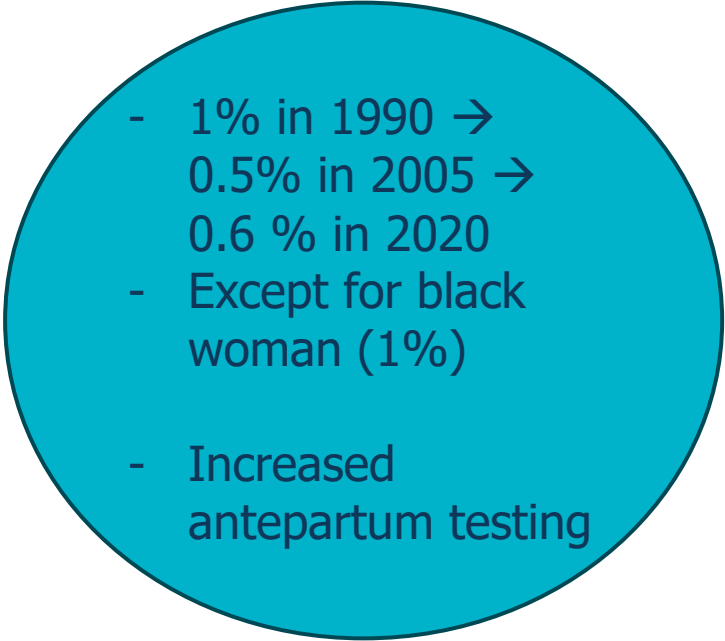
Incidence of Pregnancy Loss

- Increasing rates of early pregnancy loss
- Plateau rates of stillbirth
- Increased rates of ectopic pregnancy

- 
- 17% in 2011 -> 22% in 2018
 - Increased testing / ultrasound, AMA

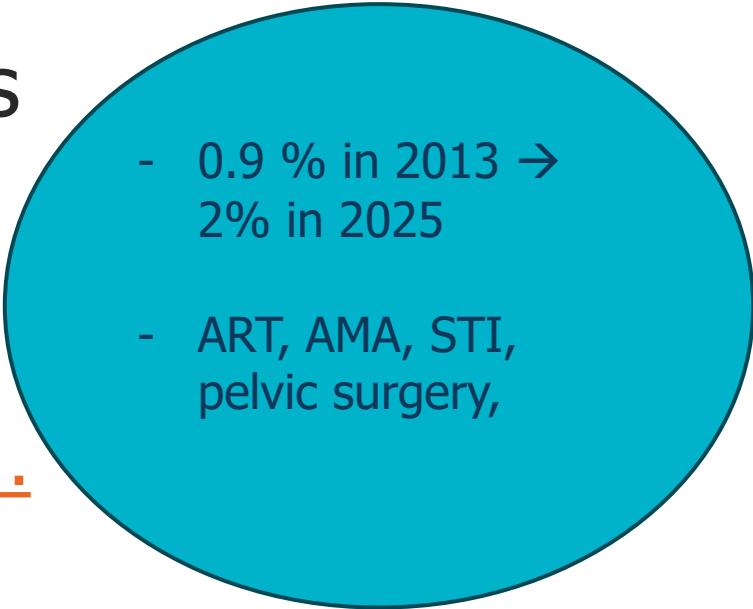
Incidence of Pregnancy Loss

- Increasing rates of early pregnancy loss
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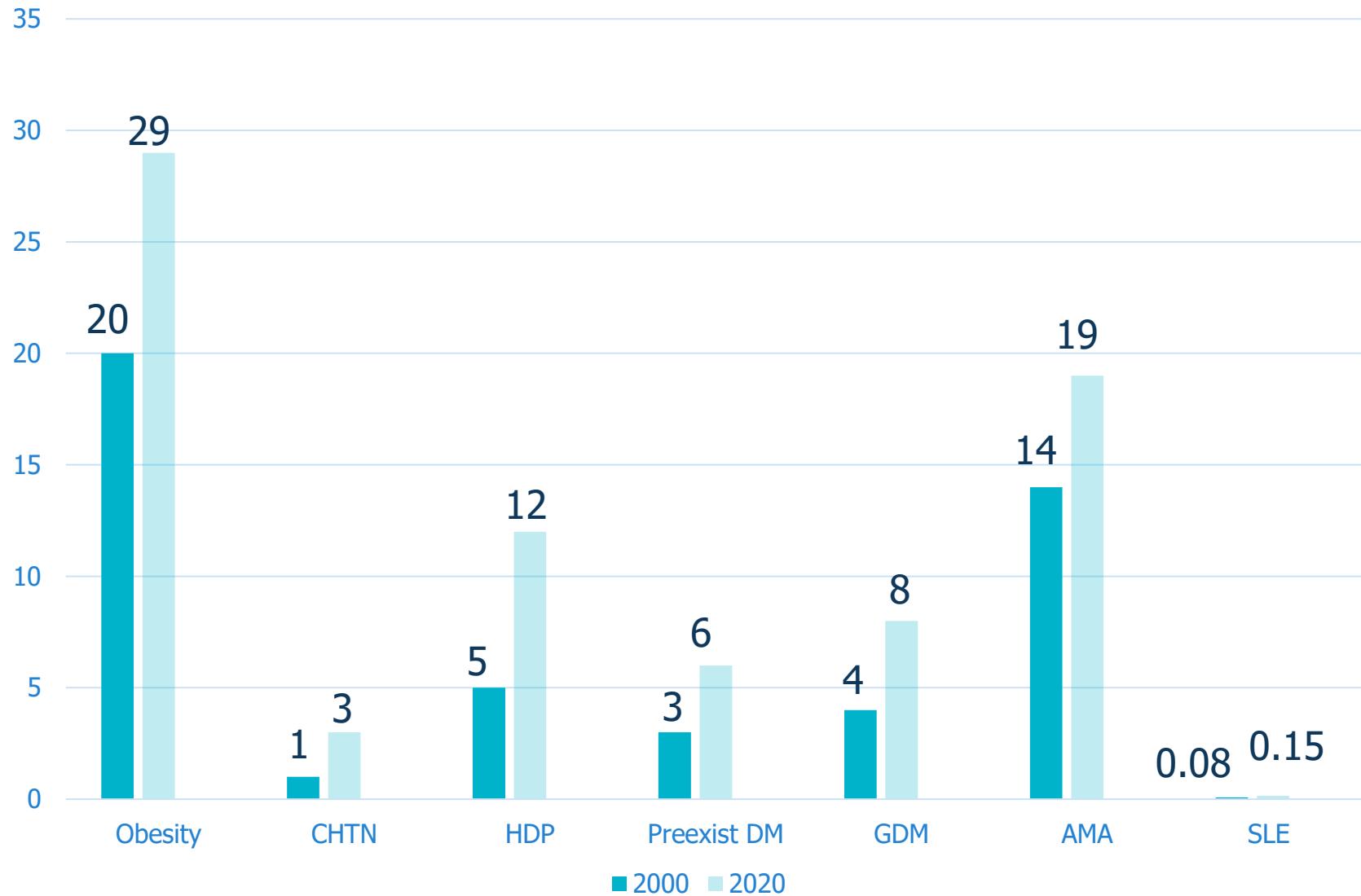
- 
- 1% in 1990 → 0.5% in 2005 → 0.6 % in 2020
 - Except for black woman (1%)
 - Increased antepartum testing

Incidence of Pregnancy Loss

- Increasing rates of early pregnancy loss
- Plateau rates of stillbirth
- Increasing rates of ectopic pregnancy ... maybe?

- 
- 0.9 % in 2013 → 2% in 2025
 - ART, AMA, STI, pelvic surgery,

Rise in Comorbidities



Risk Factors

Condition / Estimate Rate of Stillbirth		All pregnancies 6.4/1000	
Systemic lupus erythematosus	40-150/1000	Decreased fetal movement	13/1000
Diabetes		Obesity	
A1 – diet	6-10/1000	30+	5.3/1000
A2 – insulin	6-35/1000	35+	6.2/1000
		40+	7.7/1000
Hypertensive disorders		Fetal growth restriction	2.6-5.8/1000
Chronic hypertension	6-25/1000	Elevated end diastolic flow	15-25/1000
Preeclampsia – without severe features	9-51/1000	Absent end diastolic flow	68/1000
-- with severe features	12-29/1000	Reverse end diastolic flow	190/1000
Fetal growth restriction	10-47/1000	Maternal age less than 20	7-13/1000
Multiple gestation		Advanced maternal age	
Twins	12/1000	35-39 years	11-14/1000
Triplets	34/1000	40+ years	11-21/1000
Oligohydramnios	14/1000	Black maternal race	12-14/1000
Late term pregnancy (41 weeks+)	14-40/1000	Assisted reproduction	12/1000
Prior stillbirth	9-20/1000	Smoking greater than 10 / day	10-15/1000
Intrahepatic cholestasis of pregnancy	12-30/1000	Maternal renal disease	12-200/1000

Risk Factors

Condition / Estimate Rate of Stillbirth		All pregnancies 6.4/1000	
Systemic lupus erythematosus	40-150/1000	Decreased fetal movement	13/1000
Diabetes		Obesity	
A1 – diet	6-10/1000	30+	5.3/1000
A2 – insulin	6-35/1000	35+	6.2/1000
		40+	7.7/1000
Hypertensive disorders		Fetal growth restriction	2.6-5.8/1000
Chronic hypertension	6-25/1000	Elevated end diastolic flow	15-25/1000
Preeclampsia – without severe features	9-51/1000	Absent end diastolic flow	68/1000
-- with severe features	12-29/1000	Reverse end diastolic flow	190/1000
Fetal growth restriction	10-47/1000	Maternal age less than 20	7-13/1000
Multiple gestation		Advanced maternal age	
Twins	12/1000	35-39 years	11-14/1000
Triplets	34/1000	40+ years	11-21/1000
Oligohydramnios	14/1000	Black maternal race	12-14/1000
Late term pregnancy (41 weeks+)	14-40/1000	Assisted reproduction	12/1000
Prior stillbirth	9-20/1000	Smoking greater than 10 / day	10-15/1000
Intrahepatic cholestasis of pregnancy	12-30/1000	Maternal renal disease	12-200/1000

Risk Factors

Condition / Estimate Rate of Stillbirth		All pregnancies	6.4/1000
Systemic lupus erythematosus	40-150/1000	Decreased fetal movement	13/1000
Diabetes		Obesity	
A1 – diet	6-10/1000	30+	5.3/1000
A2 – insulin	6-35/1000	35+	6.2/1000
		40+	7.7/1000
Hypertensive disorders		Fetal growth restriction	2.6-5.8/1000
Chronic hypertension	6-25/1000	Elevated end diastolic flow	15-25/1000
Preeclampsia – without severe features	9-51/1000	Absent end diastolic flow	68/1000
-- with severe features	12-29/1000	Reverse end diastolic flow	190/1000
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Prior stillbirth	9-20/1000	Smoking greater than 10 / day	10-15/1000
Intrahepatic cholestasis of pregnancy	12-30/1000	Maternal renal disease	12-200/1000

Additional Risk Factors/ Etiologies...

- Antiphospholipid antibody syndrome
 - Stillbirth part of clinical diagnostic criteria
 - Consider evaluation if FGR, severe preeclampsia, other placental insufficiency
- Placental abruption
 - 5-10%
 - Substance use – cocaine, tobacco
 - Trauma
- Genetic abnormalities
 - 6-13%, >20% if anatomic abnormalities / FGR
 - T21, Monosomy X, T18, T13

Additional Risk Factors/ Etiologies...

- Infections
 - 10-20%, greater in preterm
 - Bacterial - GBS, ecoli, listeria, syphilis
 - Viral - CMV, parvo, Zika
- Umbilical cord events
 - ~10% stillbirths – vasa previa, cord entrapment, occlusion, prolapse, thrombi
 - Single or multiple nuchal cords not associated

Making the Diagnosis

- Early pregnancy loss

Suspicious but not diagnostic	Definitively diagnostic
CRL 7mm with no FCA	CRL $\geq$ 7mm with no cardiac activity
MSD 16-24 mm with no embryo	MSD $\geq$ 25 mm with no embryo
Absence of embryo >6 weeks after LMP	Absent FCA in prior embryo with FCA
Empty amnion	Absent embryo with FCA $\geq$ 2 weeks after scan showing GS without YS
Enlarged yolk sac > 7mm	Absent embryo with FCA $\geq$ 11 days after scan showing GS with YS
Small GS relative to embryo (5mm difference btw MSD and CRL)	
Slow fetal heart rate – 100 bpm at 5-7 weeks	

Making the Diagnosis

- Stillbirth
 - Ultrasound evidence of no fetal heart activity with Doppler (M-mode, pulsed wave, color flow)
 - Utilize two provider evaluation

Making the Diagnosis

- Stillbirth
 - Ultrasound evidence of no fetal heart activity with Doppler (M-mode, pulsed wave, color flow)
 - Utilize two provider evaluation
- Ectopic
 - Ultrasound evidence of gestational sac outside of endometrial cavity

**Note about the discriminatory zone:
2500 – 2500 mIU/mL... now consider no cutoff**



Delivering the News

ARS Question



Question 2

A 32-week pregnant patient presents with decreased fetal movement. Ultrasound confirms no fetal cardiac activity, confirmed by sonographer and yourself. Which of the following is the best initial response?

