WELCOME
to the
Strategies To Optimize Rural Perinatal Healthcare ECHO

Funding Statement

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North Country Maternity Network partners

- **North Country Health Consortium**
  - Rural health network to enhance collaboration among regional health and human service providers
- **Critical access/community hospitals providing birthing services**
  - Androscoggin Valley/North Country Healthcare
  - Littleton Regional Hospital
  - Northeastern VT Regional Hospital (VT)
- **Critical access hospitals that don't provide birthing services**
  - Weeks Medical Center
  - Upper Connecticut Valley Hospital
- **Federally Qualified Health Centers**
  - Coos County Family Health Services
  - Little Rivers Health Center (VT)
- **Family Resource Center**
  - Community-based family support program
- **Women of the Mountains Birth Initiative**
  - Community-based educational and perinatal support program
- **Dartmouth Health**
  - Academic Medical Center

NCMN Partners

Series Learning Objectives

After participating in this activity, learners will be able to:

- Discuss maternal health conditions, including labor induction and prenatal/postpartum emergencies to improve management of obstetrical complications
- Develop a collaborative network of healthcare providers to support high quality, consistent care of pregnant people
- Utilize evidence-based practice resources and support

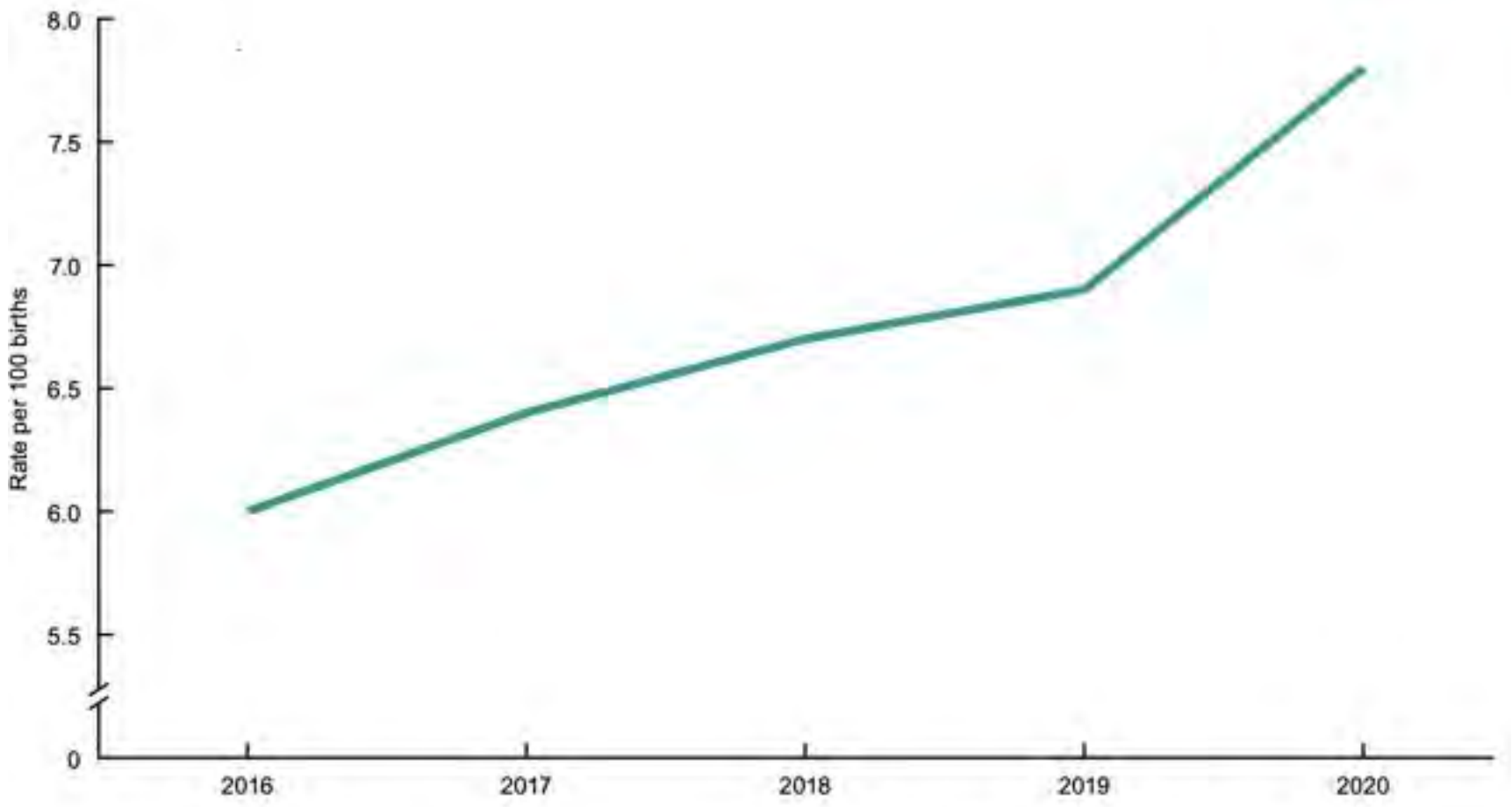
Dartmouth Health ECHO

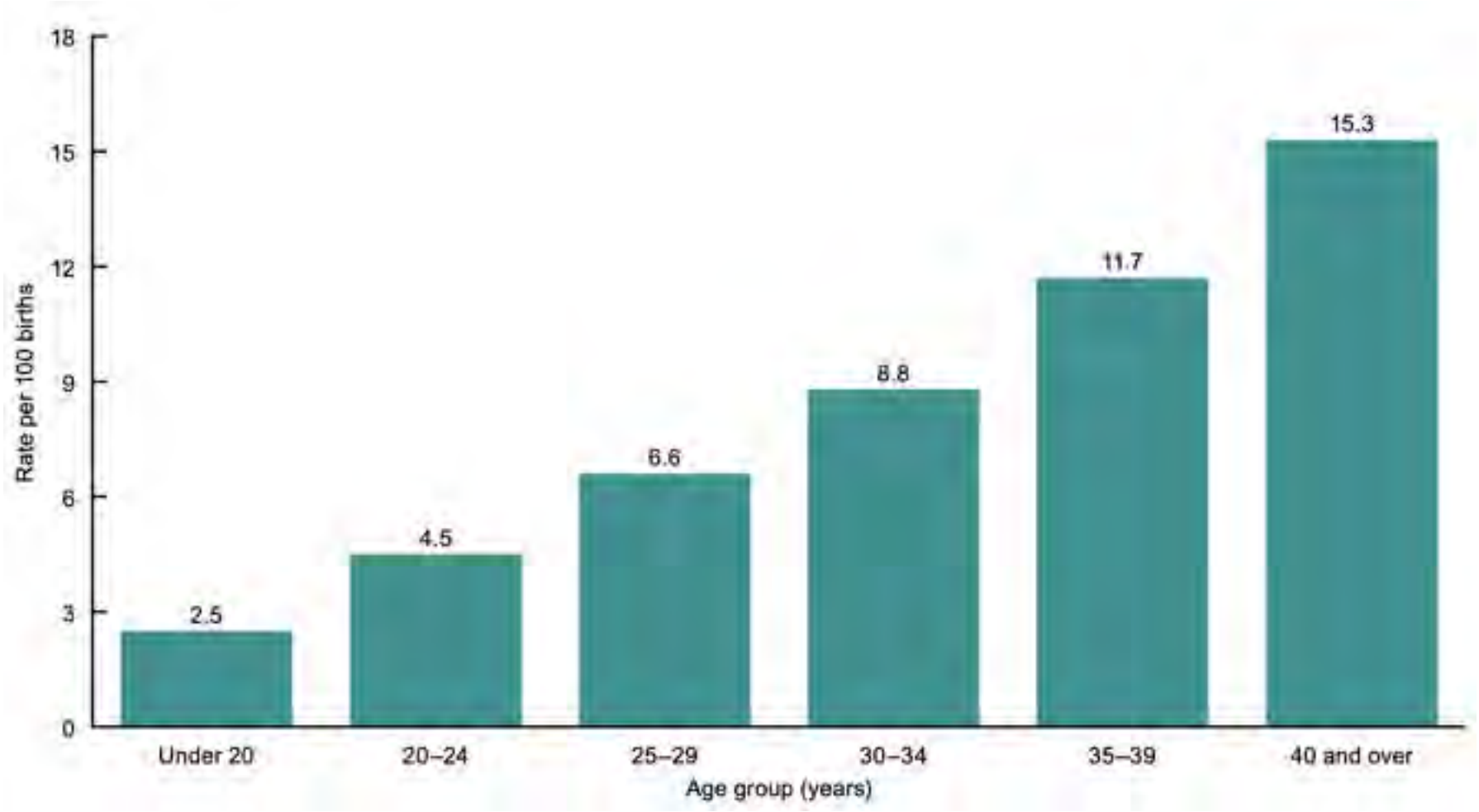
Series Sessions

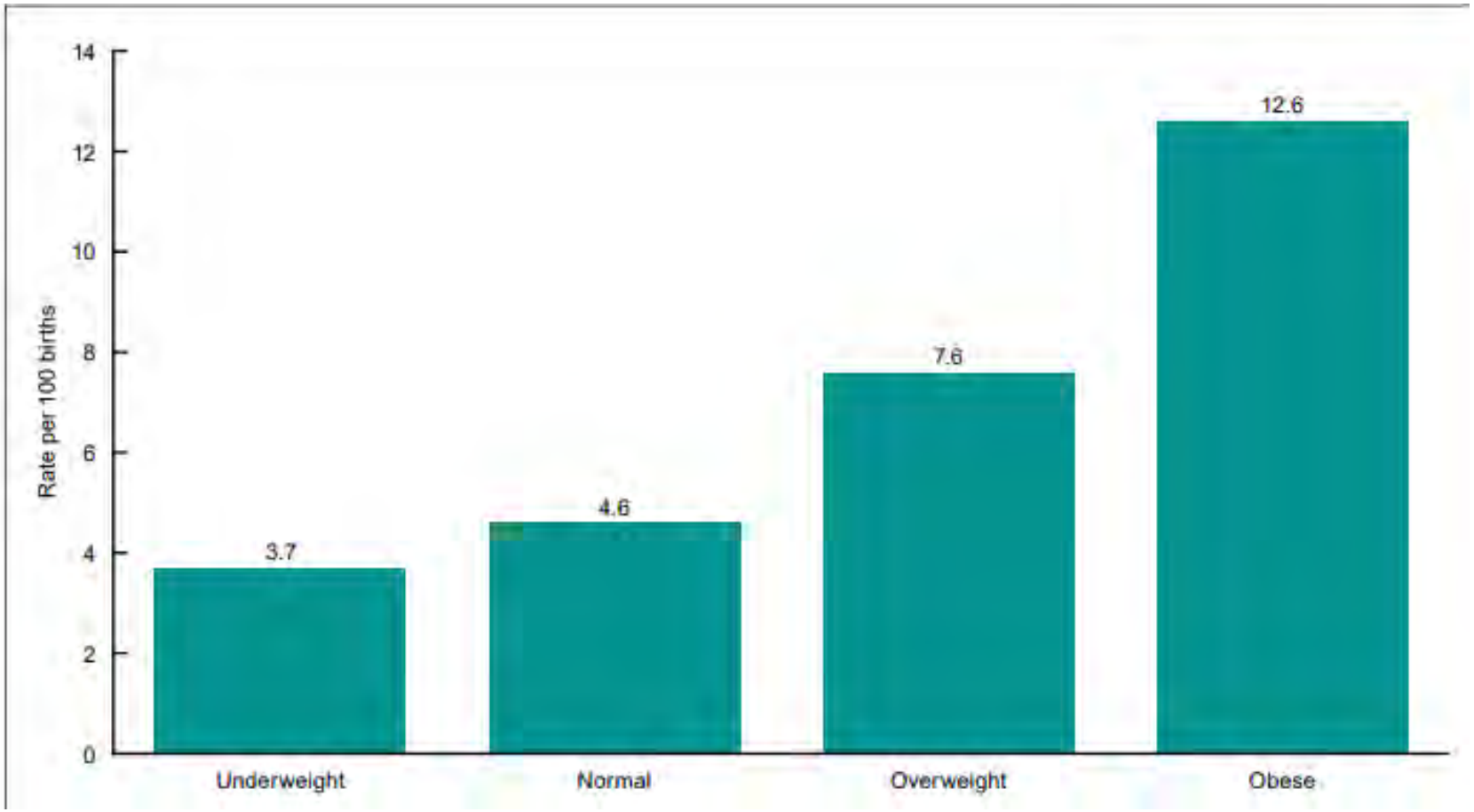
Date	Session Title
January 21	Maternal Care in Rural Areas: focus on Gestational Diabetes
February 18	Hypertension and Pre-eclampsia
March 18	Mood Disorders: Prenatal and Post-partum
April 15	Updates on Syphilis and HIV
May 20	Screening and Management of Hepatitis B and C
June 17	Risk Appropriate Care for Perinatal Substance Use Disorders
July 15	Doulas, Midwives, and Medical Providers
August 19	Advocating Current Standards in Pain Management
September 16	Best Practices in Induction of Labor
October 21	VBACs (vaginal birth after cesarian)
November 18	Decision Making for Third Trimester Obstetric Emergencies and Transport
December 16	TBD

Gestational Diabetes

Emily R. Baker, MD
Maternal Fetal Medicine
Dartmouth Health


8.0
7.5
7.0
6.5
6.0
5.5
0
Rate per 100 births
2016
2017
2018
2019
2020


18
15
12
9
6
3
0
Rate per 100 births
2.5
4.5
6.6
8.8
11.7
15.3
Under 20
20–24
25–29
30–34
35–39
40 and over
Age group (years)


Rate per 100 births
14
12
10
8
6
4
2
0
3.7
4.6
7.6
12.6
Underweight
Normal
Overweight
Obese

Pathophysiology

- Personal insulin resistance

Plus

- Steadily rising insulin resistance related to human placental lactogen.