- A. There is absent fetal cardiac activity on the ultrasound.
- B. Unfortunately, this pregnancy is no longer viable.
- C. I am so sorry, I have very difficult news. Your baby has died.
- D. I'm sorry, I cannot find the heartbeat.

Profound Multidimensional Impact

Patients with miscarriage and ectopic pregnancy

- 1 month -- 29% PTSD, 24% moderate/severe anxiety, 11% for moderate/severe depression
- 9 months – 18% PTSD, 17% anxiety, 6% depression
- 2.14 fold increase risk depressive disorders, 1.75 fold increase in anxiety disorders

Profound Multidimensional Impact

Patients with miscarriage and ectopic pregnancy

- 1 month -- 29% PTSD, 24% moderate/severe anxiety, 11% for moderate/severe depression
- 9 months – 18% PTSD, 17% anxiety, 6% depression
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Patients after stillbirth

- PTSD at 15 days – 44%, 1 month – 34%, 3 months – 9%
- Depression – 60-70% at 1 year, 50% late 4+ years
- Anxiety – 1.75 fold increase

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Partners / fathers

- Depression – 18-40%, PTSD 7-46%, anxiety 22-30%
- Higher levels of suppression/ avoidance, employment difficulties, financial debt, substance use

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HIGH RISK OF INCONGRUENT GRIEF

Profound Multidimensional Impact

Economic costs

Cost category	Stillbirth	Early Pregnancy Loss
Direct hospital cost (per event)	\$7495	\$455-2242
Out of pocket cost to parents	\$197-20,000	Not well quantified
Additional cost of subsequent pregnancy	\$558-1735	--
Workplace absence (per event)	\$2476 - 3829	\$431 - 521
Funeral / burial cost	\$469-11,719	Not applicable
Litigation (average indemnity)	\$423,250 per paid OB claim	--

Cultural/Ethical/Legal Considerations

- Believe about when life begins
- Spiritual or religious frameworks
 - Shapes grieving rituals, burial practices, beliefs about afterlife
- Cultural perceptions of blame / responsibility
 - How understand cause, whether they feel guilt / shame / stigma
- Expectations of grief
 - Emotional expression normal vary widely
- Community involvement
 - Family / community participation in decision making
 - Complications in navigating consent
- Expectation of healthcare
 - Views on autopsy, testing, pathology examinations
 - Communication styles

Delivering the News

- Be direct and clear
- Avoid euphemisms
- Active listening
- Validate feelings
- Include family if desired

SPIKES PROTOCOL	
	Setting
	Perception
	Invitation
	Knowledge
	Emotion
	Strategy and Summary

Initial Counseling

- Deliver diagnosis
- Review urgency of intervention
 - Usually, intervention is not medically urgent
- Addressing immediate concerns
 - Pain, bleeding, future fertility
- Address safety, social support, culture/religious needs
- **SHARED DECISION MAKING**



Management of Pregnancy Loss

ARS Question



Question 3

29-year-old G2P1 at 35 weeks is diagnosed with stillbirth. She is medically stable without evidence of hemorrhage, infection, or preeclampsia. After receiving the diagnosis, she asks if she needs to delivery right away. What is the most appropriate response?

- A. Yes, delivery should occur immediately because waiting increases maternal risk.
- B. Cesarean delivery is an option to reduce maternal trauma.
- C. Expectant management is preferred in most stillbirths.
- D. Electing to wait for support persons and thoughtful delivery planning is appropriate in stable patients.

Approach to Early Pregnancy Loss

- Discussion of options
 - Type of loss
 - Gestational age
- Indications/ contraindications
 - Bleeding / instability, prior cesarean deliveries
 - Urgency of intervention
- Location dependent
 - Provider experience, specialist availability, blood bank

Early Pregnancy Loss Options

Gestational Age	Management Options
<10 weeks	Expectant - watchful waiting Medical – Misoprostol +/- Mifepristone Surgical – Manual vacuum aspiration, D&C
10-14 weeks	Medical – Misoprostol +/- Mifepristone Surgical – D&C
14-20 weeks	Medical – Misoprostol +/- Mifepristone +/- Oxytocin Surgical – D&E

Gestational Age	Management Options	Medications / Procedures	Typical Success Rate	Considerations, Risks
<10 weeks	Expectant	Watchful waiting	80-90%	Unpredictable, retained tissue
	Medical	Misoprostol 800 ug vaginally or buccal X 2 doses	85- 95%	Pain, bleeding, follow up to completion
	Surgical	Manual aspiration	>98%	Clinic location, uterine/cervical injury, infection
10-14 weeks	Medical	Misoprostol 400-800 ug vaginal/buccal q 3-6 hrs	85-95%	Heavier bleeding, retained tissue
	Surgical (D&C)	Suction curettage	98%	Infection, injury
14-20 weeks	Medical induction	Mife 200mg -> Miso 400 ug q 3hrs max 5 doses	85-95%	Inpatient, pain control, rare uterine rupture with prior CD
	Surgical (D&E)		>95%	Shorter time, anesthesia and skill required, cervical prep needed

Early Pregnancy Loss Options

- What about history of cesarean delivery?
 - <24 weeks + prior x2
 - Misoprostol 400ug vaginal q 6 hrs = 91% success rate
 - 24-28 weeks + prior x2
 - suggested lower dosing 200 ug – data incomplete
 - >28 weeks + only prior x1
 - Per OB protocols – Foley ripening recommended
- History of classical or multiple CD
 - Individualize and shared decision making!
 - Consider experience and resources available

Ectopic Management Options

Management Option	Eligibility Criteria	Success Rate	Risks
Expectant management	Small unruptured ectopic Hemodynamically stable Declining hCG levels Minimal / no symptoms	47-82%	Rupture, slow resolution
Methotrexate	Stable, unruptured ectopic hCG <5000 mIU/mL No fetal cardiac activity Allergy, cannot follow up, breastfeeding Renal or hepatic dysfxn, pulm disease, blood dyscrasias	70-95%	Abd pain, liver toxicity GI upset Requires close monitoring / labs / hCG til resolution Avoid NSAIDs, folic acid
Diagnostic laparoscopy - Salpingostomy - Salpingectomy	Not a candidate for expectant or medical management	95-100%	Follow hCG / path Loss of tube
Emergent laparotomy	Hemodynamic instability Large hemoperitoneum Cannot tolerate laparoscopy	100%	Surgical risks Transfusion

Approach to Stillbirth

- Review any important medical indications / contraindications
 - Prior cesarean deliveries, bleeding / instability
 - Timing
- Evaluate what experience is important to the patient/ family
 - Expedited delivery vs holding child
- Discuss memory items available if desired
 - Photos, footprints
- Evaluate what resources are available
 - L&D availability
- Discuss cost

Maternal Evaluation

- Full personal and family history
 - Prior VTE, comorbidities, medications, nicotine/substance/alcohol use
 - Prior pregnancy outcomes
- Genetics
 - Review of antenatal testing, hereditary conditions, consanguinity, prior loss history
- Maternal-fetal bleeding
 - Kleinhauer Betke testing
- Infections
 - Syphilis, ParvoB19
 - TORCH panels not recommended
- Circumstances
 - Trauma, labor, ultrasound abnormalities, current pregnancy complications

Fetal Evaluation

- Ultrasound
 - Confirmation of loss, evaluation of anatomy, EFW
- Amniocentesis
 - Infection, genetics – best yield if before delivery
- Autopsy
 - If declines, external evaluation by trained perinatal pathologist
 - Alt: photographs, X rays, ultrasound, MRI, tissue sampling
- Burial vs cremation
 - Culturally varies
 - State by state variation in fetal disposition laws: when fetal death report is mandated and thus burial is mandatory, ex: 20 weeks, >350 grams

Placental Evaluation

- Pathology evaluation
- Infection testing
 - Viral or bacterial – more common in preterm births (19 vs 2%)
- Culture

Physical Inspection of Fetus and Placenta

- Weigh fetus, measure head circumference, measure length of fetus
- Weigh placenta
- Photographs: frontal and profile, all extremities, any abnormalities
- Documentation of all findings – normal and abnormalities

Obtain consent for cytogenetic specimen collection

- Obtain cytogenetic specimens with sterile technique and instruments (amnio)
- Alternative specimens:
 - Preferred: **Amniotic fluid at time of diagnosis of demise**
 - **Placental block 1x1 cm from below cord insertion**
 - **Umbilical cord segment measuring 1.5 cm in length**
 - Fetal tissue specimen – **costochondral joint or patella**
- Avoid formalin – place specimens in Lactated Ringers solution at room temperature



Obtain consent for performance of fetal autopsy

- | | |
|---|--|
| <ul style="list-style-type: none"> - Fetal autopsy - Placental pathology - Whole body Xray | <ul style="list-style-type: none"> - If declines consent: - External evaluation by trained perinatal pathologist - Imaging: photos, Xray, MRU, Ultrasound - Sampling of blood / skin |
|---|--|

Yield of Evaluation of Stillbirth

	ACOG recommendation?	Diagnostic yield
Syphilis serology	yes	0.2%
Parvo B19 IgG / IgM	Selected cases	0.4%
Placental pathology	Yes – most useful single test	64.6%
Placental fetal/ cultures	Yes – part of placental exam	above
Fetal autopsy	Yes – second most useful test	42.4%
Chromosomal microarray	Yes	11.9% (20+% with abnl)
Antiphospholipid antibodies	Yes (history clots)	11.1%
Kleinhauer- Betke	Yes	6.4%
HbA1c	Selected cases	1.6%
TORCH panel	No – not recommended	Very low

Stillbirth Management Regimens

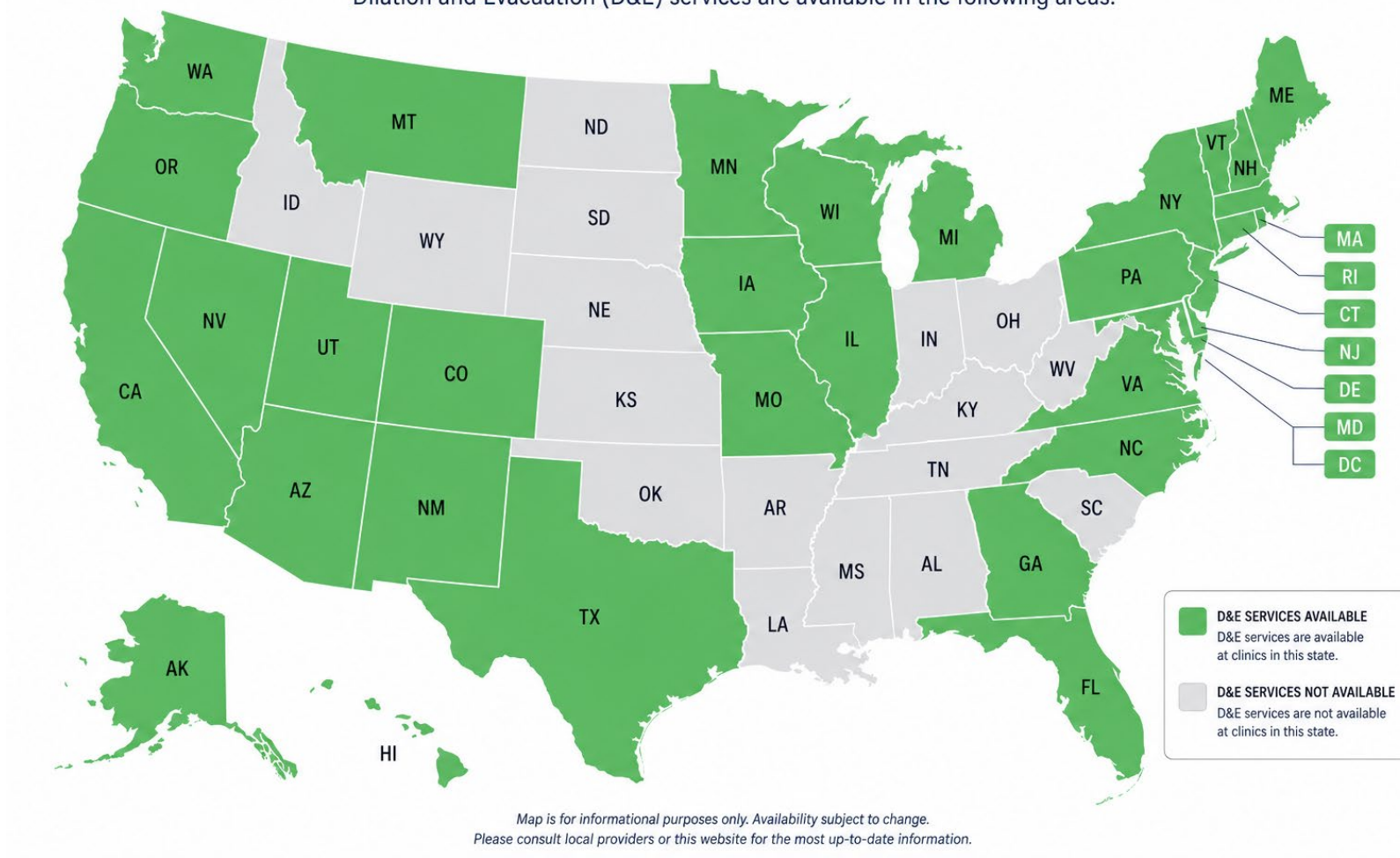
Gestational Age	Management Options
20-24 weeks	Medical – Misoprostol +/- Oxytocin Surgical – D&E
24- 28 weeks	Medical – Misoprostol +/- Oxytocin
>28 weeks	Medical - Induction per OB protocols

Goal to avoid cesarean delivery for stillbirth alone*

*shared decision making

D&E SERVICES AVAILABILITY IN THE U.S.

Dilation and Evacuation (D&E) services are available in the following areas.



Stillbirth Medical Management Regimens

Regimen	Success < 24hs	Failure 48 hrs	Risks
Misoprostol alone	80-95%	<10%	Fevers, chills, GI upset Uterine tachysystole <5% Rare rupture <0.3% Incomplete expulsion
Misoprostol + oxytocin	85-95%	~5-10%	Hyperstimulation Rare rupture Excess bleeding
Oxytocin alone	50-70%	20-50%	Prolonged labor Fluid overload Tachysystole Infection risk

Medical management conducted inpatient, risk of failure, bleeding and infection

Intrapartum Considerations

- Clarify experience patient desires
 - Clarify support /family
 - Clarify memory making – photos, footprints, lock of hair
- Use term “baby” rather than fetus
- Pain management
 - Nothing
 - Nonpharmacologic – water therapy, TENS, massage, music
 - Nitrous oxide
 - Systemic opioids - PO / IV medications, PCA
 - Neuraxial anesthesia - epidural
- Utilize perinatal loss team
 - L&D nursing, NICU teams, chaplain services / other religious specific teams

ARS Question



Question 4

How much does it cost for a patient with a stillbirth without insurance to have a vaginal delivery without complications and ACOG recommended testing/care?

- A. \$1,000
- B. \$2,500
- C. \$5,000
- D. \$10,000

	Cash Pay	Medicaid	Private Insurance
Genetic counseling	\$ 200-400		Co-pay / deductible
Amniocentesis	\$ 500- 1500	Varies by state	
Genetics - CMA	\$ 1500-2500	Varies by state	
- Karyotype	\$ 500-1000		
- FISH	\$ 300-700		
- NIPT	\$ 500-750		
Infectious test	\$ 200-600		
Lab tests	\$ 250-600		
D&C	\$ 1300-10000	100%	
D&E	\$ 1300-10000	100%	
Induction	\$ 2000-30000*	100%	
Fetal autopsy	\$ 1000-3000		
Placental pathology	\$ 300-800		
Placental cultures	\$ 50-200		
Postpartum care	\$150-600	Covered for 60 days	

* Variable by vaginal vs cesarean, epidural, length of stay, complications...

	Cash Pay	Medicaid	Private Insurance
Genetic counseling	\$ 200-400		Co-pay / deductible
Amniocentesis	\$ 500- 1500	Varies by state	
Genetics - CMA	\$ 1500-2500	Varies by state	
- Karyotype	\$ 500-1000		
- FISH	\$ 300-700		
- NIPT	\$ 500-750		
Infectious test	\$ 200-600		
Lab tests	\$ 250-600		
D&C	\$ 1300-10000	100%	
D&E	\$ 1300-10000	100%	
Induction	\$ 2000-30000*	100%	
Fetal autopsy	\$ 1000-3000		
Placental pathology	\$ 300-800		
Placental cultures	\$ 50-200		
Postpartum care	\$150-600	Covered for 60 days	

Low end – \$ 5150
High end – \$ 10750

* Variable by vaginal vs cesarean, epidural, length of stay, complications...

Cost Conscious Options? Cultural Options?

- Southcentral Foundation – Anchorage AK
 - Handmade compostable coffins, TSA approved, Alaska Native approved
- Meriter Hospital – Madison WI
 - 3 options for early loss: group burial q October, disposed by hospital, private burial.
- Mary Washington Hospital – Fredericksburg, VA
 - “Garden of Angels” – free burial for any pregnancy loss regardless of GA
- Star Legacy Foundations / The TEARS Foundation
 - National organizations for emotional support and funding for care of remains



Post Loss Care

Immediate post delivery / procedure care

- Pain management
 - Ibuprofen / Tylenol
 - Short term narcotic use
- Antiemetics
- Lactation support
 - 25% did not receive care
 - Medical suppression – cabergoline (not with CHTN, pree, liver disease, psychosis)
 - Supportive bra, cold compresses
 - Milk donation – aid in processing grief
- Rhogam if Rh negative
- Return precautions
- Scheduled follow up prior to discharge
- Connect to bereavement sources

Psychosocial Interventions/Referral

- Know your resources and use early
 - Brief supportive counseling, grief counseling, CBT, perinatal mental health services, support groups, chaplaincy
- Partner and family care
 - Inclusion of partner, sibling support, address interpersonal strain
- When to refer to psychiatry / specialist
 - Suicidality, psychotic symptoms, moderate-severe depression, PTSD with impairment, substance use disorder, pre-existing psych disorders, prolonged grief, outside of provider comfort zone

Psychosocial interventions / referral

- Grief Services/Specialists
- psychologists, social workers, or psychiatrists with advanced training in perinatal mood and anxiety disorders, traumatic birth, and reproductive grief.
- Postpartum Support International (PSI) - maintains a directory of therapists with subspecialties in pregnancy loss, stillbirth, and infertility grief.
- Bereavement or Grief Counselors
- Licensed mental health or pastoral care professionals specializing in loss and bereavement.
- They help parents and families process grief, manage guilt, and find meaning or closure after miscarriage, stillbirth, or neonatal death.
- Share Pregnancy & Infant Loss Support, Return to Zero, HOPE, Star Legacy Foundation:
 - offer group or one-on-one peer support guided by trained facilitators who've experienced loss themselves.

Follow Up Care After Loss

- Review circumstance of loss
 - Contributing factors, test results, pathology
- Additional / follow up testing
 - STIs, diabetes, thrombophilias, thyroid, additional genetic testing, hCG trending
- Timing to try again
 - Emotional readiness is paramount
 - Physical readiness pending circumstances of loss
- Contraception counseling
- Preconception health optimization/ recurrence risk counseling
- Continue evaluation of grief state

Management of Subsequent Pregnancy After Stillbirth

- Evaluation / work up of prior stillbirth
- Health optimization - smoking cessation, weight loss , diabetic screening, acquired thrombophilia testing, emotional support
- Dating ultrasound, genetic screening
- Anatomy ultrasound 18-20 weeks
- Growth restriction screening
- Antepartum testing 32+ weeks or 1-2 weeks earlier than prior stillbirth
- Fetal movement assessment equivocal
- Delivery 37w0d – 38w6d weeks

Practice Recommendations

- Use a structured communication framework, such as the SPIKES protocol, when discussing pregnancy loss to improve patient understanding, support emotional processing, and promote patient-centered decision-making. (Level B)
- Management should be individualized and patient-centered; expectant, medical, and surgical options are all acceptable. (Level A)

Practice Recommendations

- Every stillbirth should undergo a standardized evaluation including fetal autopsy (or alternative postmortem assessment), placental pathology, and genetic testing whenever possible, as these investigations provide the highest diagnostic yield for determining cause of death. (Level A)
- Emotional support, counseling, and follow-up are essential components of care of the entire family. (Level B)

Practice Recommendations

- Women with a history of stillbirth or pregnancy loss should receive individualized preconception counseling and enhanced surveillance in subsequent pregnancies, with management guided by the suspected cause of the prior loss and recurrence risk. (Level B)

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Answers

1. Audience poll, no correct answer
2. C
3. D
4. C



Thank you

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Fewer Cesareans More VBACS

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Disclosure Statement

It is the policy of the AAFP that all individuals in a position to control CME content disclose any relationships with ineligible companies upon nomination/invitation of participation. Disclosure documents are reviewed for potential relevant financial relationships. If relevant financial relationships are identified, mitigation strategies are agreed to prior to confirmation of participation. Only those participants who had no relevant financial relationships or who agreed to an identified mitigation process prior to their participation were involved in this CME activity.

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Learning Objectives

1. Summarize the current US primary cesarean rate, VBAC rate, and related trends.
2. Describe evidence-based approaches to reducing primary cesarean rates.
3. Suggest quality improvement strategies for the safe reduction of primary cesarean births.



Too Many Cesareans

Current US Cesarean Rate

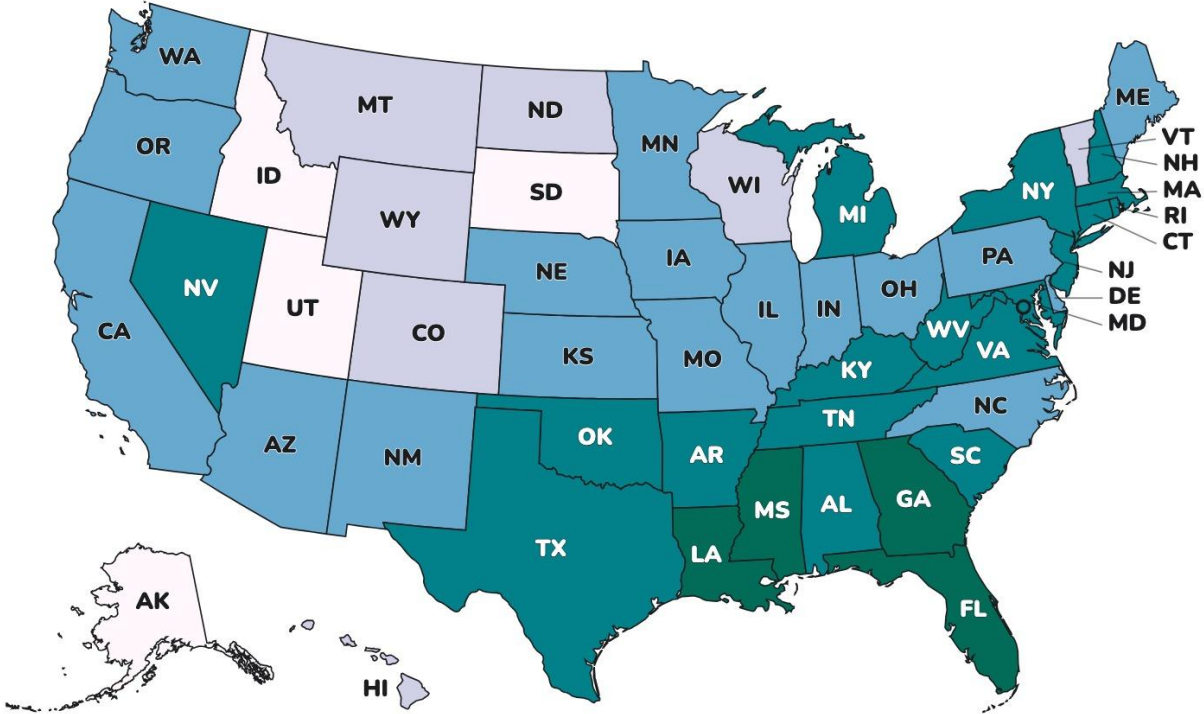
- In 2023, there were 1,161,896 cesareans out of 3,596,017 US births (32.3%)
- 692,747 were primary cesareans (22.8%)



Year

2023

▼



Percent of all live births that were cesarean deliveries

- 21.6 - < 24.98
- 24.98 - < 28.36
- 28.36 - < 31.74
- 31.74 - < 35.12
- 35.12 - < 38.5

US Cesarean Rate Over Time

Years	Cesarean rate (percent)
1990-2000	20.7-22.9
2001-2009	Rose to peak of 32.9 in 2009
2010 to present	31.7-32.8

Status: Getting worse

[Learn more about our data release schedule](#)



Most Recent Data:
26.6 percent (2023)