- Immediate fall after placenta delivery

Morbidity

- Preeclampsia
- Cesarean section
- Macrosomia
- Shoulder dystocia
- Neonatal hypoglycemia
- Neonatal Jaundice
- NICU stay

Screen for pre-pregnancy diabetes by HbA1c

- BMI > 25 kg/m^2 *or* BMI >23 kg/m2 in Asian Americans *with one or more of the following*
  - Physical inactivity
  - First degree relative with diabetes
  - High risk ethnicity (e.g., African American, Latino, Native American, Asian American, Pacific Islander)
  - Previously given birth to an infant weighing ≥ 4000 gm
  - Previous gestational diabetes
  - Hypertension (140/90 mm Hg or on treatment for hypertension)
  - HDL cholesterol <35 mg/dl or triglyceride level > 250mg/dl
  - Polycystic ovarian syndrome
  - HbA1c ≥ 5.7%, impaired glucose tolerance or impaired fasting glucose on previous testing
  - Other clinical conditions associated with insulin resistance (e.g. acanthosis nigricans)
  - History of cardiovascular disease
  - Age 35 years or greater
  - HIV infection

Screen for pre-pregnancy diabetes by HbA1c

- HgbA1c results
  - ≥6.5% – meets criteria for diagnosis of diabetes. Manage as a pre-existing diabetic.
  - 5.7 – 6.4% - impaired glucose tolerance. Consider recommendation for nutrition counseling. Plan routine screening with 1hr GCT at 24-28w. Clinical judgement and shared decision making about starting home glucose monitoring before routine screening if additional risk factors
  - <5.7% - normal. 1hr GCT at 24-28w

Glucose challenge test tips for patients

- 50 gram is not a fasting test
- Do not restrict carbohydrates for 3 days prior to the 100 gram test
- Bring a sandwich to eat after last blood draw
- Drink it cold

Glucose cutoffs

- 50 gram ≥ 135 mg/DL
- 100 gram
  - Fasting ≥ 95 mg/dL
  - 1-hour ≥ 180 mg/dL
  - 2-hour ≥ 155 mg/dL
  - 3-hour ≥ 140 mg/dL
- Home targets
  - Fasting < 95 mg/dl
  - 1-hour < 140 mg/dl
  - 2-hour < 120 mg/dl

Three hour 100 gram OGTT with one abnormal value

- Fasting blood glucose ≥ 95 mg/dL.
  - Consider home glucose monitoring for 7-10 days to determine need for ongoing monitoring.
  - Review recommendations for nutrition and exercise during pregnancy or refer to dietician or clinical diabetes educator
- Elevated 1, 2, or 3 hour
  - Review recommendations for nutrition and exercise during pregnancy or refer to dietician or clinical diabetes educator

Next steps after diagnosis

- Medical Nutrition Therapy
  - Refer to nutrition counselor RD
  - Clinic generated handouts
  - ADA handouts
  - Video/on line resources
  - The intention of diet changes is not to lose weight and is not to be hungry
- Exercise
  - Encourage moderate intensity aerobic exercise at least 5 days per week or a minimum of 150 minutes per week.
  - 15-to-20-minute brisk walk after meals

Next steps

- Home monitoring (fasting and 1 hour postprandial)
- Establish means to communicate glucose numbers (phone, fax, portal, CGM)
- Communication allows coaching and encouragement

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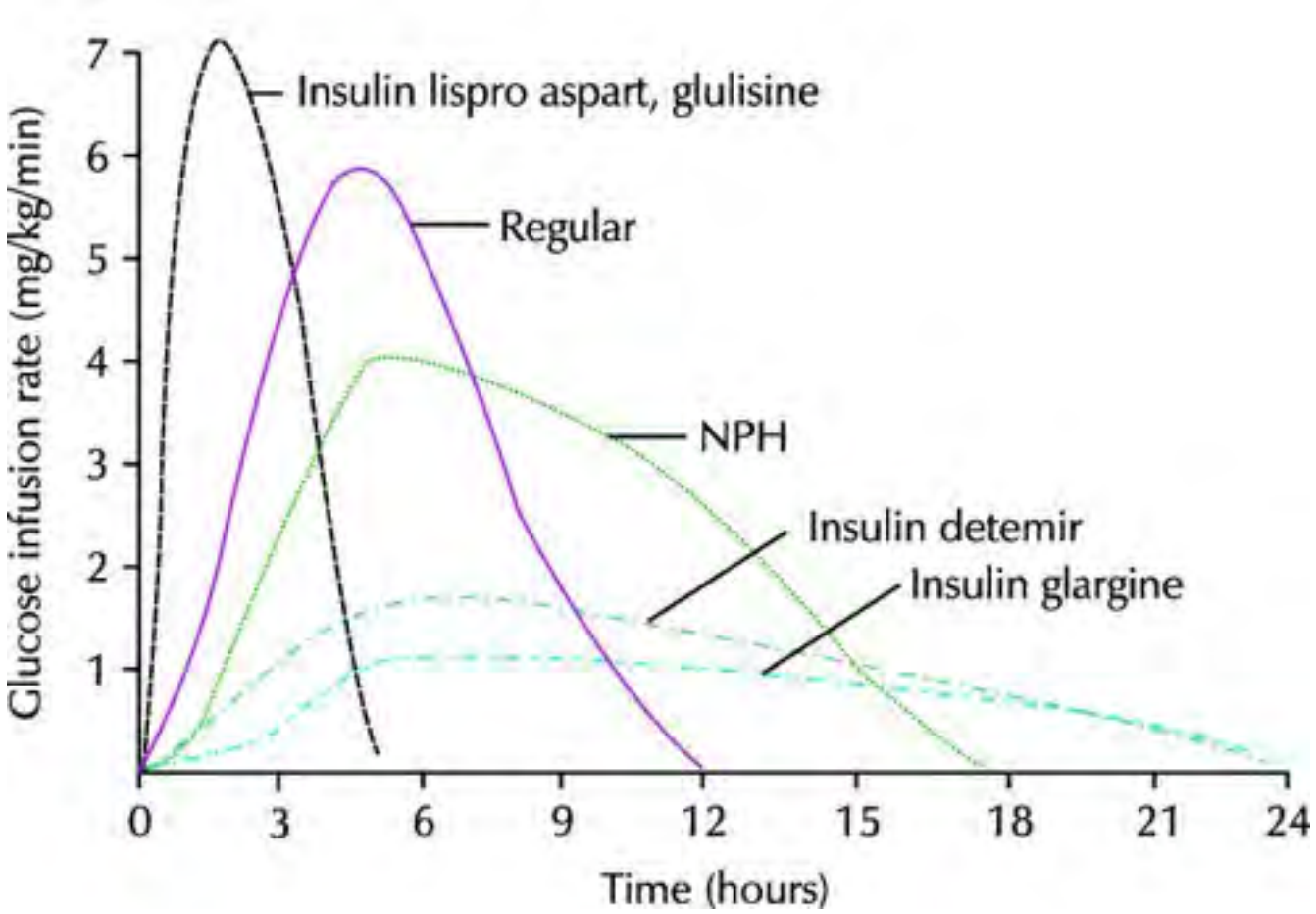
Medication

- Insulin is the standard treatment – many reasonable option)
- Start medication if roughly 30% of a given time-frame is abnormal
- Lots of nuance and experience drives dosing decisions
- Many regimen options
- GDM patient are not “brittle”
- Can be fairly aggressive at increasing insulin dose especially when high BMI
- Expect high amount of insulin
- At extreme U500

Medication- Insulin



Medications

- Metformin
  - Metformin can be used for patients who decline insulin therapy, who cannot afford insulin therapy or for those patients whom the obstetrical care providers believe will be unable to safely administer insulin.

Surveillance

- GDMA1
  - No antenatal testing.
  - Deliver 39w0d – 40w6d
  - Ultrasound q 4w
- GDMA2
  - NST 1-2/week depending on control
  - Deliver 39w0d – 39w6d
  - Prior to 39 weeks if very poor control
  - Ultrasound q 4week

Mode of Delivery

- ACOG

  “Women with GDM should be counseled regarding the risks and benefits of a scheduled cesarean delivery when the estimated fetal weight is 4,500 g or more”

Delivery

- Intrapartum
  - Every 2 hour fingerstick with short acting insulin
  - No intermediate or long acting insulin
  - The work of labor will help keep glucose down
- After delivery: immediate resolution of placenta- mediated insulin resistance
  - 75- gram OGTT postpartum day 1-3 or at 4-12 weeks postpartum

75 gram OGTT

- Type 2 Diabetes
  - A single abnormal value on 75 gram GTT
    - Fasting ≥ 126 mg/dL
    - 2-hour ≥ 200 mg/dL
  - HBA1c ≥ 6.5%
  - Random plasma glucose ≥ 200mg/dL with symptoms of diabetes
- Impaired Fasting Glucose (IFG)
  - Fasting ≥ 100-125 mg /dl
- Impaired Glucose Tolerance (IGT)
  - 2-hour ≥ 140-199 mg/dl

Follow up care

- Amend EMR history and problem list
- Copy the primary care provider regarding GDM
- Careful discussion with her about the risk for type 2 diabetes and repeat GDM, need for frequent testing
- Encourage breast feeding

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Session 2, Maternal Care in Rural Areas: focus on Hypertension and Pre-Eclampsia

February 18, 2025

Hypertensive Disorders of Pregnancy

Robert N. Blatman, MD
Maternal Fetal Medicine
Dartmouth Health

Hypertensive Disorders of Pregnancy

- Chronic Hypertension
  - Hypertension before 20 weeks and after 12 weeks postpartum
- **Gestational Hypertension**
  - Hypertension that develops after 20 weeks and resolves by 12 weeks postpartum
  - No proteinuria or
  - No sign/symptoms of end-organ dysfunction
- **Preeclampsia**
  - Hypertension that develops after 20 weeks and resolves by 12 weeks postpartum
  - Proteinuria and/or
  - Signs/symptoms of end-organ dysfunction
  - Does not require edema
- Chronic Hypertension with Superimposed preeclampsia
- Eclampsia

Epidemiology basics

- >70000 deaths worldwide
- Incidence in US is about 5% (and creeping up)
- Late onset preeclampsia (>34 weeks) is about 6 fold more common than early onset
- One third are nulliparous
- About 5% are recognized postpartum

Risk Factors Preeclampsia

- Previous preeclampsia
- Family history of preeclampsia
- Renal Disease
- Autoimmune disease
- Diabetes
- Obesity
- AMA
- Adolescent pregnancy
- Multiple Gestation

Typical Presentation of preeclampsia

- 85% present with hypertension and proteinuria after 34 weeks
  - Hypertension: Diastolic >=140 or systolic >=90
  - On 2 occasions 4 hours apart
- Proteinuria
  - 300mg/24 hour or
  - Urine Pr/Cr ratio of >= 0.3 or
  - 2+ on urine dip (only if more quantitative options are not available)

Severe Preeclampsia

- **Symptoms**
  - Headache
    - Generally not responsive to pain medication
  - Abdominal Pain
    - RUQ or epigastric
  - Visual changes
    - Scotomata, blurred vision, rarely cortical blindness
  - Pulmonary edema
- **Laboratory findings**
  - Elevated LFTs (> double high end of normal)
  - Thrombocytopenia (<100)
  - Elevated Creatinine (>1.1)
- **Oliguria** (<500cc/24 hour**)**

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Potential Complications of Preeclampsia

- **Seizures (eclampsia)**
- **Hypoxia**
- **Stroke**
- **Abruption**
- **Fetal Growth Restriction**
- **Stillbirth**
- **Death**

Atypical Presentations

- HELLP syndrome
  - Hemolysis
  - Elevated LFTs
  - Low Platelets
- Gestational proteinuria
  - 20-25% go onto develop preeclampsia
- Presentation <20 weeks
  - Most are associated with molar pregnancies or severe preexisting disease (Such as antiphospholipid antibody syndrome)

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Management:
Gestational Hypertension/Preeclampsia without severe features

- Delivery at 37 week

- <37 week, Expectant management until:
  - 37 week or
  - Development of severe features

Management:
Preeclampsia with severe features

- Admit

- Delivery may often be delayed until 34 weeks
  - Severe range blood pressure that can be controlled
  - No evidence of end-organ damage

Management:
Preeclampsia with severe features

- Delivery before 34 weeks is indicated for:
  - Fetal demise
  - Fetal surveillance indicating fetal jeopardy
  - Escalating hypertension poorly responsive to antihypertensives
  - Persistent symptoms unresponsive to pain medication
    - Headache
    - Upper abdominal pain
  - Pulmonary Edema
  - Acute renal injury
  - Escalating LFTs
  - HELLP Syndrome

Management:
Preeclampsia with severe features

- Possible indications for delivery before 34 weeks
  - Abruption
  - Labor
  - Maternal request?

Intrapartum Management: General Principals

- OK to induce labor
- Use Continuous EFM (not a candidate for Intermit Ausculation
- Manage Hypertension:
  - Target BP is unclear. 130's-140's/80's-90's is probably reasonable
- May reasonable to have primary c/section for those most at risk of failing IOL:
  - Early gestational age
  - Worrisome maternal pathology
    - Very low platelets, severe symptoms

Intrapartum Management: General Principals

Seizure Prophylaxis

- Preeclampsia without severe features
  - Probably doesn't need Magnesium (We usually don't)
  - (but seizure risk is close to 1%)
- Preeclampsia with severe features
  - Magnesium Sulfate 4-6 gram loading dose and then 2gm/hour for most people
  - Adjust maintenance downward for those with high creatinine or low urine output
  - Check levels clinically or with lab every 4 hours
  - Continue until 24 hours postpartum. Maybe longer with neurologic symptoms.

Confounding and clinically tricky Circumstances

- Preexisting Maternal disease with
  - Proteinuria
  - Hypertension
  - Elevated LFTs
  - Headache
  - Often difficult diagnostic conundrum
- Almost severe?
  - Headache the is somewhat responsive to treatment
  - BP that is tickling severe

Prevention of Preeclampsia

- Aspirin
- Timing and best doses are not completely clear
- ACOG, SMFM and USPSTF all recommend 81mg/day
- Europe (FIGO) uses 150mg
- Society of Ob/Gyns of Canada recommends 162mg/day
- I generally recommend 162/day starting at 12 weeks and continuing until delivery

Strategies to Improve Rural Perinatal Healthcare: Maternal Mental Health

Julia Frew, MD

Department of Psychiatry, Dartmouth Health

March 18, 2025

Outline

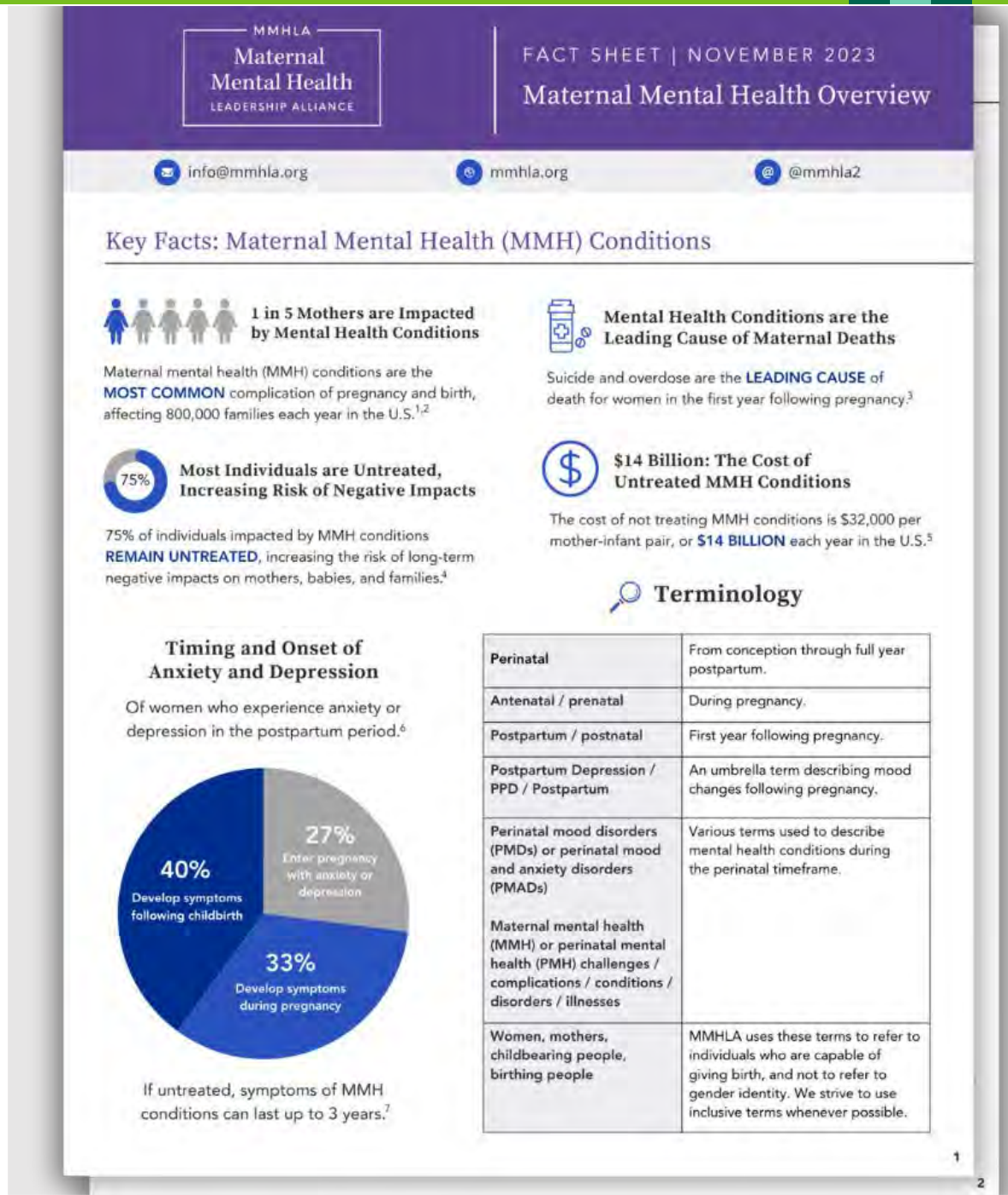
- Epidemiology
- Screening
- Assessment
- Treatment
- Resources

Perinatal Mental Health Conditions

- Common
- Impactful
- Treatable, but often go untreated

Suicide and overdose are the LEADING CAUSE of death for women in the first year following pregnancy, with 80% of those deaths deemed preventable.

https://www.cdc.gov/maternal-mortality/php/data-research/index.html



MMHLA Maternal Mental Health LEADERSHIP ALLIANCE

FACT SHEET | NOVEMBER 2023

Maternal Mental Health Overview

info@mmhla.org mmhla.org @mmhla2

Key Facts: Maternal Mental Health (MMH) Conditions

1 in 5 Mothers are Impacted by Mental Health Conditions

Maternal mental health (MMH) conditions are the MOST COMMON complication of pregnancy and birth, affecting 800,000 families each year in the U.S.[1,2]

Mental Health Conditions are the Leading Cause of Maternal Deaths

Suicide and overdose are the LEADING CAUSE of death for women in the first year following pregnancy.[3]

Most Individuals are Untreated, Increasing Risk of Negative Impacts

75% of individuals impacted by MMH conditions REMAIN UNTREATED, increasing the risk of long-term negative impacts on mothers, babies, and families.[4]

$14 Billion: The Cost of Untreated MMH Conditions

The cost of not treating MMH conditions is $32,000 per mother-infant pair, or $14 BILLION each year in the U.S.[5]

Timing and Onset of Anxiety and Depression

Of women who experience anxiety or depression in the postpartum period.[6]

If untreated, symptoms of MMH conditions can last up to 3 years.[7]

Terminology

Perinatal	From conception through full year postpartum.
Antenatal / prenatal	During pregnancy.
Postpartum / postnatal	First year following pregnancy.
Postpartum Depression / PPD / Postpartum	An umbrella term describing mood changes following pregnancy.
Perinatal mood disorders (PMDs) or perinatal mood and anxiety disorders (PMADs) Maternal mental health (MMH) or perinatal mental health (PMH) challenges / complications / conditions / disorders / illnesses	Various terms used to describe mental health conditions during the perinatal timeframe.
Women, mothers, childbearing people, birthing people	MMHLA uses these terms to refer to individuals who are capable of giving birth, and not to refer to gender identity. We strive to use inclusive terms whenever possible.

1

2

Screening

- ACOG recommends that screening for perinatal depression and anxiety occur at the initial prenatal visit, later in pregnancy, and at postpartum visits using a standardized, validated instrument.

- Lifeline for Moms has created composite screeners including:
  - Depression: PHQ9 or EPDS
  - Anxiety: GAD-7
  - Bipolar disorder: MDQ (only needs to be done once as it queries lifetime symptoms)
  - PTSD: PC-PTSD-5
  - Supplemental patient safety screener

- Screen all perinatal patients for SUD using a validated questionnaire or conversation with patient
  - Routine urine drug screening not recommended

https://www.acog.org/programs/perinatal-mental-health/patient-screening

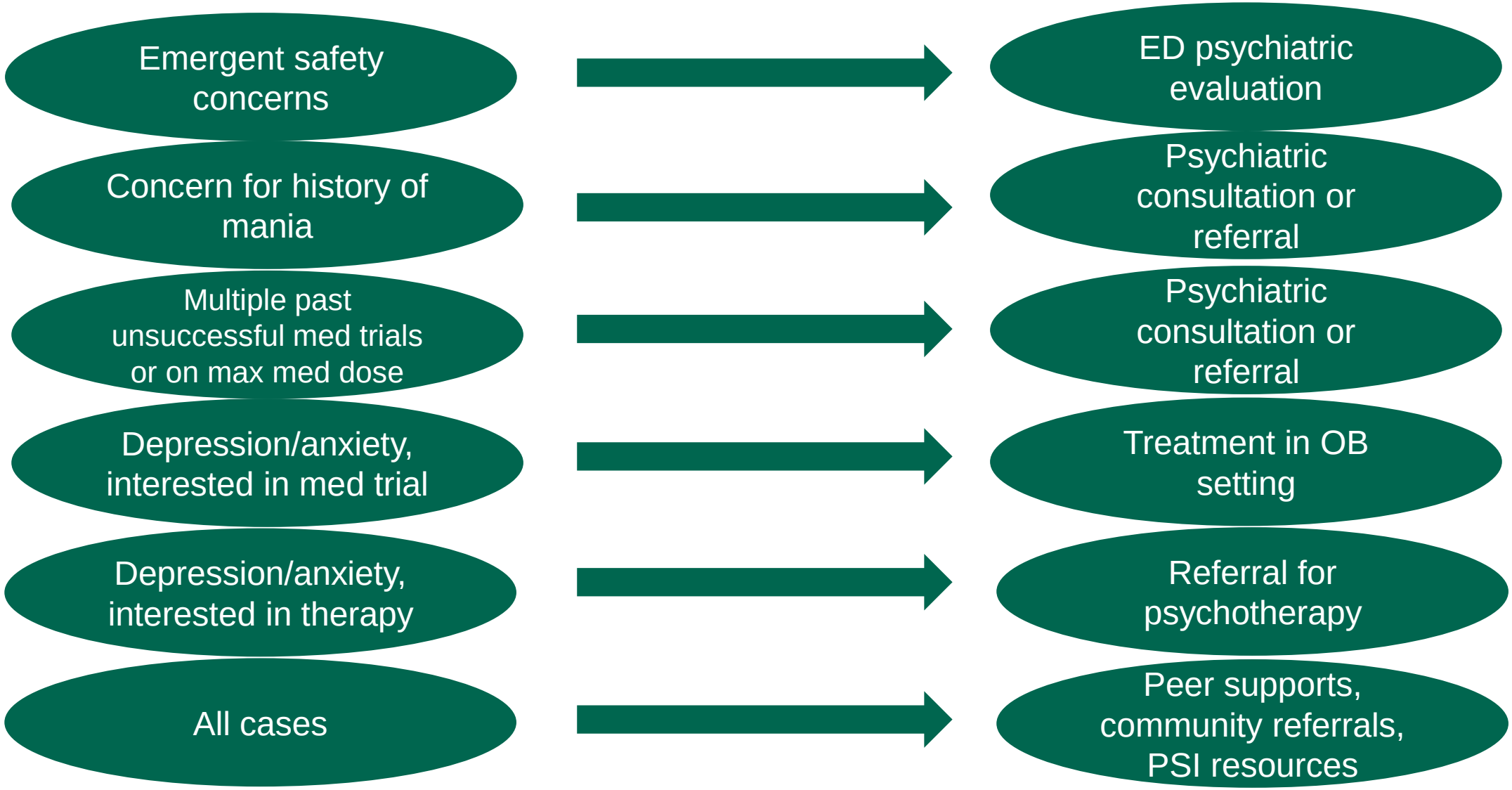
https://www.acog.org/clinical/clinical-guidance/committee-opinion/articles/2015/06/alcohol-abuse-and-other-substance-use-disorders-ethical-issues-in-obstetric-and-gynecologic-practice

Assessment (screening ≠ diagnosis)

- Positive screening results should trigger further assessment
- At a minimum, assess:
  - Safety
  - Severity of symptoms
  - Interest/openness to treatment options (meds, psychotherapy)
  - Presence of current treatment providers

"Is this something I can address in the OB setting, or do I need additional support?"

Assessment


Emergent safety concerns
ED psychiatric evaluation
Concern for history of mania
Psychiatric consultation or referral
Multiple past unsuccessful med trials or on max med dose
Psychiatric consultation or referral
Depression/anxiety, interested in med trial
Treatment in OB setting
Depression/anxiety, interested in therapy
Referral for psychotherapy
All cases
Peer supports, community referrals, PSI resources

Treatment of MMH conditions in the OB setting

- **If:**
  - No concern for history of mania
  - At least moderate symptoms of anxiety/depression
  - Interest in med trial
- **Then:**
  - Initiate SSRI or SNRI (choose previously effective med, if applicable)
  - Titrate to effect or to at least a moderate dose
    - Sertraline 100-150mg
    - Fluoxetine 40-60mg
    - Escitalopram 15-20mg

Know Your Local Resources

- Psychiatry services in your medical system
  - Collaborative/integrated care models
  - Subspecialty mental health care
  - Electronic or curbside consultation
- Community Mental Health Centers
- Family Resource Centers/Parent Child Centers
- Private Practice providers in the community
  - https://www.psychologytoday.com/us/therapists
- PSI Online Provider Directory:
  - https://www.postpartum.net/get-help/provider-directory/

State Resources

National Network of Perinatal Psychiatry Access Programs

Our National Network of Perinatal Psychiatry Access Programs:

- Facilitates peer learning and resource sharing among aspiring, emerging, and established Perinatal Psychiatry Access Programs and relevant partners across the U.S.
- Nurtures relationships to promote continued support for, and innovation and expansion of, existing and future programs.
- Facilitates quality improvement, program evaluation, and equity advancement within and across programs.

Learn more about our commitment to equity across our Network of Perinatal Psychiatry Access Programs.

If your state doesn't have a Perinatal Psychiatry Access Program yet and you are interested in consulting with a perinatal psychiatrist, you can contact the **Postpartum Support International (PSI) Perinatal Psychiatric Consult Line** online or by calling **877-944-4773**.

https://www.umassmed.edu/lifeline4moms/Access-Programs/

National Resources

- PSI Perinatal Psychiatric Consult Line
  https://www.postpartum.net/professionals/perinatal-psychiatric-consult-line/

POSTPARTUM SUPPORT INTERNATIONAL

Medical Providers (For Prescribers):

The PSI perinatal psychiatric consultation line is a service provided at no cost.

The consultation line is available for medical professionals who are prescribers and have questions about the mental health care related to pregnant and postpartum patients and pre-conception planning. This consultation service is available for medical providers only.

The Perinatal Psychiatric Consult Line is staffed by experts in the field of psychiatry who are members of PSI and specialists in the treatment of perinatal mental health disorders. The service is free and available by appointment.

Fill out this form **and we will match you with an appointment. We will respond to your request within one business day.**

The presentation of perinatal mental health disorders is not always straightforward, and medication is not always immediately effective. PSI's expert perinatal psychiatrists are available to share their skills and expertise with fellow medical professionals, providing necessary guidance and reassurance on any matter, but particularly those that may be more challenging.

Online Resources for Providers

Dartmouth Health ECHO

MGH CENTER for Women's Mental Health
Reproductive Psychiatry Resource & Information Center

Lifeline for moms

PSI POSTPARTUM SUPPORT INTERNATIONAL

Drugs and Lactation Database (LactMed®)

Bethesda (MD): National Institute of Child Health and Human Development; 2006-

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Search this book

The LactMed® database contains information on drugs and other chemicals to which breastfeeding mothers may be exposed. It includes information on the levels of such substances in breast milk and infant blood, and the possible adverse effects in the nursing infant. Suggested therapeutic alternatives to those drugs are provided, where appropriate. All data are derived from the scientific literature and fully referenced. A peer review panel reviews the data to assure scientific validity and currency.

Bumps Best use of medicines in pregnancy

Online Resources for Pat

MGH CENTER for Women's Mental Health
Reproductive Psychiatry Resource & Information Center

PSI POSTPARTUM SUPPORT INTERNATIONAL

STAR LEGACY FOUNDATION

resolve THE NATIONAL INFERTILITY ASSOCIATION

Bumps Best use of medicines in pregnancy

Resources

- Postpartum Support International: https://www.postpartum.net/
- Ammon-Pinizzotto Center for Women's Mental Health at MGH: https://womensmentalhealth.org/
- Mother to Baby (Organization of Teratology Information Specialists): https://mothertobaby.org/
- Reprotox: https://reprotox.org/
- LactMed: https://www.ncbi.nlm.nih.gov/books/NBK501922/
- BUMPS (UK Teratology Information Service): https://www.medicinesinpregnancy.org/
- Lifeline4Moms: https://www.umassmed.edu/lifeline4moms/
- Star Legacy Foundation (stillbirth and infant loss): https://starlegacyfoundation.org/
- Resolve (infertility): https://resolve.org/

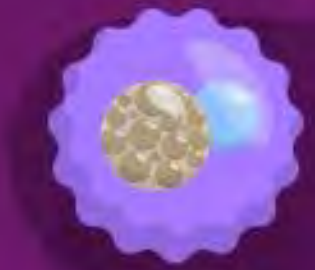
Syphilis and HIV

Strategies to Optimize Rural Perinatal Healthcare ECHO

Learn more at:
www.cdc.gov/sti

The State of STIs in the United States in 2023.

Sexually transmitted infections (STIs) are very common but preventable.



1.6 million cases of **CHLAMYDIA;** **9% decrease** since 2019.

601,319 cases of **GONORRHEA;** **2% decrease** since 2019.

209,253 cases of **SYPHILIS;** **61% increase** since 2019.

3,882 cases of **SYPHILIS AMONG NEWBORNS;** **106% increase** since 2019.

Syphilis

- *Treponema pallidum*
- Spirochete - corkscrew-shaped, motile microaerophilic bacterium that cannot be viewed by normal light microscopy.
- Transmitted sexually through skin and mucous membranes (during primary or secondary stages when lesions or rash are present), and hematogenously (transplacental spread to fetus)

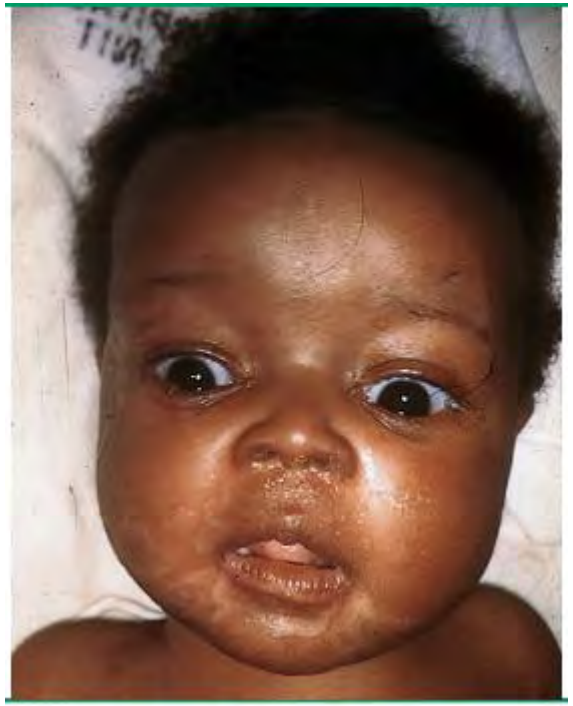
Syphilis in Pregnancy

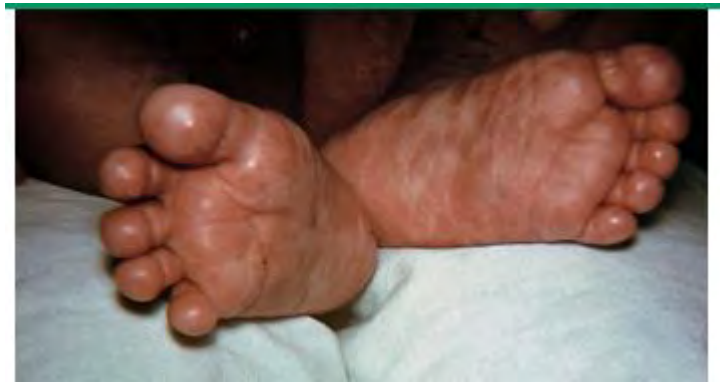
- Transplacental transmission of *T. pallidum* can occur at any time during gestation but occurs with increasing frequency as gestation advances.
- Women with untreated primary or secondary syphilis are more likely to transmit syphilis to their fetuses than women with latent disease.
- If acquired within 4 years of delivery, can lead to infection in fetus in 80% of cases and may result in stillbirth or infant death in up to 40%.
  - The risk of transmission is only 2% after four years.
- *T. pallidum* is not transferred in breast milk, but transmission may occur if the mother has a chancre on her breast.

N Engl J Med. 1952;247(2):48.