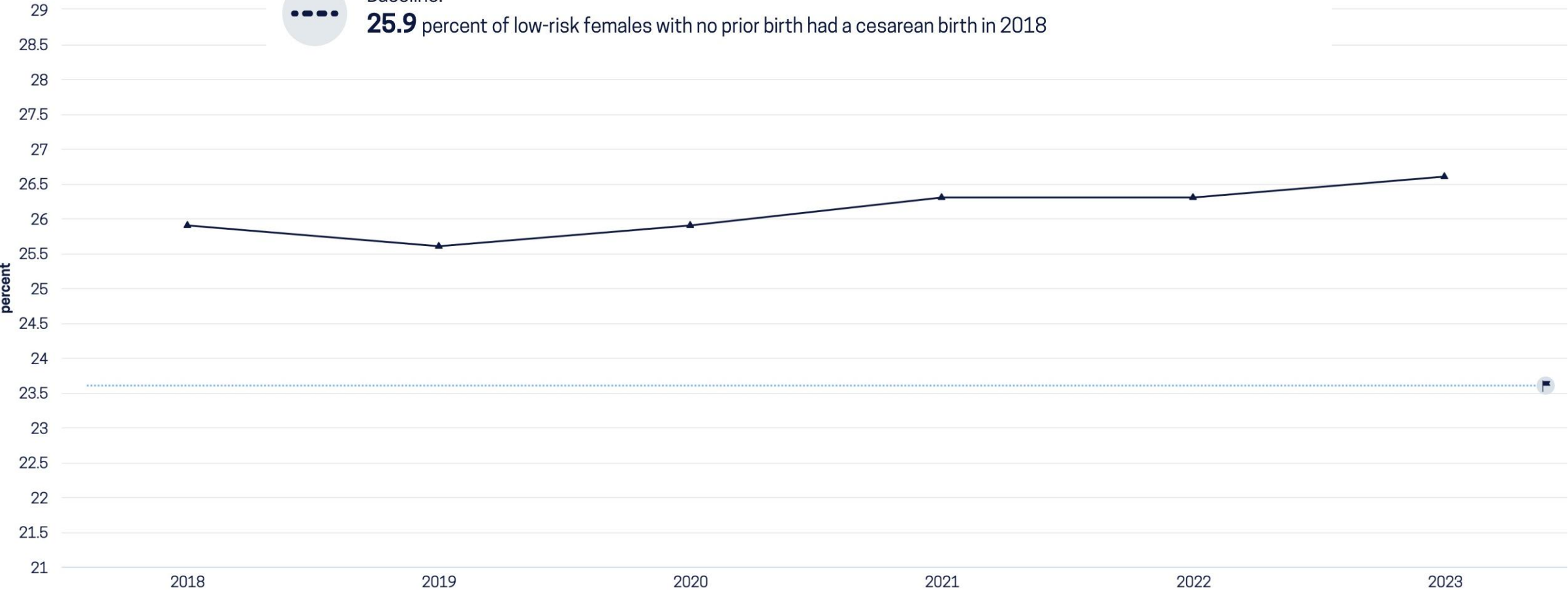
Target:
23.6 percent



Desired Direction:
Decrease desired



Baseline:
25.9 percent of low-risk females with no prior birth had a cesarean birth in 2018



Reasons for Steady High Cesarean Rate

- Decrease in assisted vaginal delivery rate
- Older average maternal age
- Higher average body mass index (BMI)
- Increase in elective cesareans at patient request or to prevent pelvic floor injury
- Increase in cesareans for multiple gestation deliveries
- Increase in use electronic fetal monitoring
- Defensive medicine (to avoid law suits)
- Low VBAC rate



Indications for Primary Cesareans

Indication	Percentage
Failure to progress	35.4
Non-reassuring FHT	27.3
Fetal malpresentation	18.5

Strategies for Decreasing Primary Cesarean

- New evidence-based definitions of failure to progress and arrest of descent
- Limit continuous electronic fetal monitoring to high risk deliveries
- New analysis of fetal heart tracing
 - 3 categories of FHT
 - 5 categories of FHT
 - Clark's algorithms
- Ultrasound everyone at 36 weeks and offer external cephalic version for those whose baby is non-cephalic

Six is the New Four

- 2010 reevaluation of labor curve previously defined by Friedman growth curve of 1950s.
- Friedman based on 1,000 deliveries at single center while Zhang based on 62,415 at multiple US sites
- Friedman active phase starts at 4cm; Zhang at 6cm



ACOG – Failure to Progress

- No cesarean until:
 - Rupture membranes
 - 6cm or more
 - No change of dilation after 4 hours of adequate contractions OR
 - No change of dilation after 6 hours on oxytocin

(ACOG 2024)



Decreased Cesarean Using 6 Instead of 4

- Comparing 3283 deliveries when 4cm used to define active labor with 3068 deliveries when 6cm used to define active labor, cesarean rate decreased (OR 0.71; 95% CI 0.59-0.85; $P < .01$).
- No difference in maternal and neonatal outcomes except that 1 minute APGAR <7 fell from 8.4% to 6.9% ($P = 0.02$)



New definition of second stage of labor

- 3 hours of pushing for nullips
- 2 hours of pushing in multips
- Individualize approach considering
 - Progress
 - Clinical factors which may affect likelihood of vaginal delivery (including parity, delayed pushing, epidural, BMI, OP position, fetal station)
 - Risks and benefits of available interventions
 - Patient preference
- Note that Consortium on Safe Labor Study suggests allowing an extra hour with epidural

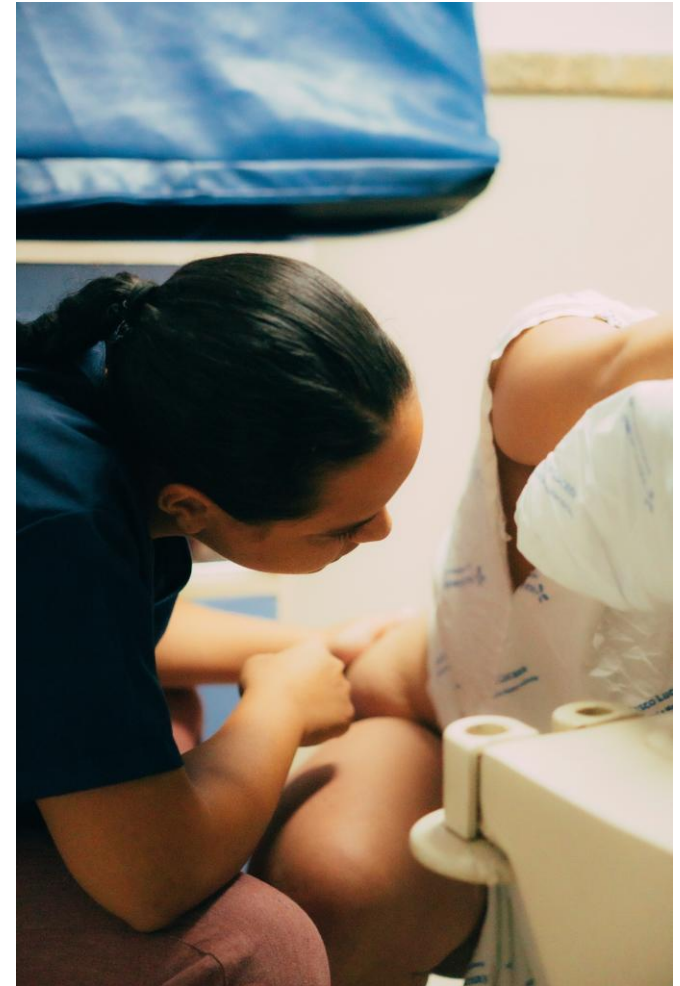


Other Effective Strategies

- Doula
- Amniocentesis for repetitive late decelerations
- Manual rotation
- Internal podalic version for twin B

Doula

- Cochrane review showed birthing people with continuous support in birth were less likely to have a cesarean (average RR 0.75; 95% CI 0.64 to 0.88; 24 trials, 15,347 women; low-quality evidence)
- Subgroup analysis found most effective in reducing cesarean if doula and if epidural not routinely available



Amnioinfusion

- Cochrane Review showed transcervical amnioinfusion for potential or suspected umbilical cord compression was associated with a decreased risk of cesarean (13 trials, 1493 participants; aRR 0.62, 95% CI 0.46 to 0.83)
- Also associated with decreased fetal heart rate decelerations, APGAR <7 at 5min, meconium below vocal cords, postpartum endometritis, and maternal hospital stay greater than 3 days.



Manual rotation

- A respective cohort study of 731 who underwent trial of manual rotation for 2nd stage OP/OT vs 2527 with expectant management found a decreased risk of cesarean with manual rotation (aOR 0.12; 95% CI 0.09-0.16). NNT = 4 (Shaffer 2011)
- 2025 Cochrane Review of RCTs found no change in cesarean rate (RR 1.09; 95% CI 0.76-1.56; 6 RCTs; 1002 participants) (Phipps 2025)



Quality-improvement Strategies to Decrease Primary Cesarean Rate

- Culture of care (administrators; clinicians; champions; patients)
- Practice environment (policies, training, reimbursement strategies)
- Data collection and monitoring (patient, clinician, nursing, unit, hospital, health system)
- Monitoring data by race and ethnicity (address inequities)
- Proactive management and planning for known and unanticipated drivers of cesarean birth (fetal position/US and ECV and fetal heart rate abnormalities)



Alliance for Innovation on Maternal Health (AIM) Safe Reduction of Primary Cesarean Birth Patient Safety Bundle

- Significant reduction in primary cesarean rate in California, Iowa and Maryland (CMQCC 2026; Lagrew 2018; Callaghan-Koru 2021)
- 5 Rs (Readiness, Recognition and Prevention; Response; Reporting and systems learning; Respectful, Equitable and Supportive care)
- Systematic, evidence-based approaches, checklists, drills
- Labor support
- Protocols for labor dystocia management
- Continuous monitoring of data



Repeat Cesarean Multiplier

- **Most common indication for cesarean birth is prior cesarean birth** (ACOG 2025)
- About 1/3 of all cesareans are repeat cesareans (Grantz 2026)
- Once a cesarean always a cesarean
- Provider and patient preference
- Rural and other hospitals unable to meet inhouse requirements during labor after cesarean





Too Few VBACS

ARS Question

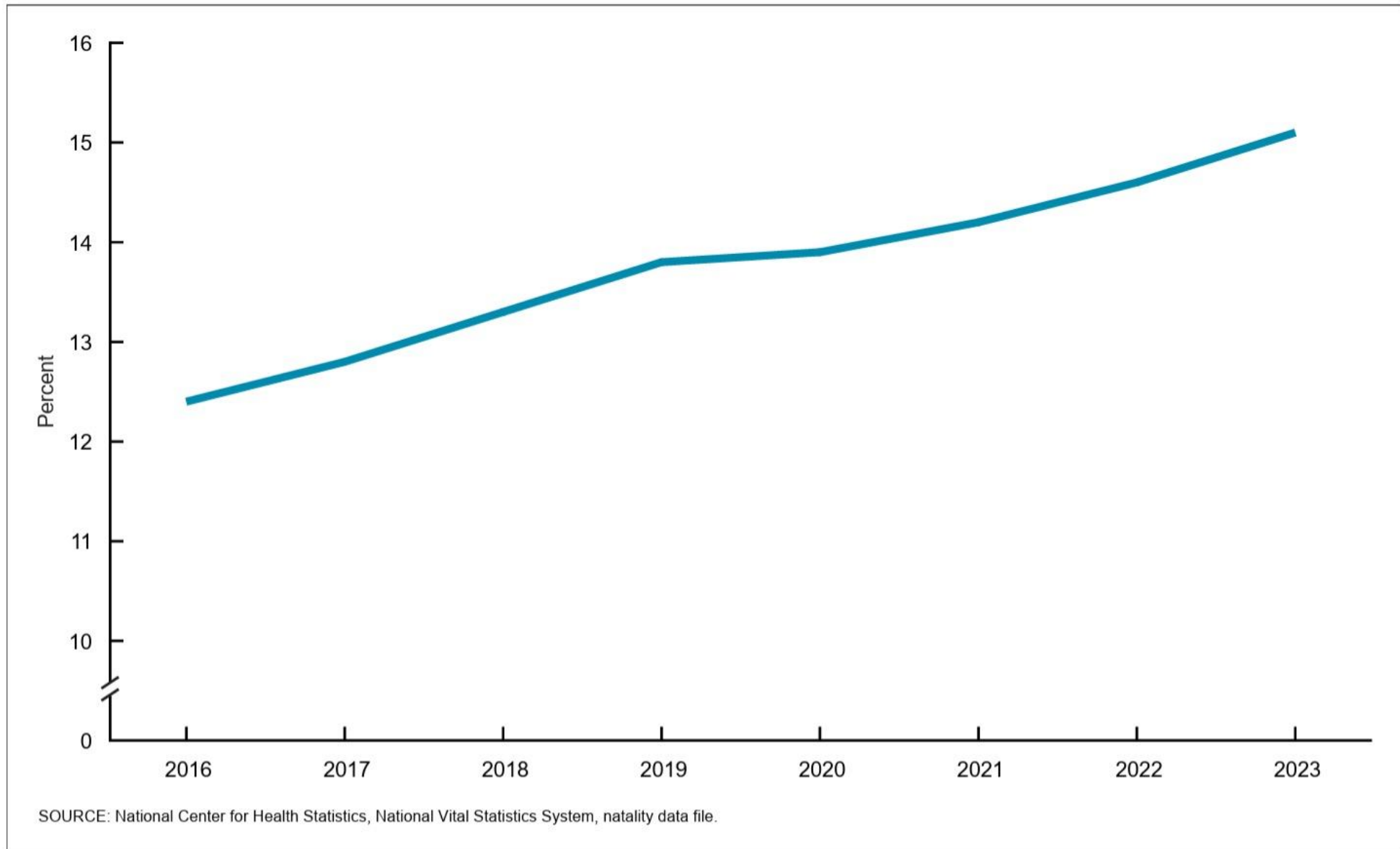


Question 1

What is the percentage gap between the expected VBAC rate if everyone with a cesarean had labor after cesarean and the actual US VBAC rate?