Congenital Syphilis

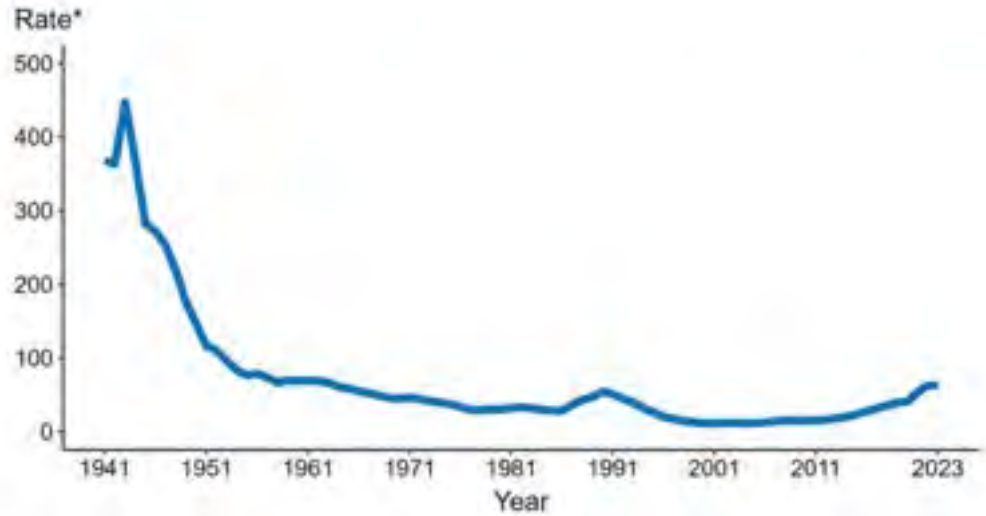
- Wide spectrum of clinical manifestations
- Only severe cases are clinically apparent at birth
  - 60-90% of live-born neonates with congenital syphilis are asymptomatic at birth
- Bones, liver, pancreas, intestine, kidney, and spleen are the most frequently and severely involved





Pediatr Infect Dis J. 2012;31(9):988
MMWR Morb Mortal Wkly Rep. 2015;64(44):1241

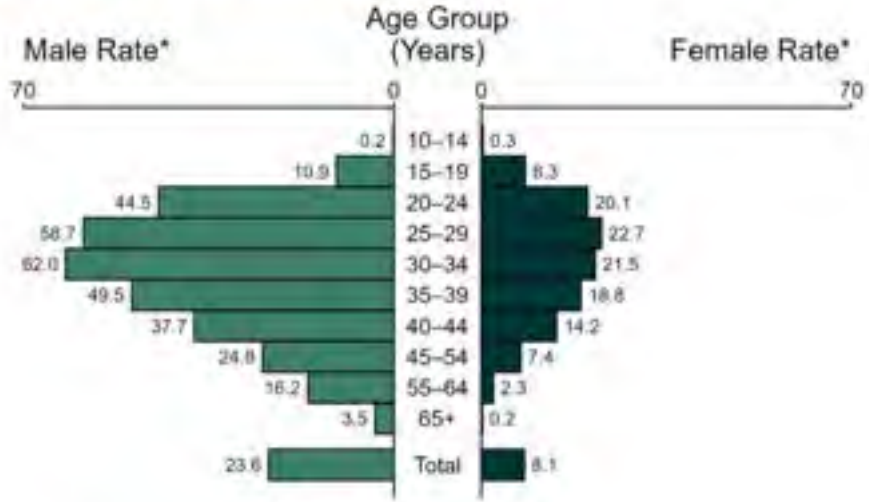
Syphilis — Rates of Reported Cases by Year, United States, 1941–2023



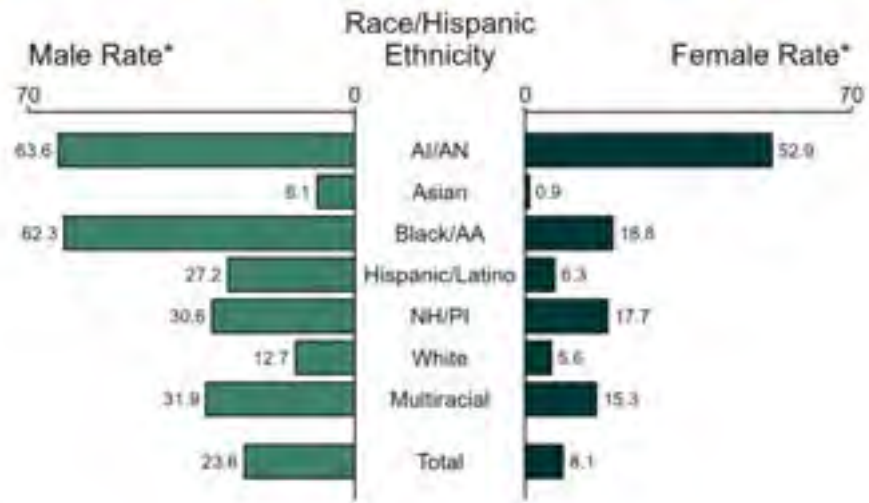
* Per 100,000

NOTE: Includes all stages of syphilis and congenital syphilis.

Primary and Secondary Syphilis — Rates of Reported Cases by Age Group and Sex, United States, 2023



Primary and Secondary Syphilis — Rates of Reported Cases by Race/Hispanic Ethnicity and Sex, United States, 2023

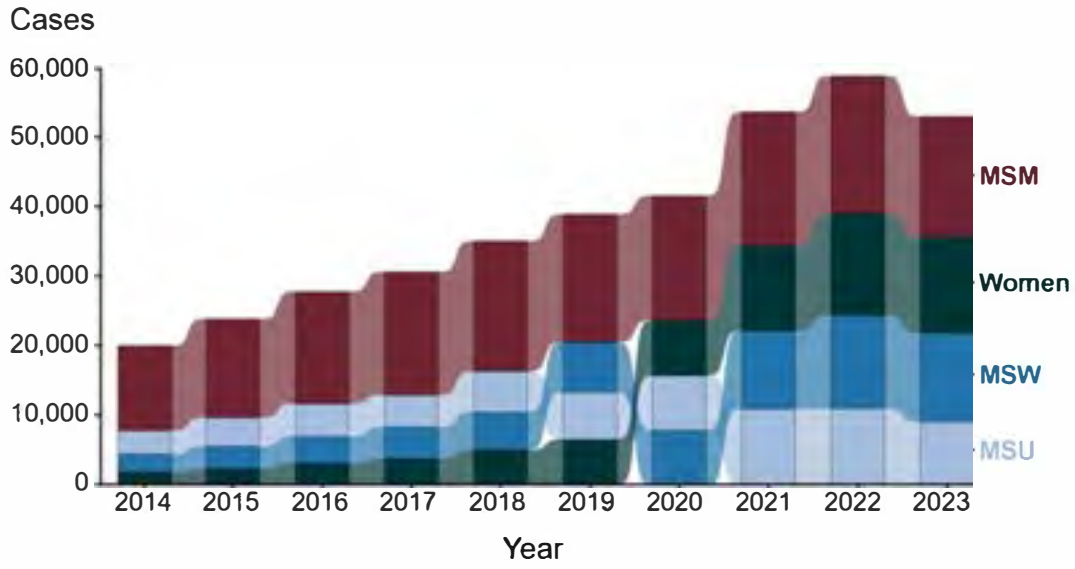


* Per 100,000

ACRONYMS: AI/AN = American Indian or Alaska Native; Black/AA = Black or African American; NH/PI = Native Hawaiian or other Pacific Islander

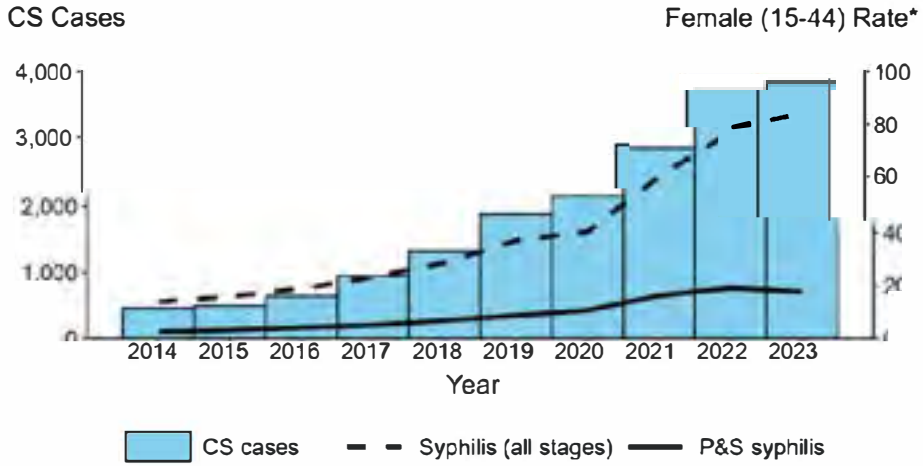
NOTE: In 2023, 2,292 primary and secondary syphilis cases among men (5.8%) and 647 cases among women (4.7%) had missing, unknown, or other race and were not reported to be of Hispanic ethnicity. These cases are included in the total rates.

Primary and Secondary Syphilis — Reported Cases by Sex and Sex of Sex Partners and Year, United States, 2014–2023



ACRONYMS: MSM = Men who have sex with men; MSU = Men with unknown sex of sex partners; MSW = Men who have sex with women only

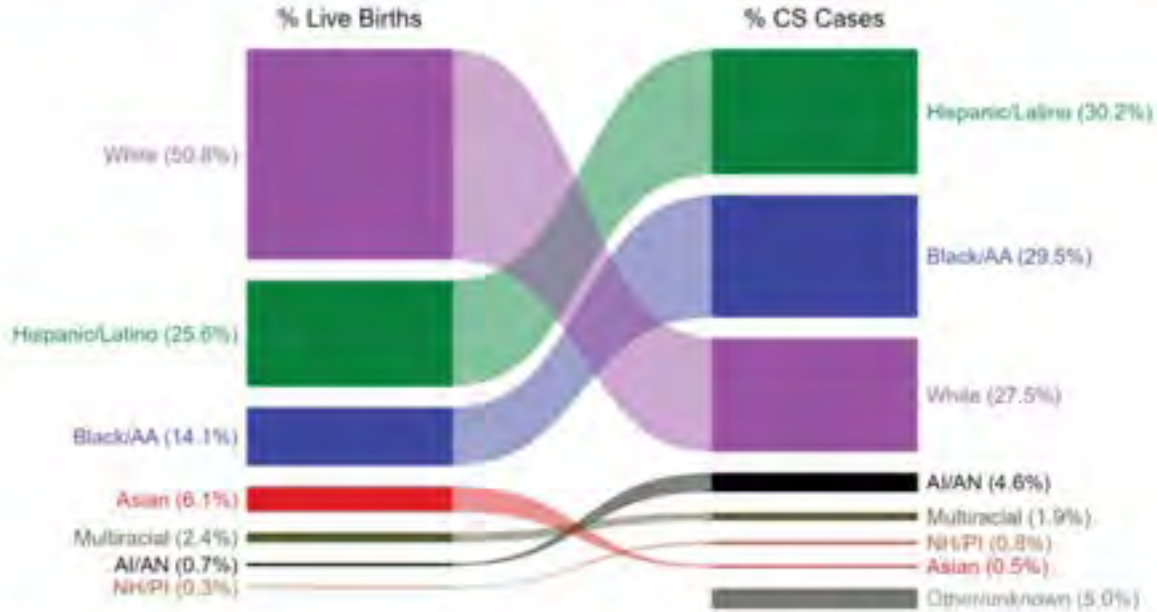
Congenital Syphilis — Reported Cases by Year of Birth and Rates of Reported Cases of Primary and Secondary Syphilis and Syphilis (All Stages) Among Women Aged 15–44 Years, United States, 2014–2023



* Per 100,000

ACRONYMS: CS = Congenital syphilis; P&S Syphilis = Primary and secondary syphilis

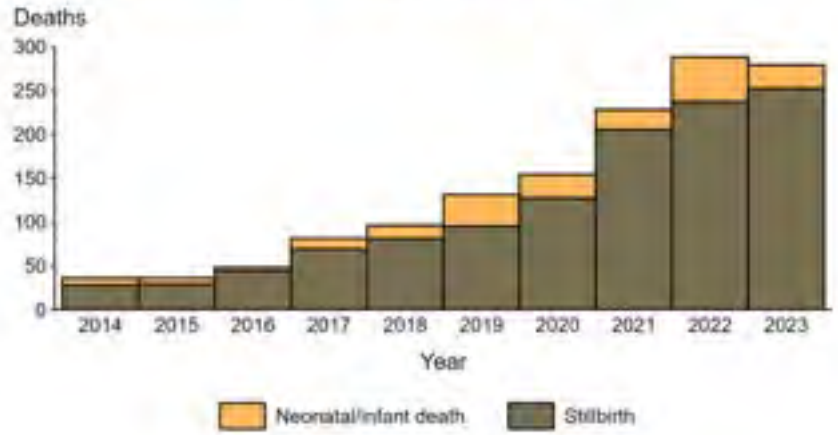
Congenital Syphilis — Total Live Births and Reported Cases by Race/Hispanic Ethnicity of Birth Parent, United States, 2023



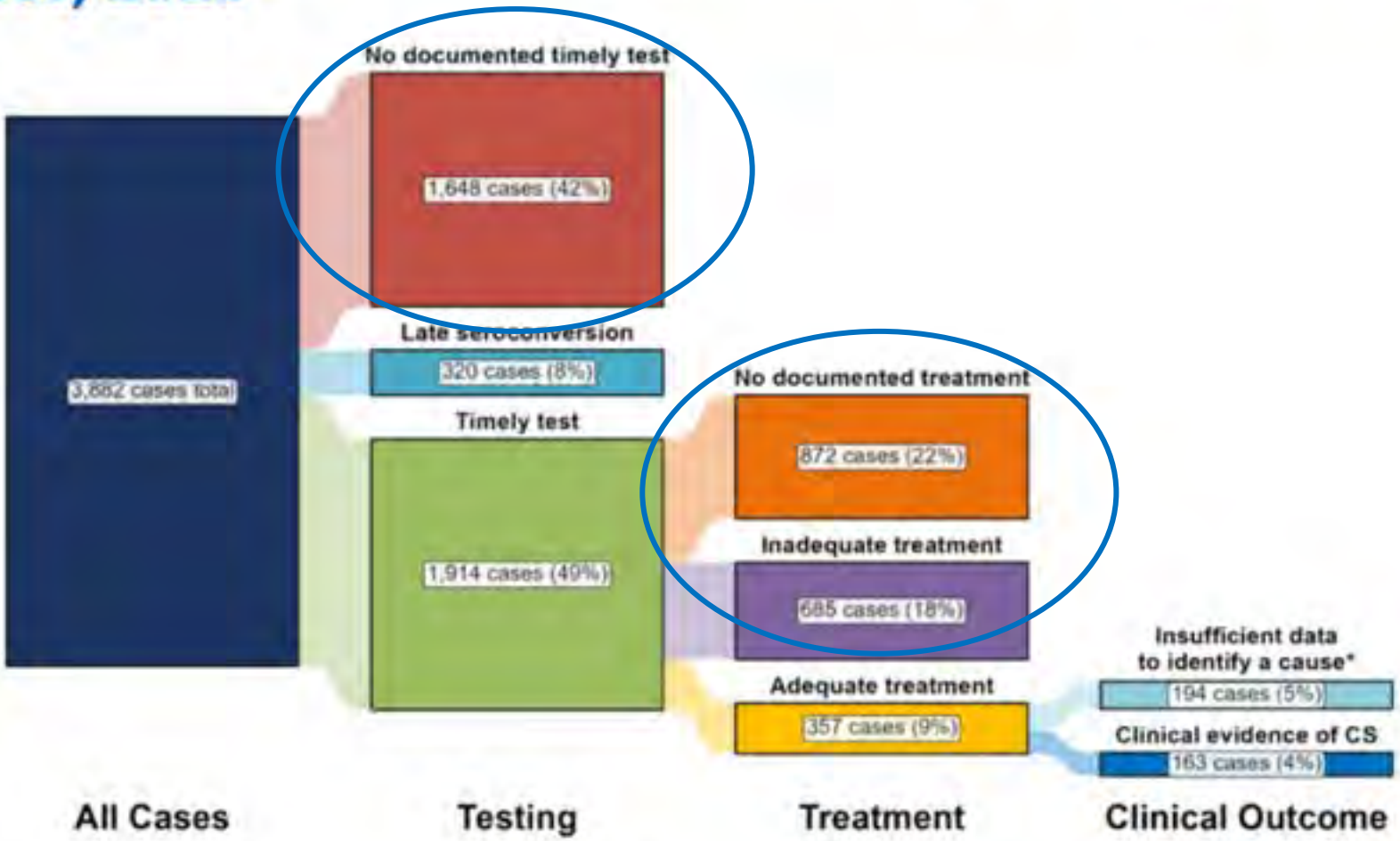
NOTE: In 2023, a total of 193 congenital syphilis cases (5.0%) had missing, unknown, or other race and were not reported to be of Hispanic ethnicity. These cases are included in the "other/unknown" category.