- A. 10 percent
- B. 25 percent
- C. 40 percent
- D. 55 percent

Figure 3. Vaginal birth after cesarean delivery: United States, 2016–2023



ARS Question



Question 2

What is true of VBAC calculators?

- A. VBAC calculators are good at estimating the uterine rupture rate risk for an individual
- B. VBAC calculators are better at predicting VBAC success when used in the second trimester
- C. VBAC calculators are better at predicting who will have a successful VBAC than who will not
- D. A VBAC calculator score of $<50\%$ is a contraindication to labor after cesarean

VBAC Calculator

- More reliable in predicting successful VBAC
- Most accurate when done in labor
- Not shown to improve outcomes
- Race/ethnicity removed in 2022



ARS Question



Question 3

What is the risk of invasive placenta with placenta previa after 4 cesareans?

- A. 3%
- B. 11%
- C. 40%
- D. 61%

Risk of Invasive Placenta

Number of cesareans	Without placenta previa (%)	With placenta previa (%)
1	0.3	3
2	-	11
3	-	40
4	-	61
5 or more	6.74	67

VBAC Counseling – Determine if Candidate

- Exclusion criteria include:
 - prior vertical uterine incision
 - prior transfundal uterine surgery (ex fibroidectomy)
 - prior uterine rupture
 - 3 or more prior cesareans
 - other condition contraindicating vaginal birth

VBAC Counseling – Risks of Labor After Cesarean

- Uterine rupture (approx. 0.7%)
- Increased risk rupture if induction or oxytocin
- Misoprostol contraindicated
- Increased risk if cesarean after unsuccessful trial of labor than elective repeat cesarean pre-labor

VBAC Counseling – Benefits if Successful VBAC

- Lower birthing person risks of bleeding, blood transfusion and associated risks, infection, venous thromboembolism, organ damage (bowel/bladder), death
- Lower fetal risk of scalpel injury on entering uterus, NICU stay for transient tachypnea of newborn
- Quicker recovery
- Decreased risk of complication if future pregnancy (especially decreased risk of invasive placenta, adhesions)

VBAC Counseling – Likelihood Successful VBAC

- 73.6% overall
- 86.6% if previous vaginal delivery
- 63.5% if labor dystocia prior cesarean
- 68.4% if BMI>30

Amish Birthing Center – Lafarge, WI

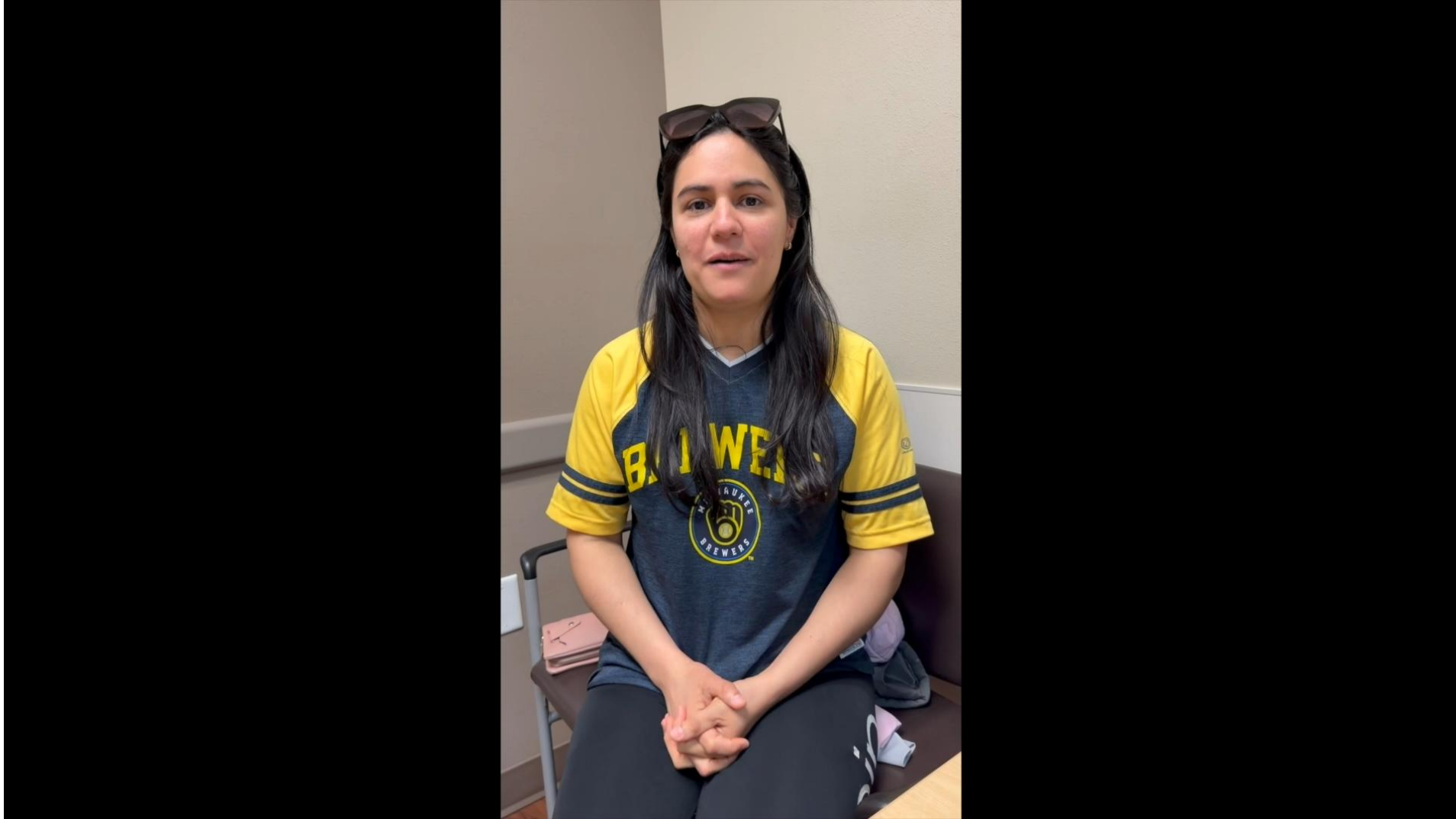
- Review of 17 years of birth records
- 100% attempted labor after prior cesarean
- 95% successful VBAC rate (88 of 92)
- Zero uterine ruptures or maternal deaths
- The neonatal death rate of 5.4 of 1,000 was comparable to that of Wisconsin (4.6 of 1,000) and the United States (4.5 of 1,000)





Two VBAC Testimonials

Review of 2 Cesareans Followed by VBAC



Initial Fear of Labor After Cesarean



Evangeline!



Painful but Marvelous!



Closing Advice...



Cesarean for Cord Prolapse



Worth the Risk!



Easier Recovery!



Doula

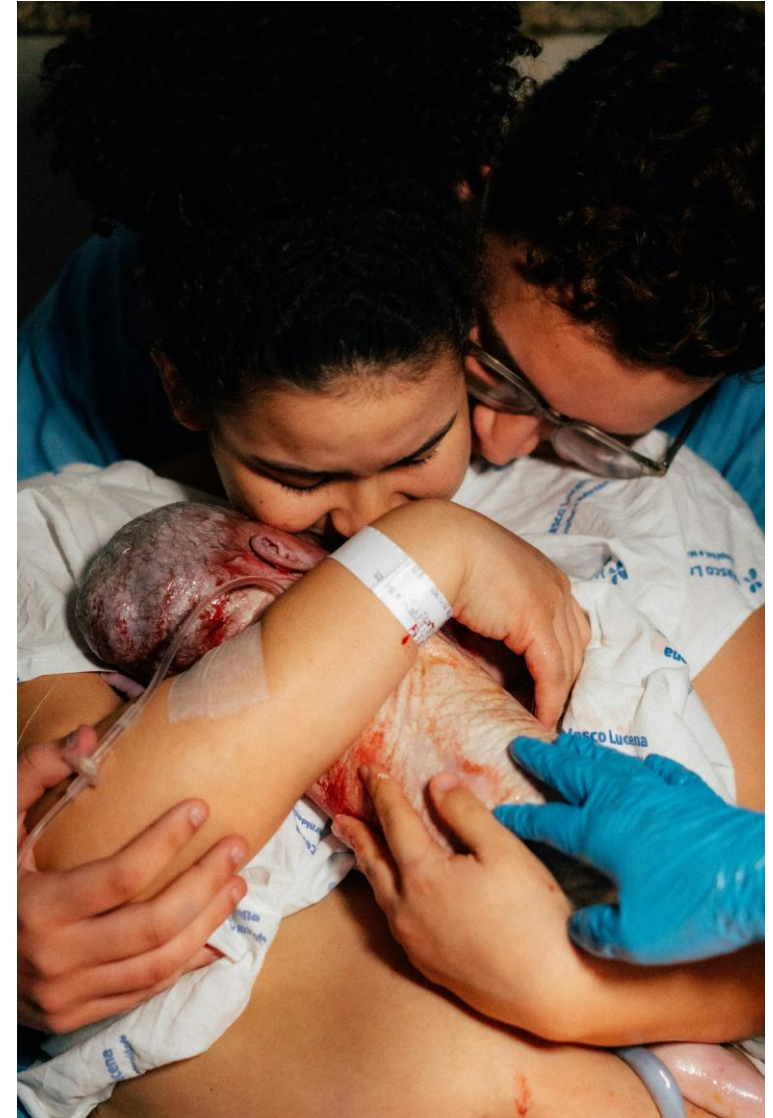




Special Cases

History of 2 Prior Cesareans

- Study comparing 20,175 women with 1 prior cesarean with 3970 with 2 prior cesarean.
- Of those with 1 prior cesarean, 62.1% opted for trial of labor
- Of those with 2 prior cesareans, 27.2% opted for trial of labor
- No difference in VBAC rate (75.5% vs 74.6%; $p = 0.50$)



History of 2 Prior Cesareans

- Higher rate of uterine rupture if h/o 2 cesareans (1.8%(20) vs 0.9%(113); adjusted OR 2.30 (95% CI 1.37-3.85)
- Authors note while relative risk higher, absolute risk still “quite small”
- With h/o 2 cesarean, 16 of the ruptures occurred where labor was induced or augmented.
- With h/o 2 cesareans, 0.5% rate if h/o previous vaginal delivery; 2.4% if no previous vaginal delivery
- No significant difference in bladder injury, transfusion, Fever, or other major operative injury.
- Authors conclusion: VBAC reasonable with h/o 2 cesareans if appropriately counseled



History of 2 Prior Cesareans

- Prospective, multi-center
- 975 with labor after multiple cesareans
- 16,915 with labor after single cesarean
- No difference in uterine rupture rate (0.9% vs 0.7%; $p = 0.37$)
- Increased risk hysterectomy (0.6% vs 0.2%; $p=0.023$)
- Increased risk transfusion (3.2% vs 1.6%; $p<0.001$)
- Authors point out absolute risk of hysterectomy and transfusion is small



History of 2 Prior Cesareans

- Systematic review
- No RCTs; 20 studies
- VBAC success rates similar but lower in people with history 2 cesarean (71.1%; 4064/5666) and history 1 cesarean (76.5%; 38,814/50,685) ($P < 0.001$).
- Slightly higher uterine rupture rate (1.59% vs 0.19% $p = 0.001$)
- No difference in transfusion rate (1.68% vs 1.67% $p = 0.63$)
- No difference in composite maternal morbidity comparing labor after cesarean vs elective repeat cesarean in people with 2 cesareans