ACRONYMS: AI/AN = American Indian or Alaska Native; Black/AA = Black or African American; NH/PI = Native Hawaiian or other Pacific Islander

Congenital Syphilis — Reported Stillbirths and Neonatal/Infant Deaths by Year, United States, 2014–2023



Congenital Syphilis — Distribution of Receipt of Testing and Treatment by Pregnant Persons with a Congenital Syphilis Outcome, United States, 2023



* Cases with insufficient data to assign a likely missed opportunity were due to missing or incomplete data in case notification data at CDC. More complete data on these cases may be available at the jurisdictional level, allowing for ascertainment of the likely missed opportunity.

NOTE: Percentages represent the number of congenital syphilis (CS) cases among the 3,882 total CS cases reported among states and the District of Columbia in 2023.

Morbidity and Mortality Weekly Report

Vital Signs: Missed Opportunities for Preventing Congenital Syphilis — United States, 2022

10x

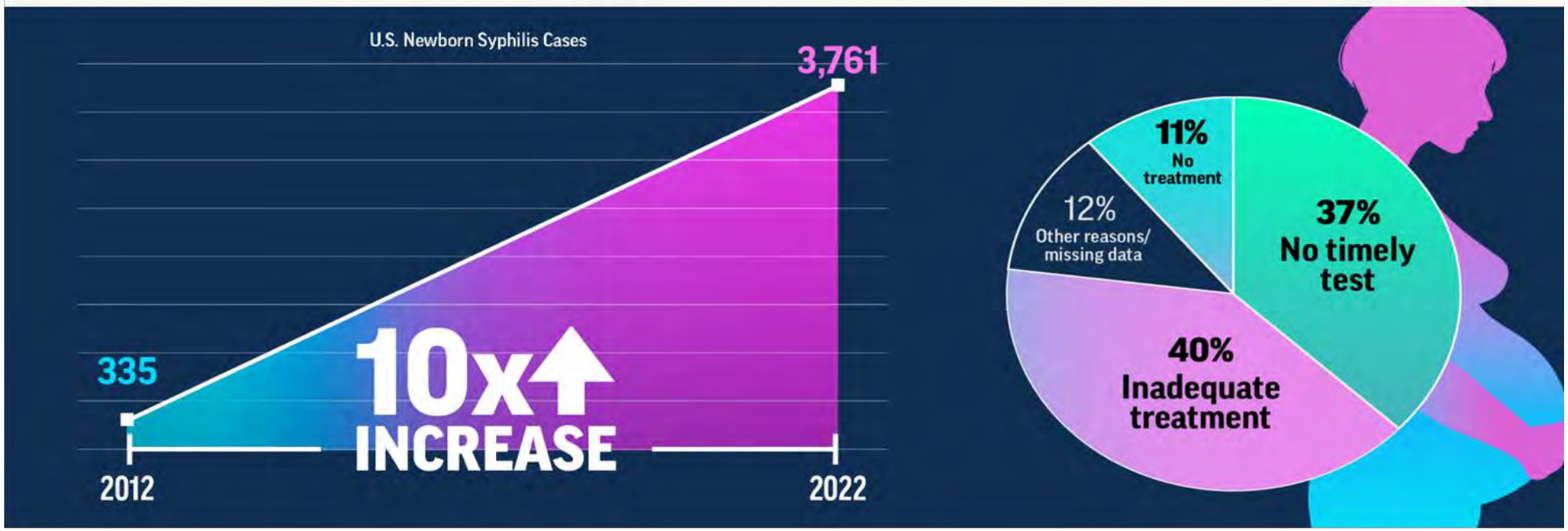
Over 10 times as many babies were born with syphilis in 2022 than in 2012.

9 in 10

Timely testing and treatment during pregnancy might have prevented almost 9 in 10 (88%) cases in 2022.

2 in 5

Two in 5 (40%) people who had a baby with syphilis did not get prenatal care.



https://www.cdc.gov/vitalsigns/newborn-syphilis/index.html

USPSTF Screening Recommendations for Syphilis

2022

Population	Recommendation	Grade
Asymptomatic, nonpregnant adolescents and adults who are at increased risk for syphilis infection	The USPSTF recommends screening for syphilis infection in persons who are at increased risk for infection.	A

- **Risk of syphilis is higher in men who have sex with men; persons with HIV infection or other sexually transmitted infections; persons who use illicit drugs; and persons with a history of incarceration, sex work, or military service.**
- However, clinicians should be aware of how common syphilis infection is in their community and assess patient's individual risk.

2018

Population	Recommendation	Grade
Pregnant women	The USPSTF recommends early screening for syphilis infection in all pregnant women.	A

CDC STI Guidelines 2021

- All pregnant women should be tested for syphilis at their first prenatal visit.
- For women at high risk for infection*, serologic testing should be performed twice during the third trimester: once at 28–32 wk gestation and again at delivery.
- Any woman who has a fetal death after 20 wk gestation should be tested for syphilis.
- No mother or neonate should leave the hospital without maternal serologic status having been documented at least once during pregnancy, and if the mother is considered high risk, documented at delivery.
- Concurrent HIV screening recommended for all pregnant woman.

2021 CDC STI Treatment Guidelines

*Women at high risk

- Diagnosed with a STI during pregnancy
- Exchanging sex for drugs or money
- Multiple sex partners
- Late entry into care (second trimester or later)
- No prenatal care
- Residence in an area of high syphilis prevalence
- Methamphetamine or heroin use
- Incarceration of woman or her partner
- Unstable housing or homelessness

Legal requirements for syphilis screening among pregnant women by time of test and state

	First Visit	Third Trimester	Delivery
Alabama	X	X	X
Alaska	X		
Arizona	X	X	X
Arkansas	X	X	
California	X	X	O
Colorado	X		
Connecticut	X	X	
Delaware	X	X	
DC	X	X	
Florida	X	X	O
Georgia	X	X	X
Hawaii			
Idaho	X		
Illinois	X	X	
Indiana	X	O	
Iowa			
Kansas	X		
Kentucky	X		
Louisiana	X	X	O
Maine			
Maryland	X	X	O
Massachusetts	X		
Michigan	X	X	O
Minnesota			
Mississippi	X	X	X
Missouri	X	O	O
Montana	X		
Nebraska	X		
Nevada	X	X	O
New Hampshire			
New Jersey	X		X
New Mexico	X		
New York	X	X	
North Carolina	X	X	X
North Dakota			
Ohio	X		
Oklahoma	X	O	O
Oregon	X		
Pennsylvania	X	O	
Rhode Island	X		
South Carolina	X		
South Dakota	X		
Tennessee	X	O	
Texas	X	X	X
Utah	X		
Vermont	X		
Virginia	X		
Washington	X		
West Virginia	X		
Wisconsin			
Wyoming	X		

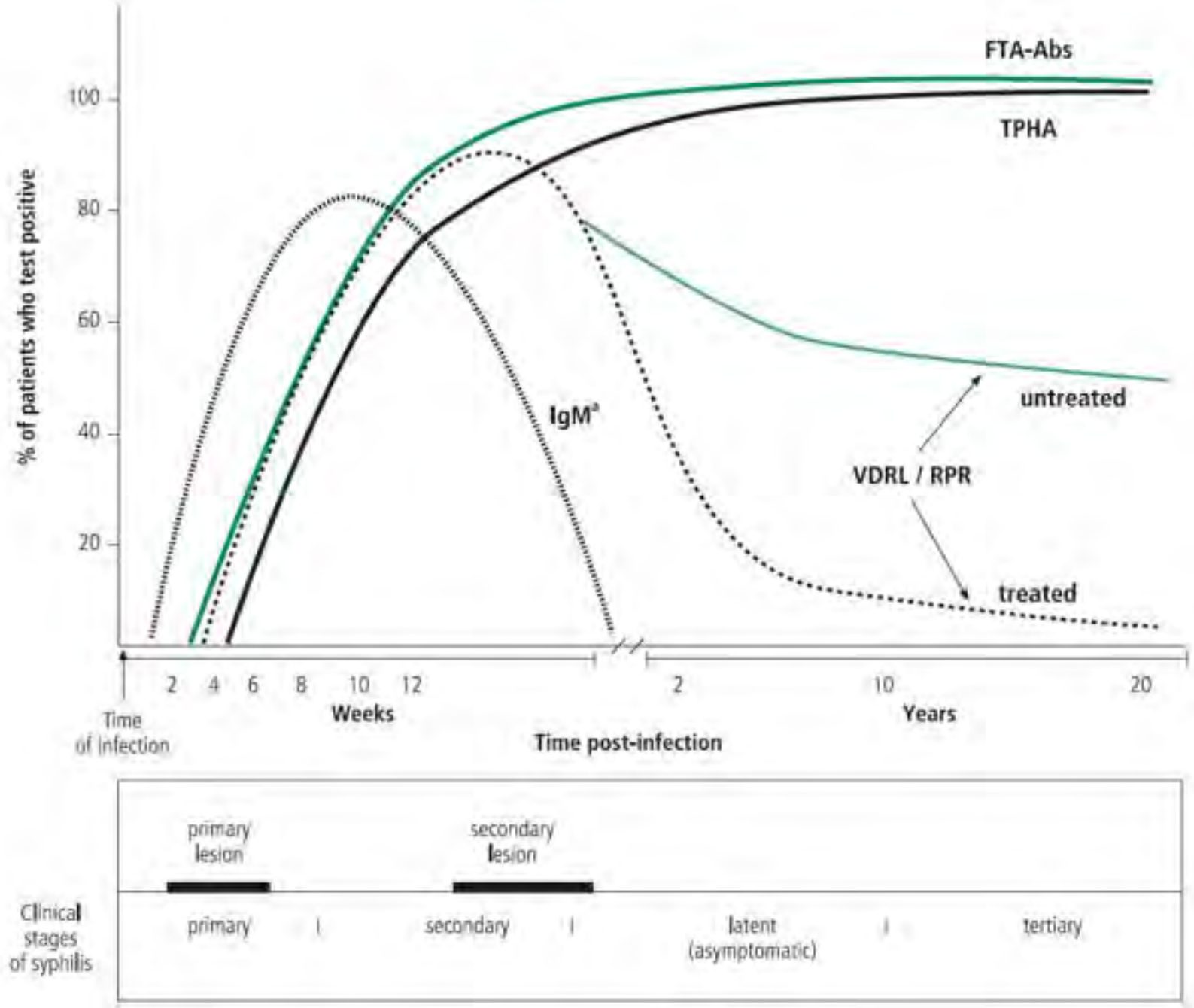
X	Screening required
O	Screening Required only if at increased risk

[Prenatal-Syphilis-Screening-Laws-Web-Document-25-July-2024-final.pdf]

Serologic Tests

- Nontreponemal – nonspecific, low cost, able to quantify response to treatment
  - Rapid plasma reagin (RPR)
  - Venereal Disease Research Laboratory (VDRL)
  - Toluidine Red Unheated Serum Test (TRUST)

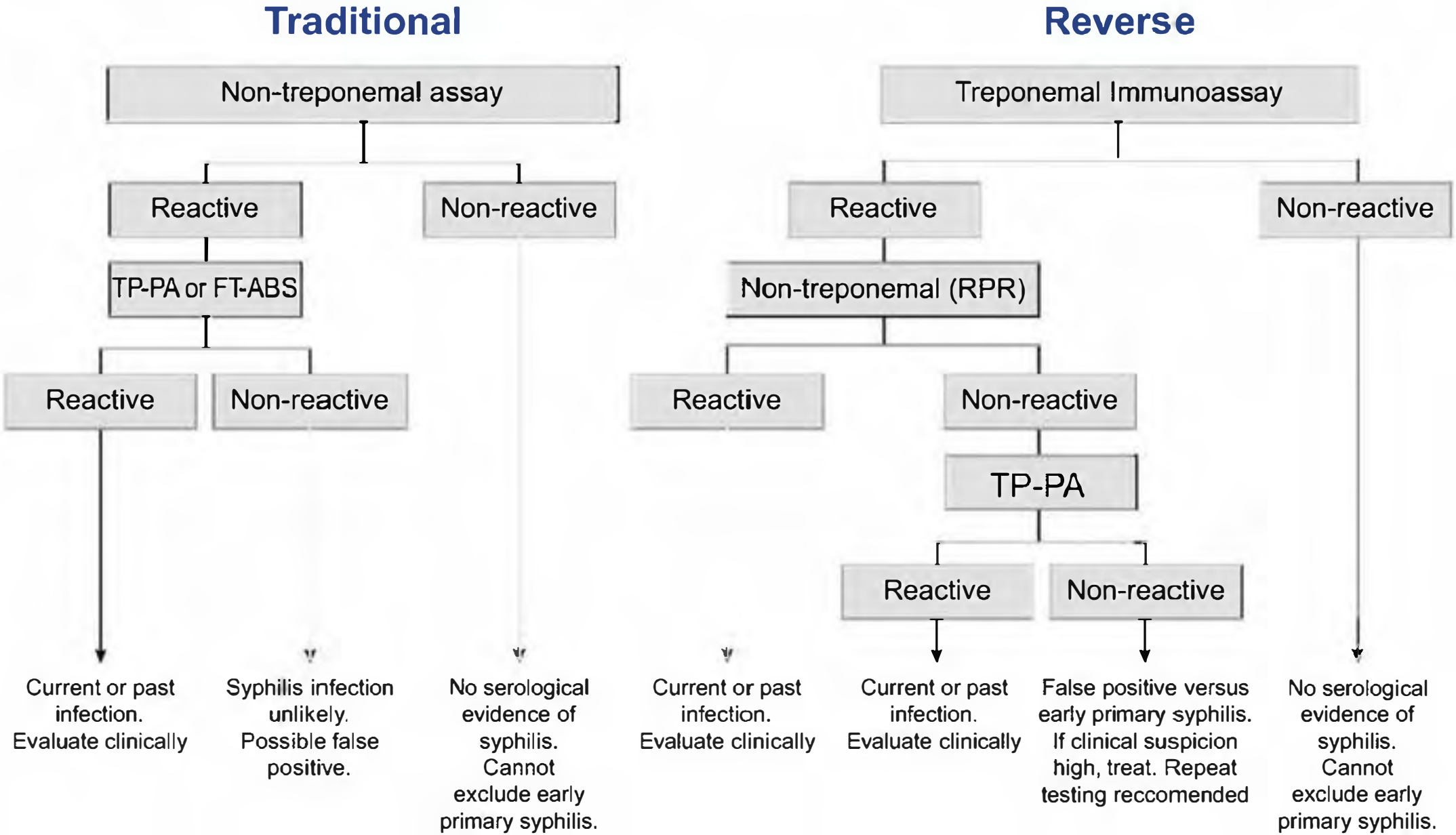
- Treponemal – more complex, expensive, specific, qualitative
  - Fluorescent treponemal antibody absorption (FTA-ABS)
  - *T. pallidum* particle agglutination assay (TPPA)
  - *T. pallidum* enzyme immunoassay (TP-EIA)
  - Microhemagglutination test for antibodies to *Treponema pallidum* (MHA-TP)
  - Chemiluminescence immunoassay (CIA)



Rac et al. Syphilis during pregnancy: a preventable threat to maternal-fetal health. AJOG. 2017.