History of 2 Prior Cesareans

- ACOG supports labor after 2 prior cesareans



History of 2 Prior Cesareans

- Retrospective single site
- 381 with labor after 2 cesareans; 3,635 with labor after 1 cesarean
- Lower successful VBAC rate (80.8% vs 92.5%; OR 0.35; 95% CI 0.26-0.47)
- Higher rate uterine rupture (0.8% vs 0.2% ;95% CI 1.1-15.9)
- Lower VBAC rate if h/o 2 cesarean with no prior vaginal delivery (45.2% vs 85.3%; 95% CI 0.1-0.3).
- Author key points conclude: Overall outcomes with history 2 cesareans "high chances of success and low risk of uterine rupture"



History Undocumented Uterine Incision

- Retrospective
- No difference in uterine rupture between unknown uterine scar and documented low transverse uterine incision
- Author conclusion: "Although obtaining an old record is useful, its absence probably should not interdict a trial of labor in a patient who desires to attempt vaginal delivery"



History Undocumented Uterine Incision

- Case-control study of 70 patients with prior cesarean and uterine rupture
- Unknown uterine scar NOT associated with increased risk of uterine rupture



History Undocumented Uterine Incision

- 15,519 with labor after 1 cesarean
- Those with an unknown uterine scar was not increased compared to people with a documented low transverse uterine incision (aOR 0.71; 95% CI 0.37-1.37)



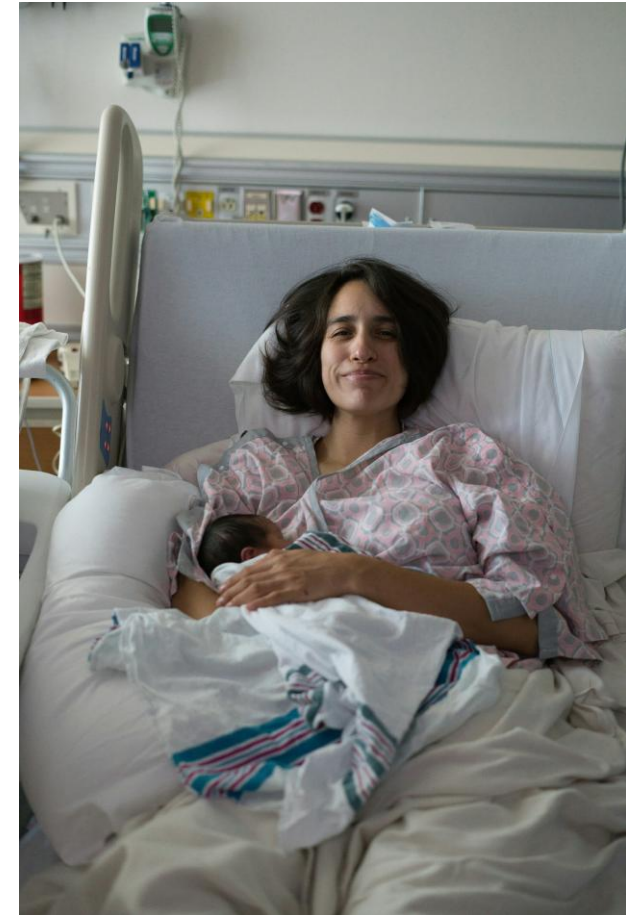
History Undocumented Uterine Incision

- 2024 Expert Review in “Grey Journal”:
- “With established hospital safety protocols that dictate close maternal and fetal monitoring, avoidance of prostaglandins, and careful titration of oxytocin infusion when induction agents are needed, spontaneous and induced trial of labor after cesarean delivery are safe and should be offered to most patients with 1 previous low transverse, low vertical, or unknown uterine incision after appropriate evaluation, counseling, planning, and shared decision-making.”



History Undocumented Uterine Incision

- ACOG supports labor after cesarean in people with undocumented uterine incision
- “unless there is a high clinical suspicion of a previous classical uterine incision such as cesarean delivery performed at an extremely preterm gestational age.”



Answers

1. D
2. C
3. D

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Practice Recommendations

- Don't diagnose failure to progress until 6 or more centimeters with rupture of membrane and no cervical change with 4 hours of adequate contractions or 6 hours on oxytocin (SOR A)
- Recommend amnioinfusion for repetitive deep variable decels (SOR A)
- Support doula assistance in labor (SOR B)
- Use caution with VBAC calculators (SOR B)
- Offer labor after cesarean for people with undocumented uterine scars whose history is not suspicious for vertical uterine incision (SOR B)
- Offer labor after cesarean for people with two low transverse uterine scars (SOR B)

Questions? Contact us.

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🌐 <https://www.uwhealth.org/providers/lee-t-dresang-md>





Thank you



Health Disparities Among Indigenous Birthing Parents

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Disclosure Statement

It is the policy of the AAFP that all individuals in a position to control CME content disclose any relationships with ineligible companies upon nomination/invitation of participation. Disclosure documents are reviewed for potential relevant financial relationships. If relevant financial relationships are identified, mitigation strategies are agreed to prior to confirmation of participation. Only those participants who had no relevant financial relationships or who agreed to an identified mitigation process prior to their participation were involved in this CME activity.

All individuals in a position to control content for this session have indicated they have no relevant financial relationships to disclose.

Learning Objectives

1. Describe the health disparities experienced by Indigenous birthing parents.
2. Explain the impact of reproductive sovereignty on Indigenous communities.
3. Provide culturally respectful and community-centered care to Indigenous patients.

Land Acknowledgement

There are currently no federally recognized tribes in the state of Missouri following violence and forced removal during the Indian Removal Act of 1830. However, we acknowledge federal recognition and current land borders as modern colonial constructs and that these constructs do not remove their claims as the original stewards of this land.

We acknowledge that we gather on the ancestral and contemporary homelands of the Osage Nation whose ties to this region continue today. We also recognize the many other Indigenous Nations tied to this region who have stewarded and cared for the land and its waterways including the Osage (Wahzhazhe), Missouria (Niuachi), Otoe-Missouria, Illini/Peoria, Quapaw, Iowa, Sac and Fox, Shawnee, Delaware, and Kickapoo.

ARS Question



Question 1

What percentage of your patient population is Indigenous?

- A. 0-10%
- B. 10-30%
- C. 30-50%
- D. Over 50%

ARS Question



Question 2

What is the leading cause of morbidity and mortality among indigenous birthing parents?

- A. Cardiovascular Disease
- B. Amniotic Fluid Embolism
- C. Mental Health
- D. Infection

ARS Question



Question 3

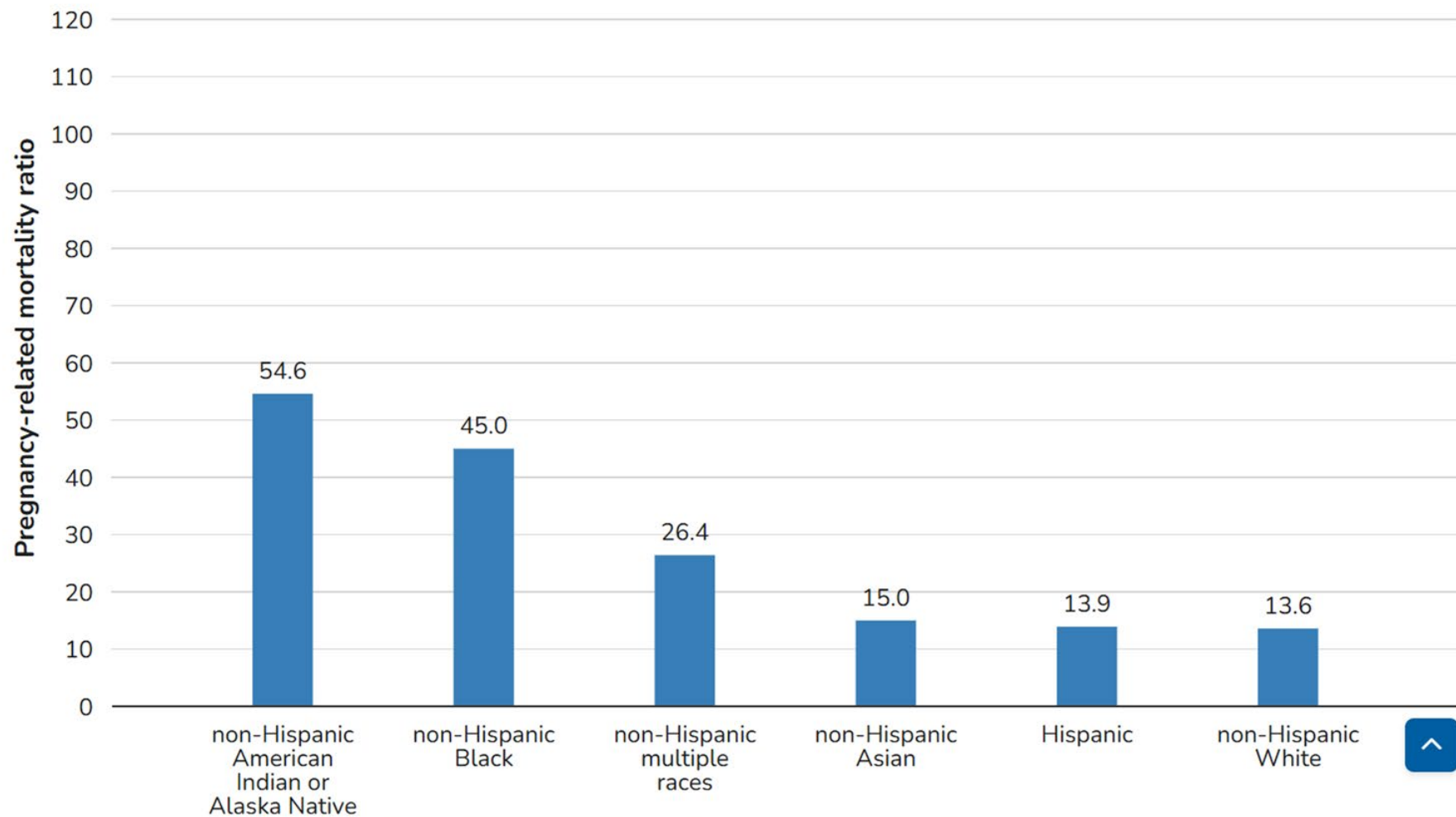
What is the General Allotment Act?

- A. Allotted tribes rights to their traditional lands and given jurisdiction over land stewardship and hunting/gathering rights
- B. Broke up communally held tribal lands into individual parcels and sold surplus land to non-indigenous settlers
- C. Distribution of federal funding to support tribal development by community based needs, supporting tribal sovereignty
- D. I've never heard of this law before



Data

Pregnancy-related deaths by race-ethnicity, 2024^a

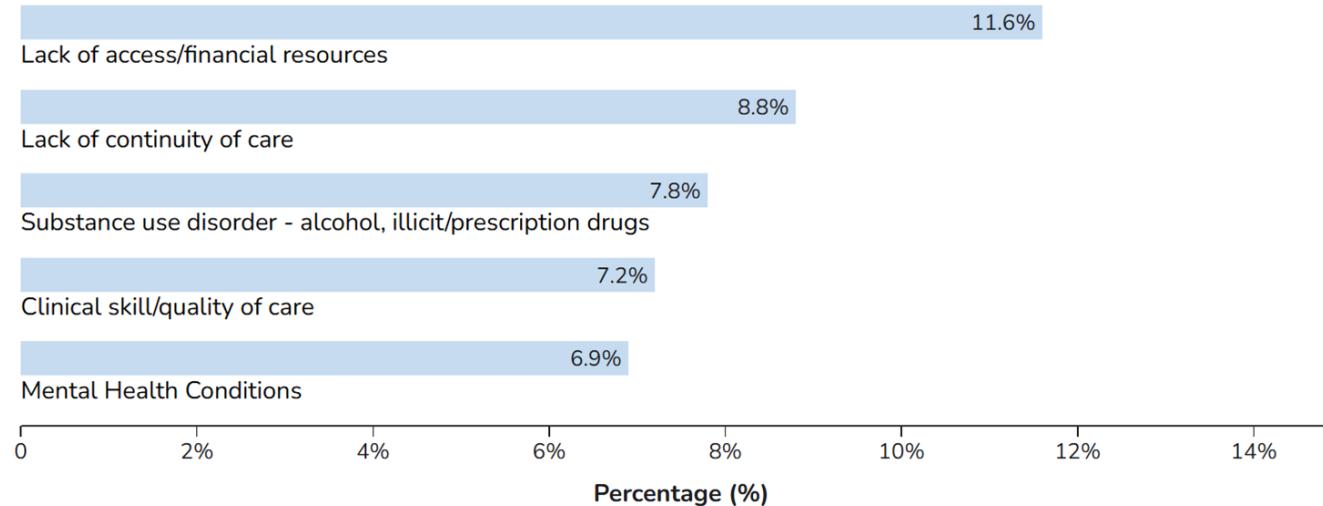


Preventable pregnancy-related deaths, 2022

94.1%

Among AI/AN deaths with a preventability determination, 94.1% were determined by MMRCs to be preventable.

Five most frequent contributing factor classes among preventable pregnancy-related deaths, 2022^a

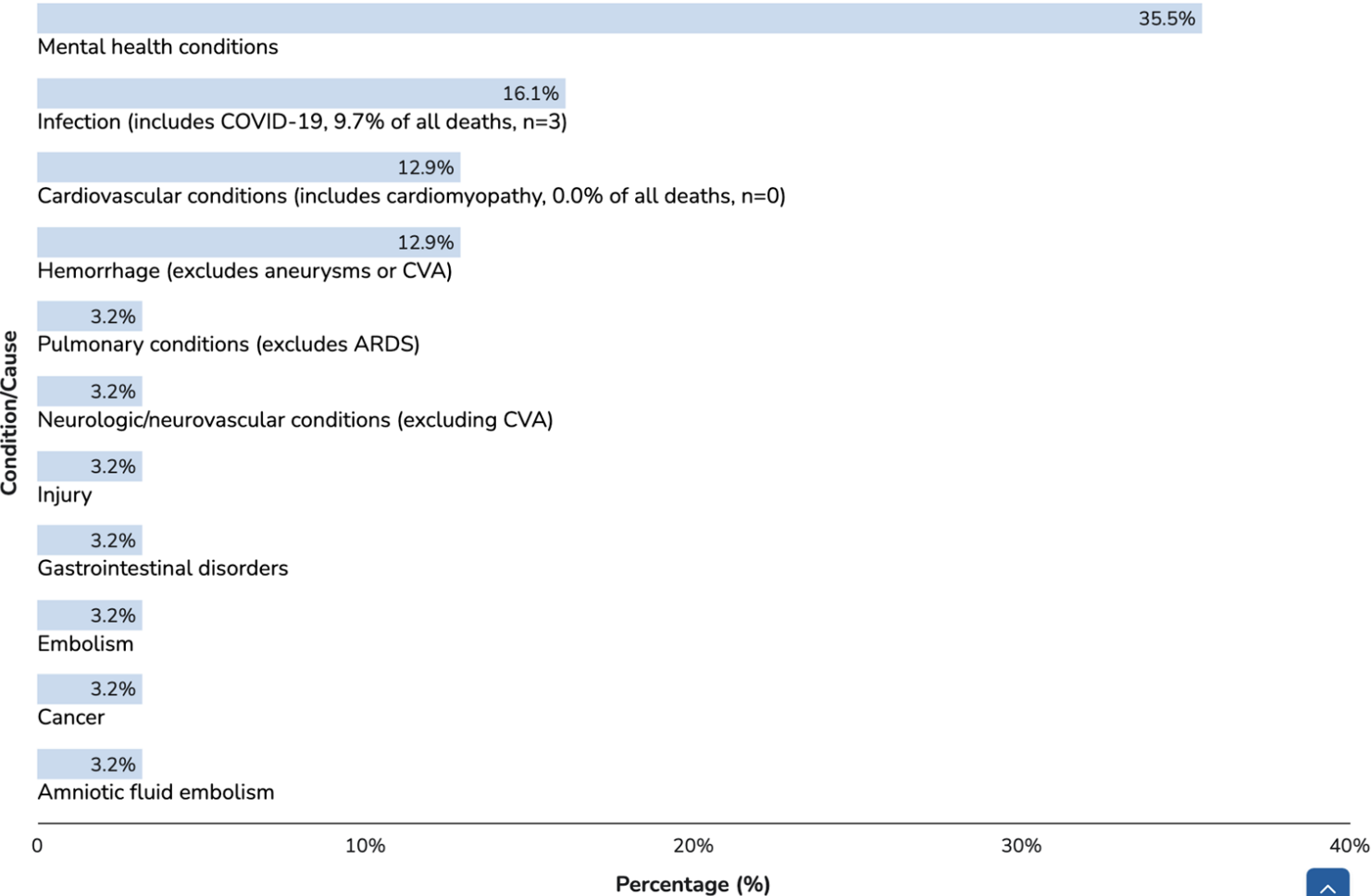


Many Maternal Deaths are Preventable and are Linked to: Underfunded Healthcare Systems

Indigenous women face maternal mortality rates that are **2–3 times higher** than non-Hispanic white women in the U.S. About **40% of Indigenous people live in rural areas**, where access to maternity care is already limited and risks during childbirth are higher.

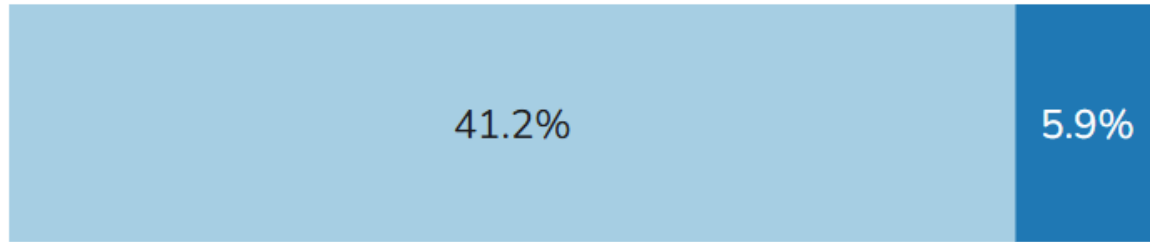
Underlying causes of pregnancy-related deaths among American Indian or Alaska Native women, 2022^{a,b}

This chart displays the top underlying conditions or causes of pregnancy-related death for AI/AN women. [About the data](#) provides more information on select underlying causes of death.



Committee determination on **mental health conditions^a** as a circumstance contributing to the death among American Indian or Alaska Native women, 2022^{a,b,c}

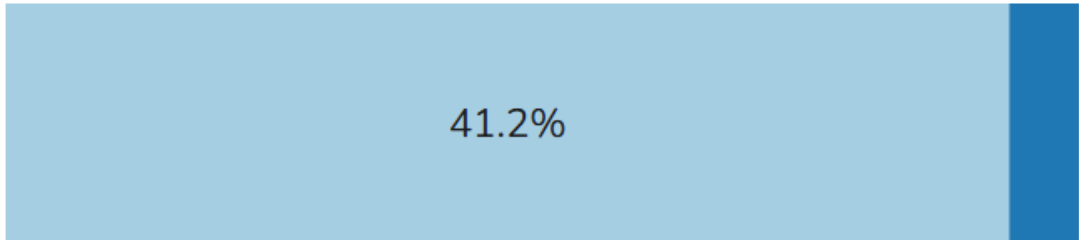
The committee may determine that a mental health condition is a circumstance that contributed to the death when the condition directly compromised a women's health or health care. For example, a mental health condition impacted her ability to manage type 2 diabetes.



Light Blue: Definitely Contributed
Dark Blue: Probably Contributed

Committee determination on **substance use disorder** as a circumstance contributing to the death among American Indian or Alaska Native women, 2022^{a,b}

The committee may determine that substance use disorder is a circumstance that contributed to the death when the disorder directly compromised a women's health or health care. For example, acute methamphetamine intoxication made preeclampsia worse, or she was more vulnerable to infections or medical conditions.



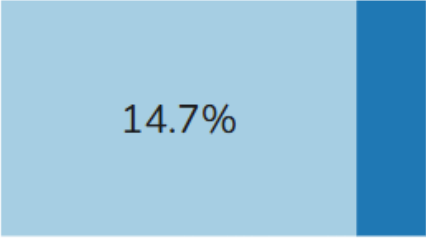
41.2%

A horizontal stacked bar chart. The bar is composed of two segments: a large light blue segment on the left and a smaller dark blue segment on the right. The text '41.2%' is centered within the light blue segment.

Light Blue: Definitely Contributed
Dark Blue: Probably Contributed

Committee determination on **obesity** as a circumstance contributing to the death among American Indian or Alaska Native women, 2022^{a,b}

The committee may determine that obesity contributed to the death when the condition directly compromised a women's health or health care. For example, obesity complicated ventilation options for a pregnant woman with the flu.



14.7%

A horizontal stacked bar chart. The bar is composed of two segments: a larger light blue segment on the left and a smaller dark blue segment on the right. The text '14.7%' is centered within the light blue segment.

Light blue: definitely contributed
Dark blue: probably contributed

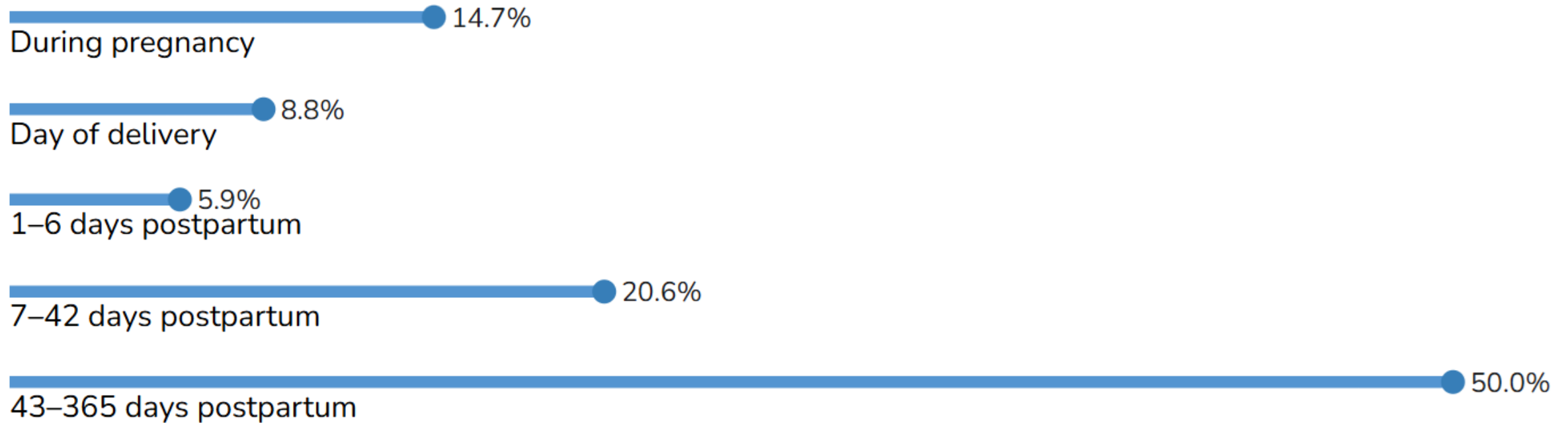
Committee determination on **discrimination** as a circumstance contributing to the death among American Indian or Alaska Native women, 2022^{a,b}

Discrimination is defined as treating someone less or more favorably based on the group, class, or category they belong to. For example, a clinician dismissed symptoms of abdominal pain described by a woman with a history of substance use disorder, which led to a delay in diagnosis and care for ruptured ectopic pregnancy.



Light Blue: Definitely Contributed
Dark Blue: Probably Contributed

Pregnancy-related deaths among American Indian or Alaska Native women by timing of death in relation to pregnancy, 2022^{a,b}



ACOG Data

Table 1. Racial and Ethnic Disparities and Inequities in Health Outcomes in Obstetrics and Gynecology

Inequities and Disparities in Health Outcomes	AI/AN	Asian	Black	Hispanic	White
Infertility in previous 12 mo (% of women)*	NA	10	12	9	7
Breastfeeding duration (% of infants at 12 mo) [†]	NA	48.5	26.8	35.7	40.7
Preterm birth (% of live births) [‡]	11.6	8.8	14.2	9.8	9.2
Fetal death (/1,000 live births+fetal deaths) [§]	7.5	3.9	9.9	4.9	4.8
Maternal death (/100,000 live births)	NA	NA	69.9	28.0	26.6
Gonorrhea (/100,000 population) [¶]	340	31	662	121	75
Cervical cancer (/100,000 population) [#]	6.3	6.1	9.2	9.7	7.1
Breast cancer deaths (/100,000 population) ^{**}	14.4	11.5	26.1	13.5	19.0
Diabetes-related deaths (/100,000 population) ^{††}	47.7	17.2	42.9	28.3	21.3

AI/AN, American Indian or Alaska Native; NA, not available.

ACOG Data

Table 2. Racial and Ethnic Disparities and Inequities in Health Care Access and Services in Obstetrics and Gynecology					
Inequities and Disparities in Health Care Access and Services	AI/ AN	Asian	Black	Hispanic	White
Birth control provided* in past year (% of women aged 15–44 y)*	NA	NA	29	29	37
Pap testing within 3 y (% of women aged 21–65 y) [†]	NA	74	85	77	83
Mammography within 2 y (% of women aged 40 y or older) [‡]	65	58	68	63	68
Ever received infertility treatment (% of women) [§]	NA	NA	11	12	16
Prenatal care in 1st trimester (% of births)	NA	NA	68	71	83
Cesarean delivery (% of births)	NA	NA	37	32	31
AI/AN, American Indian or Alaska Native; NA, not available.					