B

Screening Algorithms



Rac et al. Syphilis during pregnancy: a preventable threat to maternal-fetal health. AJOG. 2017.

False-**positive** tests

Nontreponemal tests

- Biologically due to pregnancy
  - 31% FP VDRL
- Acute febrile illness
- Recent immunization
- Autoimmune disorders
- IVDU
- Chronic liver disease
- HIV

Treponemal tests

- Biologically due to pregnancy
  - 47-88% FP TP-EIA or CIA
- Advanced age
- Tumor
- Dialysis
- Autoimmune disease
- Other spirochetal infections, malaria, leprosy

Hence all positive tests need confirmatory testing!

Genitourin Med. 1990;66(2):76
Clin Microbiol Rev. 1995;8(1):1

J Med Assoc Thai. 2016;99(2):119
Clin Infect Dis. 2015;61(7):1049.
Sex Transm Dis. 2011;38(12):1126

False-**negative** nontreponemal test

- Very early infection (primary or secondary)
  - 20-30% of patients presenting with chancre will have negative nontreponemal test
- Prozone reaction
  - Antibody titers are high (as often seen in secondary syphilis), an overabundance of antibodies interferes with clumping of antigen-antibody complexes
  - Occurs in pregnancy, HIV and neurosyphilis
- Early treatment preventing antibody formation
- Late infection (nontreponemal tests become nonreactive over time)

Clin Infect Dis. 2010;51(6):700
Ann Intern Med. 1986;104(3):368

HIV

- *Human Immunodeficiency Virus*
- Attacks the immune system and without treatment leads to AIDS (acquired immunodeficiency syndrome)
- Spreads through anal or vaginal sex, sharing needles or other drug injection equipment, or during pregnancy
- No cure, but treatment saves lives and prevents transmission to others

Perinatal Transmission

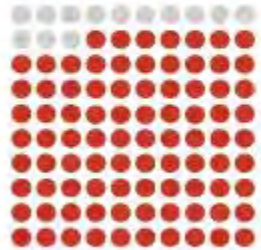
HIV can be passed from mother-to-child anytime during pregnancy, childbirth, and breastfeeding. This is called *perinatal transmission*.

HIV and Pregnancy

- 3,000 HIV infected women give birth annually in the US
- Estimated rate of perinatal transmission in the absence of intervention is about **25%**
  - 20% of transmission occurs before 36wks
  - 50% occurs between 36wks and delivery
  - 30% occurs during active labor and delivery
- Acute HIV infection **during pregnancy or while breastfeeding** confers very high risk of HIV transmission to the child due to high levels of HIV RNA in maternal plasma, genital tract and breastmilk.
- With the use of suppressive **ART during pregnancy**, followed by postnatal **infant ART prophylaxis**, the current rate of perinatal HIV transmission in the US is **<1%**.

In 2022, an estimated **1.2 million people** had HIV.

For every 100 people with HIV



87 knew their HIV status.

Estimated HIV infections in the US by transmission category, 2022

There were **31,800 estimated new HIV infections** in the US in 2022. Of those:

were among gay, bisexual, and other men who reported male-to-male sexual contact*

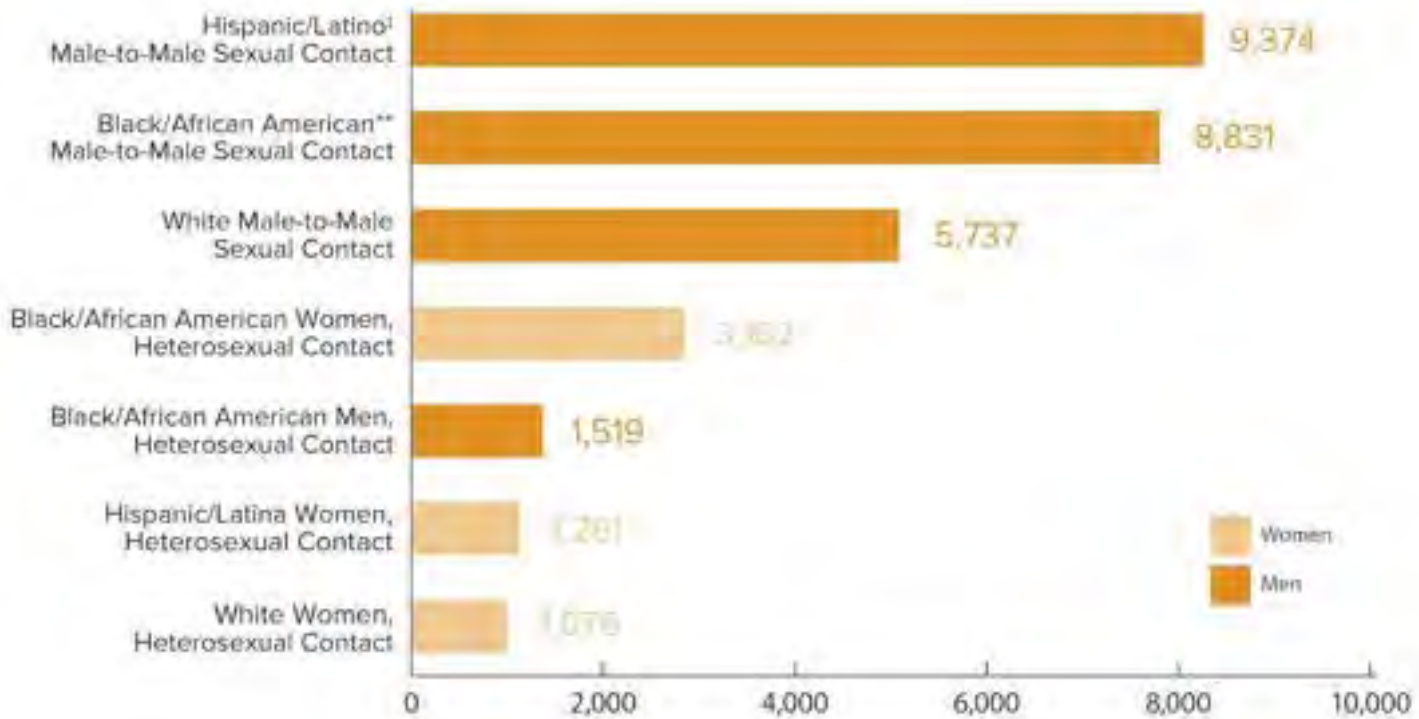
were among people who reported heterosexual contact

were among people who inject drugs

Fast Facts: HIV in the United States | HIV | CDC

HIV diagnoses in the US and 6 territories and freely associated states for the most-affected subpopulations, 2022*†

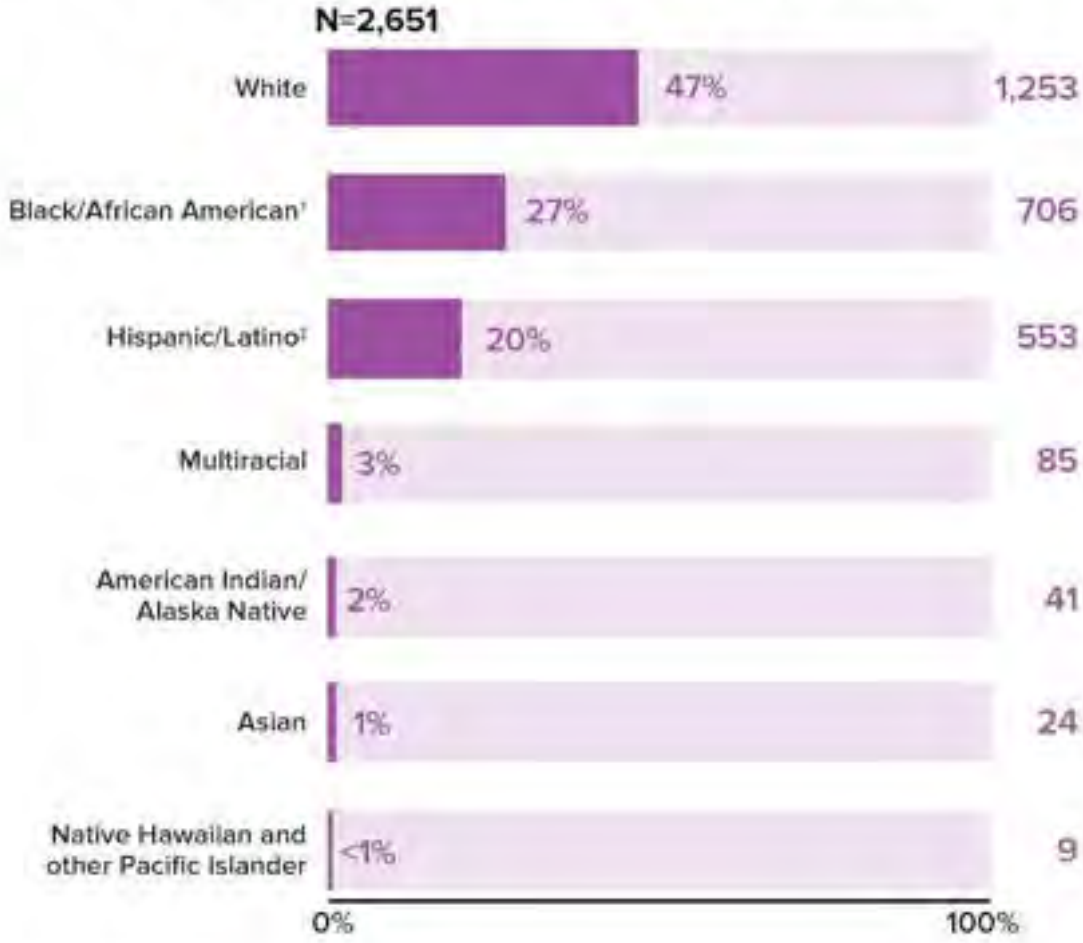
Gay and bisexual men are the population most affected by HIV.



[Fast Facts: HIV in the United States | HIV | CDC]

HIV diagnoses among people who inject drugs in the US and 6 territories and freely associated states by race and ethnicity, 2022*

White people accounted for the highest number of new HIV diagnoses among people who inject drugs.



Total may not equal 100% due to rounding.

* Among people aged 13 and older.

† *Black* refers to people having origins in any of the Black racial groups of Africa. *African American* is a term often used for people of African descent with ancestry in North America.

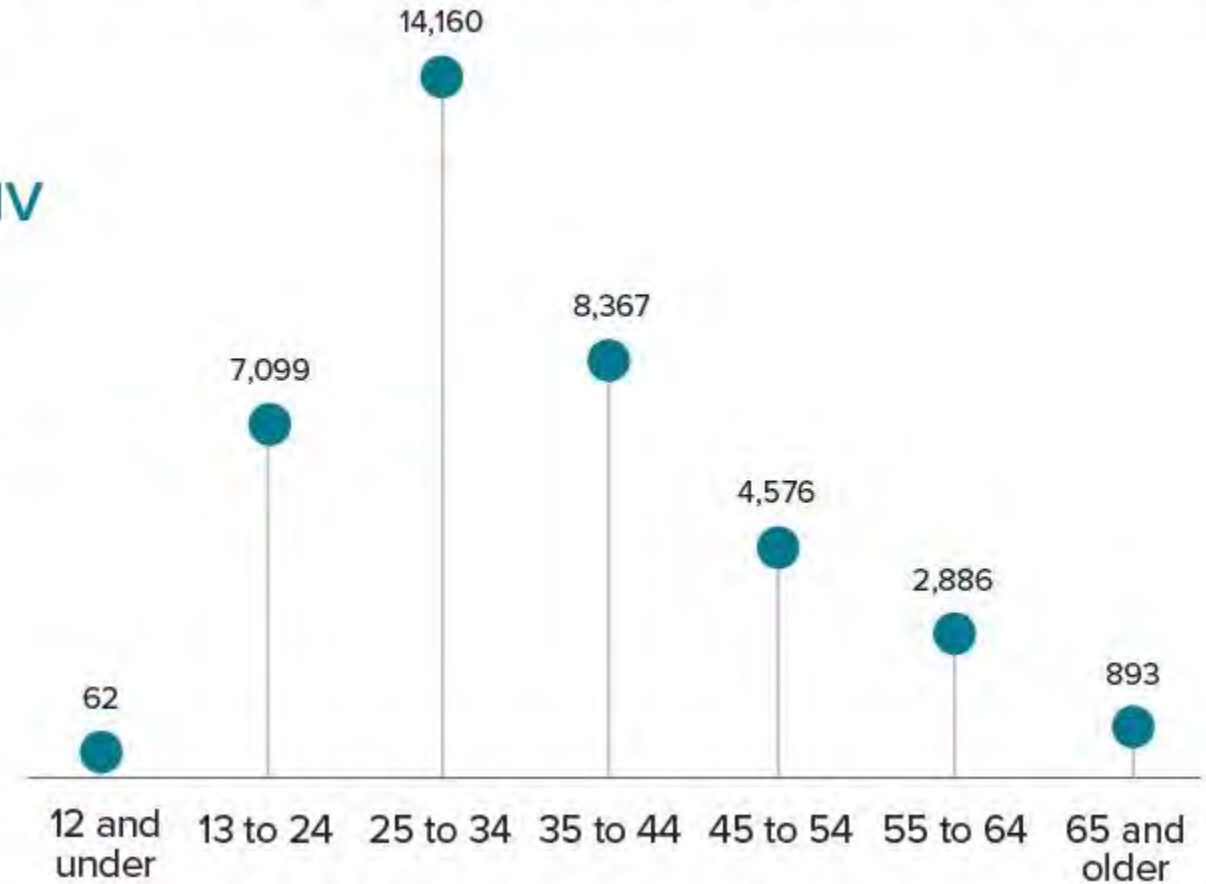
‡ Hispanic/Latino people can be of any race.

Source: CDC. Diagnoses, deaths, and prevalance of HIV in the United States and 6 territories and freely associated states, 2022. *HIV Surveillance Report*, 2024; 35.

[Fast Facts: HIV in the United States | HIV | CDC]

HIV diagnoses in the US and 6 territories and freely associated states by age, 2022

In 2022, 37,981 people received an HIV diagnosis in the US and 6 territories and freely associated states. People aged 13 to 34 accounted for more than half (56%) of new HIV diagnoses in 2022.

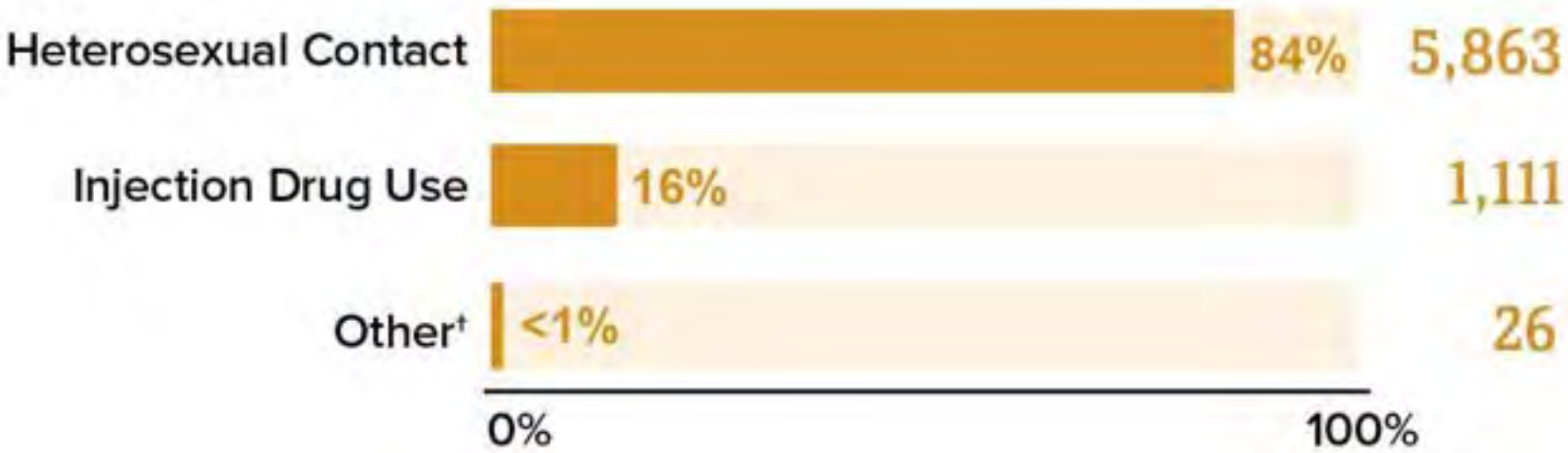


Source: CDC. Diagnoses, deaths, and prevalence of HIV in the United States and 6 territories and freely associated states, 2022. *HIV Surveillance Report*, 2022;35.

[Fast Facts: HIV in the United States | HIV | CDC]

There were **36,801 new HIV diagnoses** in the US and dependent areas in 2019. Of those, 19% (6,999) were among women.

Most new HIV diagnoses among women were attributed to heterosexual contact.



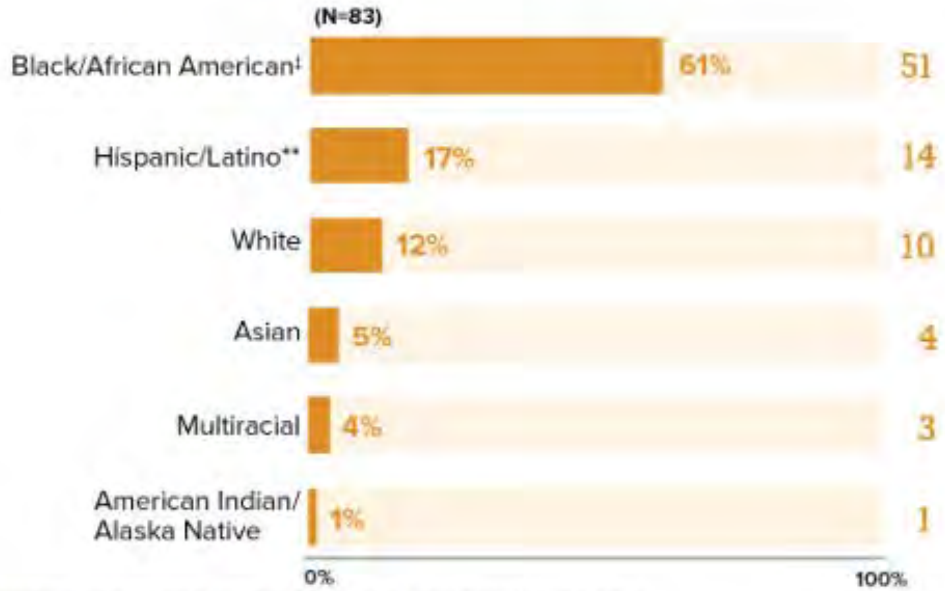
Fast Facts: HIV in the United States | HIV | CDC

Of the **36,801 new HIV diagnoses** in the US and dependent areas in 2019, <1% (84) were due to perinatal transmission.*

*Includes HIV diagnoses attributed to perinatal transmission among adults, adolescents, and children.

New Perinatal HIV Diagnoses in the US and Dependent Areas by Race and Ethnicity, 2019*†

New perinatal HIV diagnoses disproportionately affect certain racial and ethnic groups.



* In 2019, there were no cases of perinatal HIV among Native Hawaiian and other Pacific Islander people.

† Includes HIV diagnoses attributed to perinatal transmission among adults, adolescents, and children. Data have been statistically adjusted to account for missing transmission category.

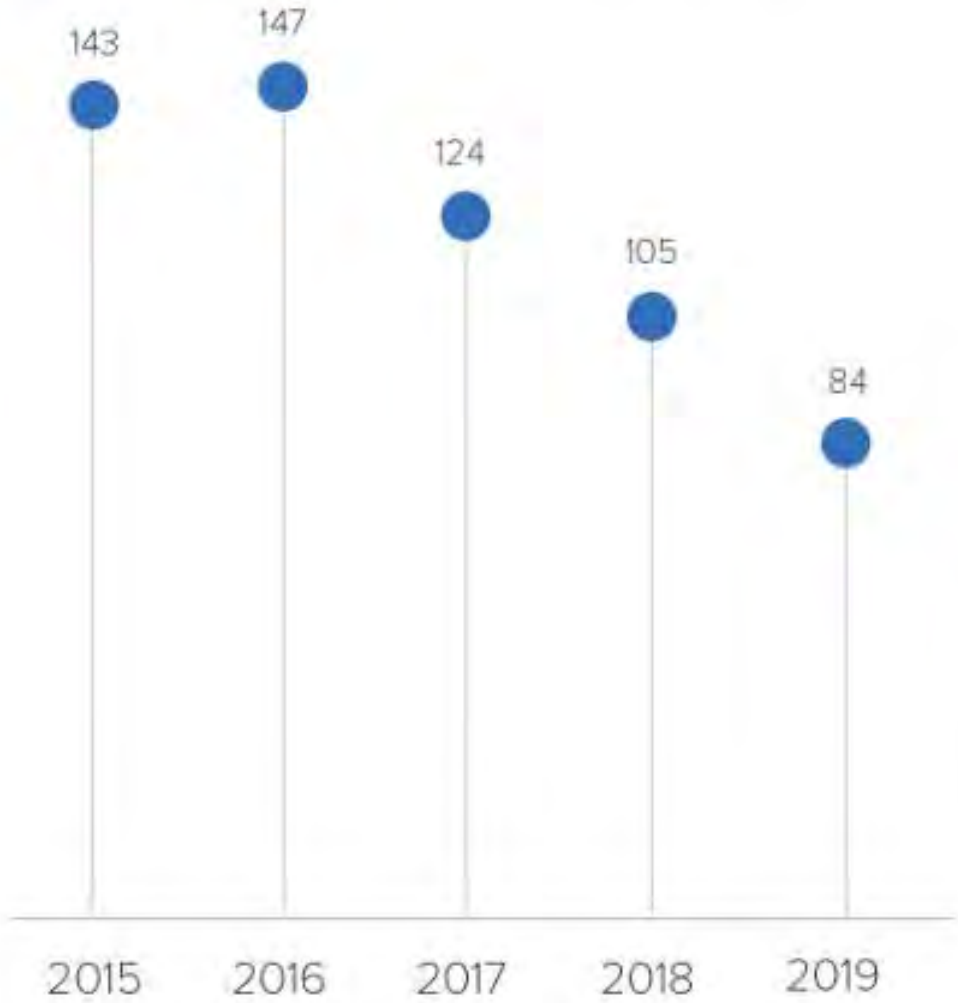
‡ *Black* refers to people having origins in any of the Black racial groups of Africa. *African American* is a term often used for people of African descent with ancestry in North America.

** Hispanic/Latino people can be of any race.

Source: CDC. Diagnoses of HIV infection in the United States and dependent areas, 2019. *HIV Surveillance Report* 2021;32.

Trends in New Perinatal HIV Diagnoses in the US and Dependent Areas, 2015-2019*

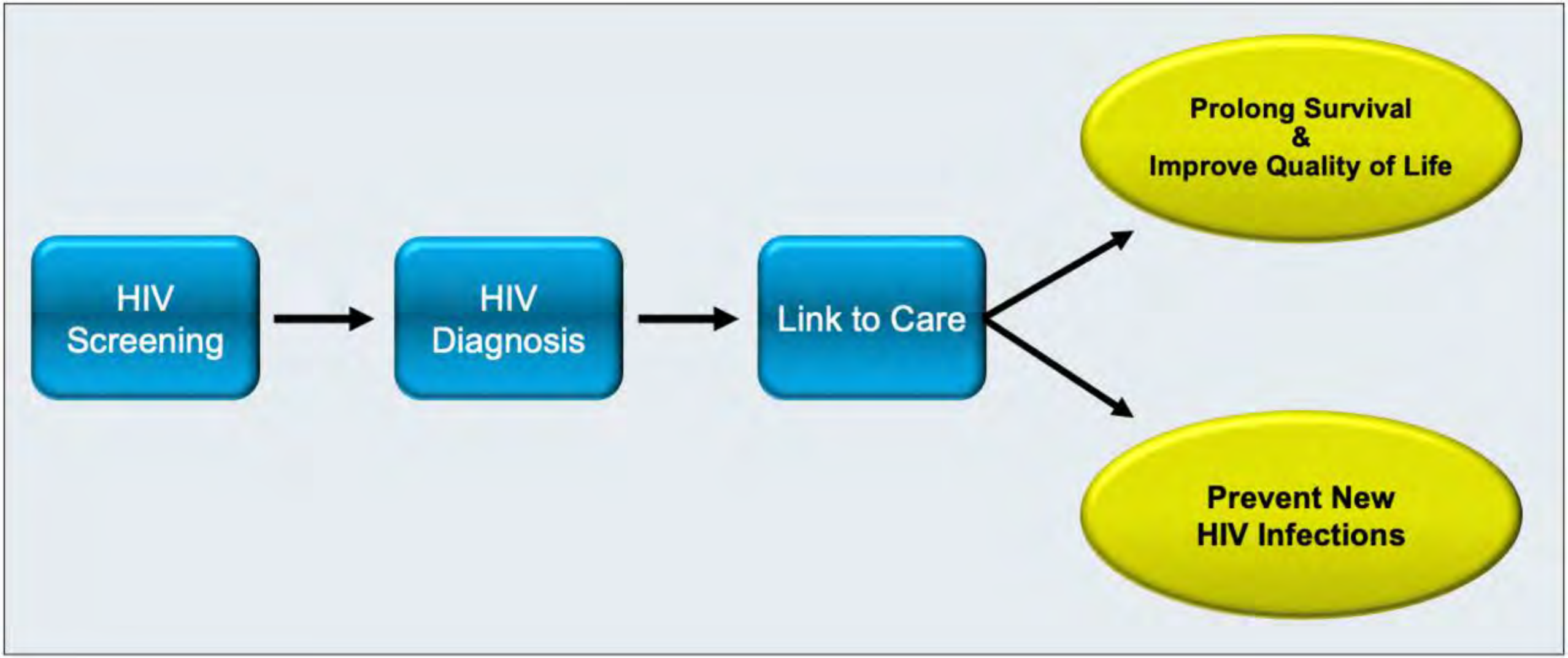
Perinatal HIV diagnoses decreased 41% from 2015 to 2019.



*Includes HIV diagnoses attributed to perinatal transmission among adults, adolescents, and children.

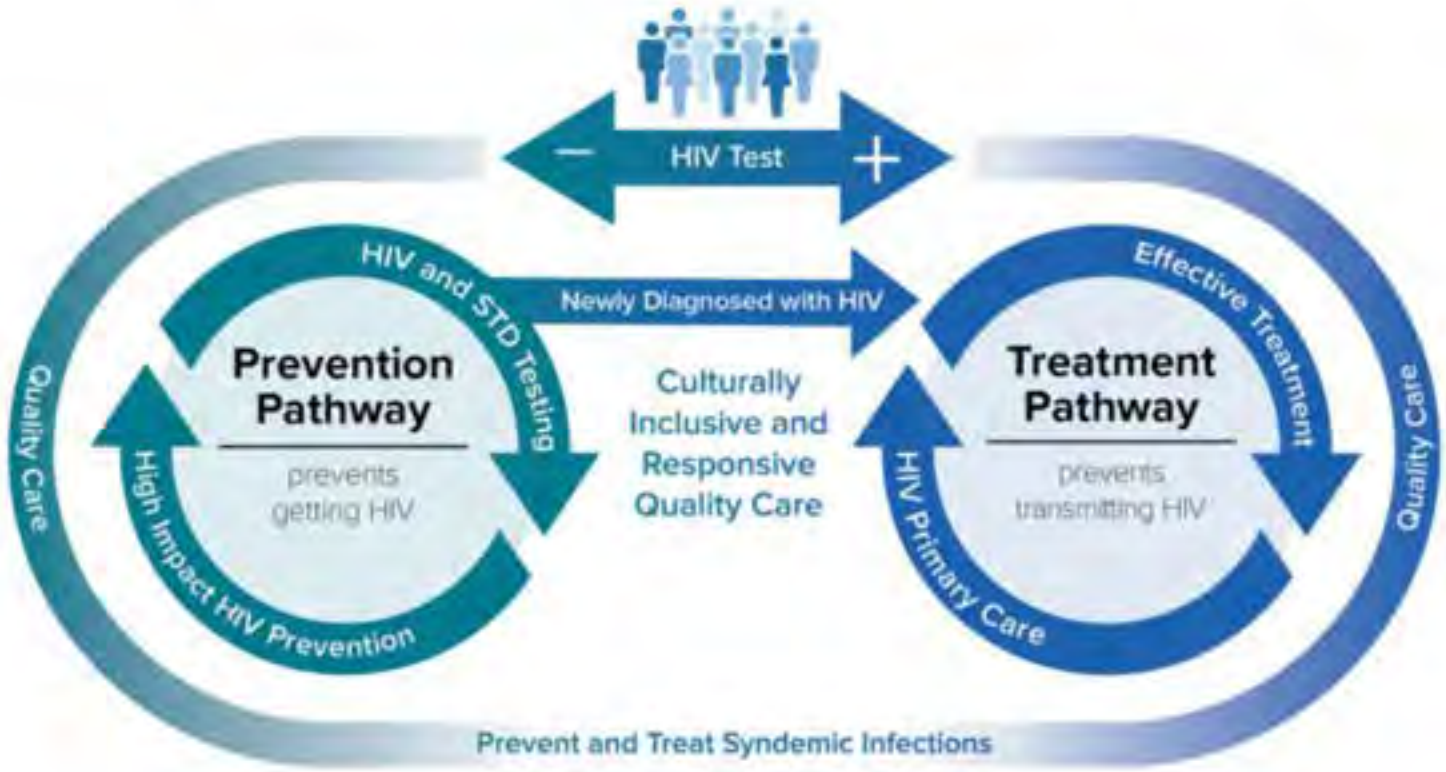
Source: CDC. Diagnoses of HIV infection in the United States and dependent areas, 2019. *HIV Surveillance Report* 2021;32.

Goals of routine screening



Status Neutral HIV Prevention and Care

People whose HIV tests are negative are offered powerful prevention tools like PrEP, condoms, harm reduction (e.g. SSPs), and supportive services to stay HIV negative.



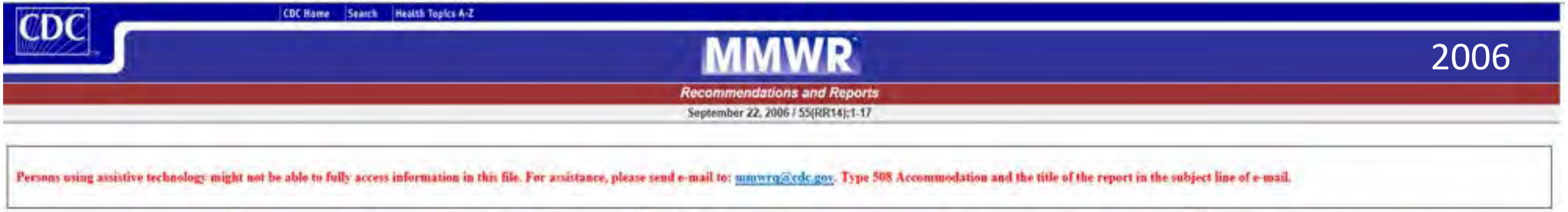
People whose HIV tests are positive enter primary care and are offered effective treatment and supportive services to achieve and maintain viral suppression.

Follow CDC guidelines to test people for HIV. Regardless of HIV status, quality care is the foundation of HIV prevention and effective treatment. Both pathways provide people with the tools they need to stay healthy and stop HIV.