ACOG Committee Opinion in Partnership with UIHI

“Urban American Indian and Alaska Native women are an “invisible” population for whom data about demographics, health care needs, and health issues are difficult to obtain. Systems must be put in place to collect accurate epidemiologic information. Such data are essential to design and implement programs to eliminate the health inequities for this population.”

Murdered and Missing Indigenous Women, Girls, Two-Spirit, and Transgender People

97%

of AI/AN women reported that they had a non-AI/AN assaulter(s) in their lifetime

45%

AI/AN females were victims of intimate partner violence related homicide

65%

of transgender AI/AN people reported sexual assault



History...and a Little Law

Settler Colonialism

- Governance
- Land ownership
- Food systems
- Healthcare
- Family structures
- Cultural and spiritual practices
- Reproductive autonomy



Key Laws

- Indian Removal Act (1830)
- Federal Indian Boarding School Policies (1800s)
- General Allotment Act (Dawes Act) (1887)
- Indian Reorganization Act (1934)
- Public Law 280 (1953)
- Federal Trust Doctrine (legal principle, not a single law)

Here's the Quick...

1. Land Loss

- Removal + allotment policies reduced access to traditional foods and land.

2. Jurisdictional Fragmentation

- Overlapping federal/state/tribal authority complicates land management.

3. Environmental Regulation Gaps

- Industrial pollution disproportionately affects Indigenous territories and sacred sites

4. Partial Restoration of Sovereignty

- Modern laws support tribal governance but do not fully restore land or ecological control.



Indian Health Services (IHS)

Snyder Act + IHClA together (Funding structure problem)

- IHS obligated to provide care but it is not guaranteed sufficient funding to meet actual healthcare needs
- Per-capita spending in IHS is significantly lower than other federal healthcare systems (like VA health care)
- This contributes directly to:
 - Fewer obstetric units
 - Limited prenatal care access
 - Staff shortages in rural Indigenous areas
- Affordable Care Act: Did its best, but limited by state

Impacts of Underfunding

Colonial policies & underfunding



Loss of local obstetric services



Forced travel + reduced culturally safe care



Distrust, delayed prenatal care, isolation



Higher maternal morbidity & mortality

ACOG Committee Opinion in Partnership with UIHI

“Increasing funding for health care for urban American Indian and Alaska Native women is critical to improving the health of this population.”



How Colonialism Connects to Maternal Health

1. Reproductive Control
2. Violence & Safety
3. Land & Environment



Reproductive Control

Reproductive Justice

1. The Right to Give Birth Safely

- Higher maternal mortality rates
- Inadequate prenatal care
- Dismissal of pain and symptoms
- Racism in healthcare settings

2. The Right to Parent Within Community

- Residential/boarded schools
- Child welfare removals
- Foster care systems



Forced Sterilization of Native Women (1960s–1970s)

- Women not being told procedures were permanent
- Pressure during labor or immediately after childbirth
- Threats involving welfare or child custody
- Inadequate consent forms
- 25-50% of native American women sterilized from 1960-1970s

The Hyde Amendment and Federal Healthcare Restrictions

- The Hyde Amendment restricted federal funding for abortion services.
- Many Indigenous people rely on federally funded healthcare through IHS
- Indigenous women disproportionately affected by these restrictions.

Suppression of Indigenous Midwifery and Knowledge

- Limited licensure or recognition of traditional midwives
- Hospital Policies restricting Indigenous birth attendants
- Inadequate reimbursement for Indigenous birth workers
- Closure of rural and tribal maternal services
- Medical dominance over traditional knowledge
- Criminalization concerns
- The struggle of traditional Midwives/Birth attendants in Hawaii

Violence and Safety

97% of AI/AN women reported that they had a non-AI/AN assaulter(s) in their lifetime
90% of AI/AN men reported that they had a non-AI/AN assaulter(s) in their lifetime
45% of AI/AN women were victims of intimate partner violence related homicide
65% of transgender AI/AN people reported sexual assault

Effects of Violence on Parental Health

- Historical devaluation of Indigenous lives
- Family separation policies and systemic racism
- Land exploitation and resource extraction
- Jurisdictional gaps on tribal lands
- Under-policing when Indigenous people go missing

Research shows violence during pregnancy is associated with:

- Preterm birth
- Low birth weight
- Pregnancy complications
- Depression and anxiety
- Increased maternal mortality risk
- Fetal risk



Law and Environment

Loss of Indigenous Land Stewardship

- Forced removal from traditional land and separation of families
- Reduce access to traditional practices, teachings, food systems, hunting/fishing rights, and birth practices
- Centralizing healthcare far from Indigenous communities
- Food and economic insecurity
- Extraction industries and environmental contamination



Land Justice is Reproductive Justice

For many Indigenous communities, connection to and protection of land and water is inseparable from protecting mothers, children, and future generations.





What are the
Committees Saying?

ACOG Recommendations

Table 3. Strategies to Decrease Racial and Ethnic Inequities in Obstetrics and Gynecology		
Factor	Racial and Ethnic Inequities	Proposed Strategies
Patient and practitioner level	Racialized constructs affecting care	•Adoption of federal standards for collection of race and ethnicity data, at a minimum •Analyze data to identify drivers of inequities and targets for quality improvement
	Mistrust, distrust, and lack of trust	•Educate and counsel patients in a culturally grounded and responsive manner •Engage with patients in ways that embody trustworthiness, mutual understanding, and shared decision making
	Implicit and explicit bias	•Ongoing diversity, equity, and inclusion education for professionals •Implicit bias training and strategies to mitigate bias
	Microaggressions and discrimination	•Incorporate system to report microaggressions •Create accountability models to address microaggressions •Create processes to address the resulting harm •Cultural humility training
	Patient–clinician communication*	•Develop effective communication style that facilitates therapeutic relationships

ACOG Recommendations***

Health care system level	Underrepresentation of racial and ethnic marginalized populations	•Invest in and recruit racially and ethnically diverse health professions workforce •Support pathway programs •Mentor •Create environment that supports retention and advancement
	Scientific racism	•Undertake and promote community-engaged research •Include racial and ethnic marginalized communities in research •Continued reinforcement of race as a social construct •Prioritize funding for rigorous health equity science
System level	Social determinants of health	•Advocate for policies or engage in quality-improvement projects that address social determinants of health •Support and promote enhanced-care or quality-improvement projects that incorporate universal social needs screening and address social needs
	Structural determinants of health, including systemic racism	•Commit to eliminating racial and ethnic health inequities, “through deep reflection, listening, accountability, collaboration, and direct action.”*,†

ACOG Committee Opinion Recommendations

- “Be aware of the increased risk profile of their American Indian and Alaska Native patients.”
- “Recognize that American Indian and Alaska Native women living in urban areas often are not eligible for health care from the IHS.”
- “Be aware that many American Indian and Alaska Native women may not be eligible for, or may not apply for, health care safety net programs. Safety net programs provide health care for people regardless of their ability to pay. Physicians caring for American Indian and Alaska Native women should educate their patients about such programs and provide information about and, where possible, assistance with enrollment.”
- “Recognize that American Indian and Alaska Native women’s health care may be highly fragmented, geographically and otherwise.”
- “Encourage legislators to support adequate funding for the Indian Health Care Improvement Act, permanently authorized as part of the Patient Protection and Affordable Care Act.”

Honorable Mention: “Recommendations to the Indian Health Service on American Indian/Alaska Native Pregnant Women and Women of Childbearing Age with Opioid Use Disorder”

AAFP Recommendations

- There are NO Indigenous-specific guidelines
- Maternal health and prenatal care guidelines emphasizes:
 - Assess social determinants of health
 - Provide patient-centered and culturally appropriate prenatal care
 - Improve access for rural and underserved communities
 - Address health equity as part of routine maternity care
 - Support continuity of care through pregnancy and the postpartum period

Colonization and Indigenous Health

- **Insufficient Data Collection**
- **Difficulty collecting and generalizing data**
- **Lack of Indigenous Representation**
- **Workforce Inequities**
- **Indian Country has already been working to close these gaps**

40% of Americans don't know Natives still exist

0.4% of physicians are AI/AN

43% of medical school do not have any AI/AN students

Solutions are already
present within
Indigenous
communities—
rooted in
sovereignty, culture,
relational
responsibility, and
self-determination.



IHS Supporting Tribal Partnerships

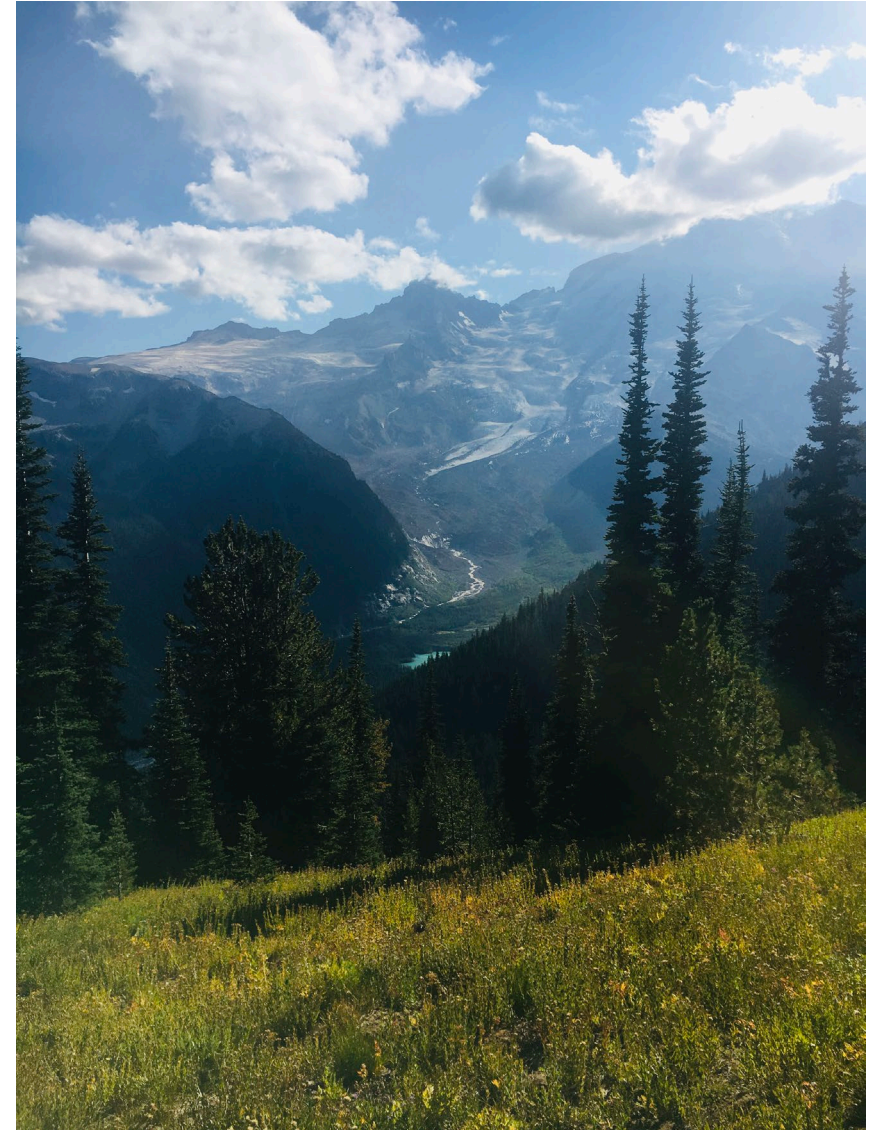
- Tribal Consultation and Tribal Engagement Offices
- Area Tribal Liaisons
- Regional tribal epidemiology centers and tribal health boards



Supporting Tribal Partnerships

“How can our OB department establish a relationship with local tribes and improve care for Indigenous birthing parents?”

1. Contact the tribe directly through its health department or tribal leadership
2. Reach out to the regional IHS Area Office tribal liaison
3. Engage local Urban Indian Organizations if serving an urban Indigenous population
4. Build relationships before proposing programs or research
5. Compensate tribal partners and include them in decision making



Answers

1. No right answer
2. C
3. B

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Practice Recommendations (SOR C)

- Increased funding for Indigenous maternal care and tribal and Indigenous healthcare programs
- Better maternal health data collection
- Partner with tribal governments and Indigenous health organizations
- Include Indigenous mothers and communities in program design
- Integrate Indigenous doulas, birth workers, and midwives
- Provide culturally safe, trauma-informed care
- Recruiting Indigenous healthcare professionals
- Respect traditional knowledge and birth practices
- Address social and structural barriers to care
- Support Indigenous-led maternal health initiatives and workforce development
- Make Indigenous Specific Guidelines
- Restoration of Indigenous land rights and sovereignty



Yawako!

(Big Thanks)