CDC

LET'S STOP HIV TOGETHER

Ending the HIV Epidemic



- Opt-out screening for:
  - All persons age 13 through 64 yrs
  - All patients with TB
  - All patients with STI
- Persons at high risk should be screened at least annually
  - MSM
  - HIV + sex partner
  - >1 partner
  - IVDU and their sex partners
  - Exchange sex for drugs or money
- **Routine prenatal screening with repeat screening in 3rd trimester in certain high risk populations (2001)**

USPSTF 2019 HIV Screening Recommendations

Recommendation Summary

Population	Recommendation	Grade
Pregnant persons	The USPSTF recommends that clinicians screen for HIV infection in all pregnant persons, including those who present in labor or at delivery whose HIV status is unknown.	A
Adolescents and adults aged 15 to 65 years	The USPSTF recommends that clinicians screen for HIV infection in adolescents and adults aged 15 to 65 years. Younger adolescents and older adults who are at increased risk of infection should also be screened. See the Clinical Considerations section for more information about assessment of risk, screening intervals, and rescreening in pregnancy.	A

Maternal HIV Testing and Identification of Perinatal HIV Exposure

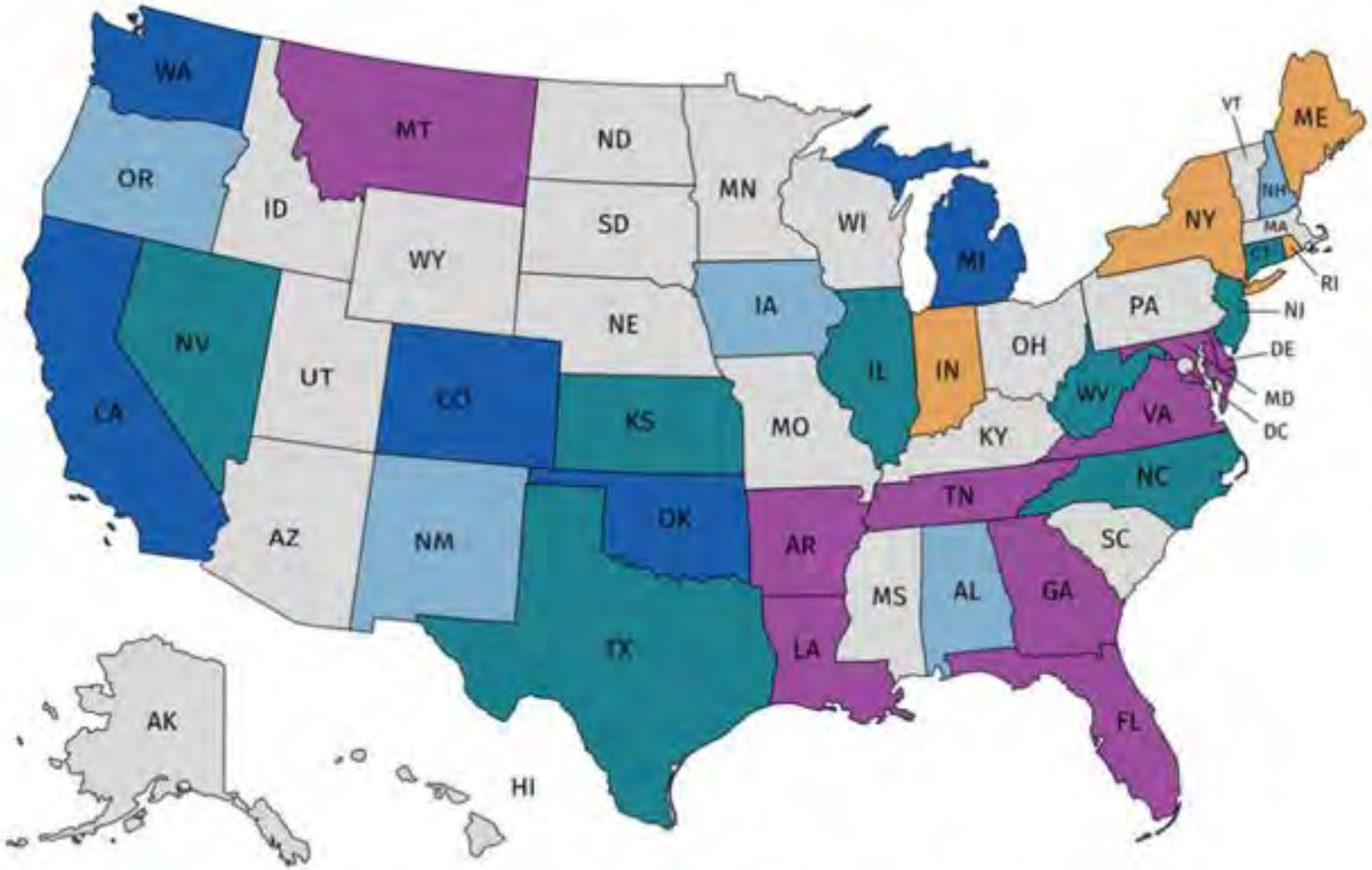
Maternal HIV Testing and Identification of Perinatal HIV Exposure | NIH (1/2024)

- HIV testing is recommended for all sexually active women and a routine component of preconception care.
- All women should be tested as early as possible during each pregnancy.
- Partners of all pregnant women should be referred for HIV testing when their status is unknown.
- Repeat HIV testing in the third trimester is recommended for pregnant women who are at increased risk of acquiring HIV*.
- Repeat HIV testing is recommended for pregnant women with a STI or with signs and symptoms of acute HIV infection, or ongoing exposure to HIV, as well as referral for initiation of PrEP if HIV testing is negative.
- Expedited HIV testing should be performed during labor or delivery for women with undocumented HIV status and for those who tested negative early in pregnancy but are at increased risk of HIV infection* and were not retested in the third trimester.

*Women at increase risk of HIV…

- Those who are injection drug users or have sex with people who inject drugs
- Those who exchange sex for money or drugs
- Those who are sex partners of individuals with HIV
- Those who have had a new sex partner or more than one sex partner during the current pregnancy
- Those who have a suspected or diagnosed STI during pregnancy

…**should have repeat HIV testing during the third trimester, before 36 weeks gestation.**



Statutes for HIV Testing During Pregnancy BUT NOT Specific to 3rd Trimester, Labor & Delivery, or for Newborns (N=5)

Statutes for HIV Testing During Labor & Delivery BUT NOT Specific to 3rd Trimester or for Newborns (N=5)

Statutes for HIV Testing During the 3rd Trimester and for Newborns (N=8)

Statutes for HIV Testing During the 3rd Trimester BUT NOT Specific for Newborns (N=9)

Statutes for HIV Testing for Newborns BUT NOT Specific to 3rd Trimester (N=4)

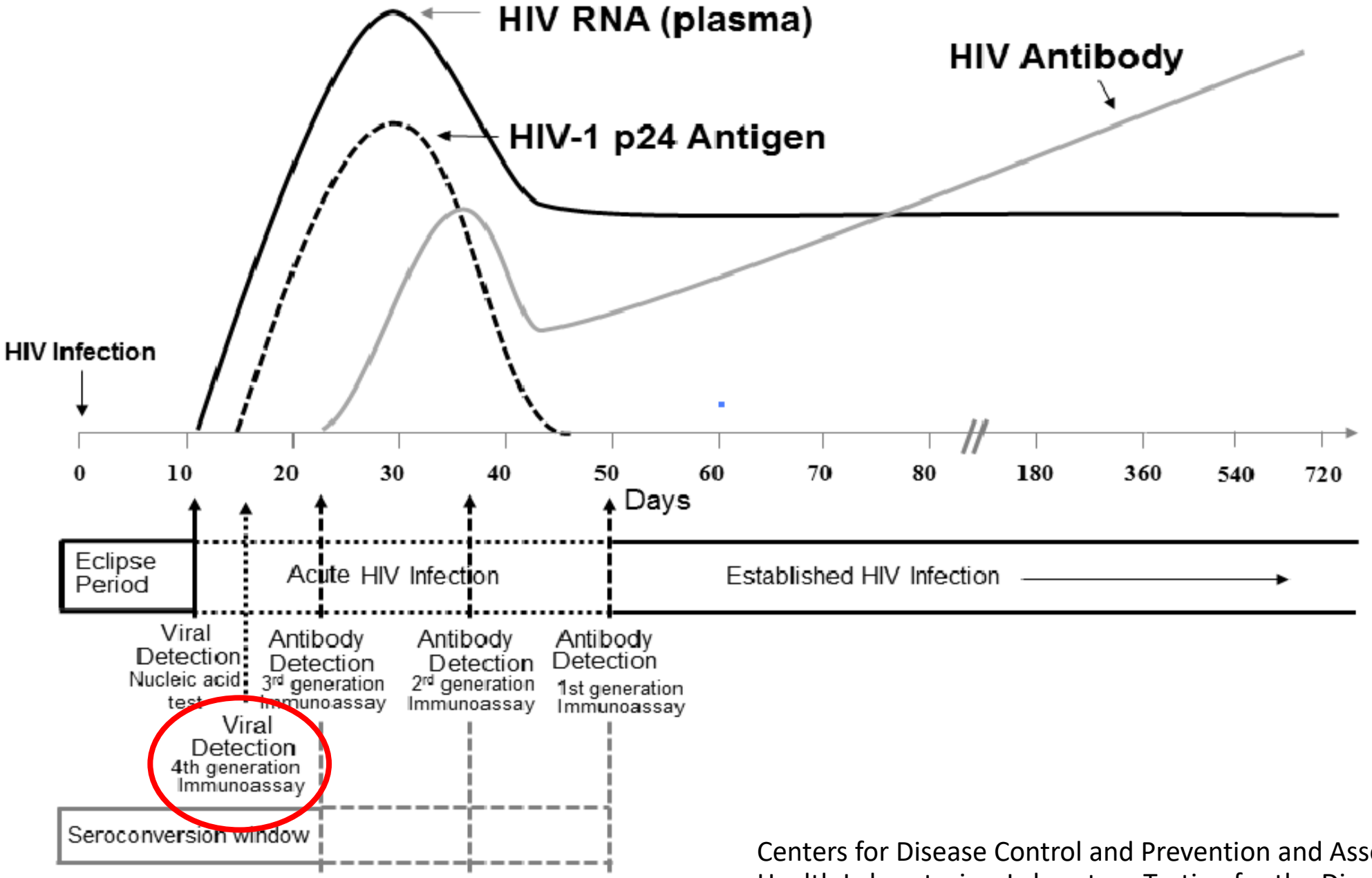
No Statutes for HIV Testing During Pregnancy (N=20)

Public Health Reports 2018, Vol. 133(5) 601-605.

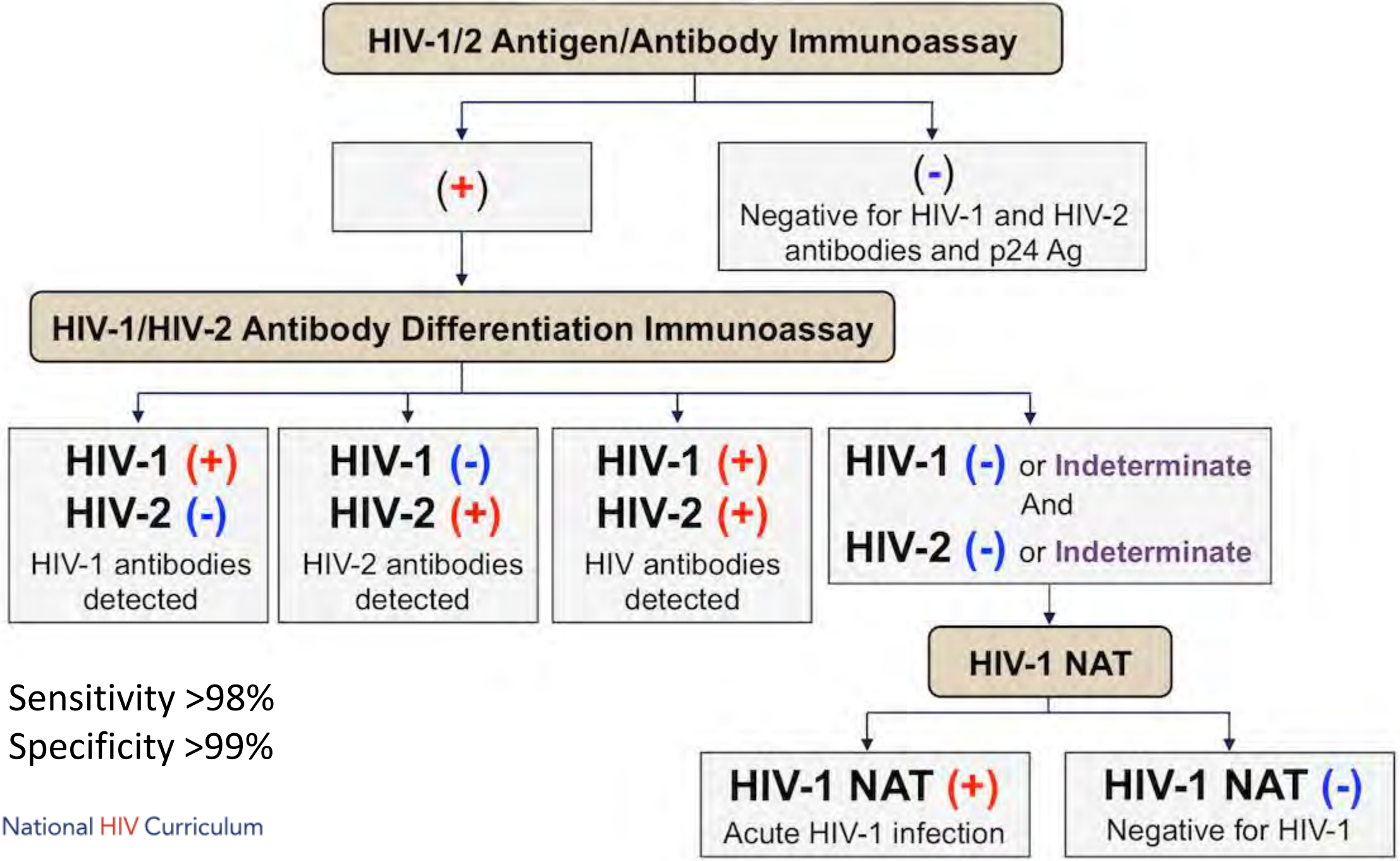
Serologic tests

- Screening tests
  - HIV antigen-antibody laboratory-based tests
  - *HIV antigen-antibody point-of-care tests*
  - HIV antibody laboratory-based tests
  - *HIV antibody point-of-care tests*

- Diagnostic tests
  - HIV-1/2 differentiation assays
  - HIV nucleic acid diagnostic tests



Centers for Disease Control and Prevention and Association of Public Health Laboratories. Laboratory Testing for the Diagnosis of HIV Infection



Sensitivity >98%

Specificity >99%

National HIV Curriculum

False negatives

- A false-negative HIV antibody (or antigen-antibody) test result most often occurs when performing testing in:
  - A person with acute HIV
  - Laboratory error
  - Following receipt of potent antiretroviral therapy very early after HIV acquisition
  - Persons who have defects in HIV-specific immunity and thus fail to generate certain antibodies
  - Persons who have acquired HIV while receiving preexposure prophylaxis
  - Persons with hypogammaglobulinemia
  - Persons who recently received potent immunosuppressant medications
- A false-negative p24 antigen test can occur in the first several weeks after HIV acquisition (usually positive by day 17)
- A false-negative HIV RNA tests can occur in the first week or two after HIV acquisition (typically positive by day 10) and in persons chronically infected with HIV who have inherently strong immunologic control of HIV and thus may have undetectable HIV RNA levels in the absence of antiretroviral therapy.

False positives

- A false-positive HIV test may occur due to polyclonal cross-reactivity, which is more common in the setting of pregnancy, recent inoculation with influenza vaccine, autoimmune disorders, receipt of an investigational HIV-1 vaccine, receipt of gamma globulin, prior blood transfusions, HTLV-1/2 infection, recent incident viral infection, collagen vascular diseases, and laboratory errors.
- A false-positive HIV NATs may occur in persons who received chimeric antigen receptor (CAR) T-cell therapy, due to the lentivirus used as the vector in manufacturing these individualized therapies; in these cases the lentivirus vector used had incorporated a transgene plasmid that contained part or all of the HIV *gag* sequence.[

Determining whether a person's HIV screening test result is accurate depends on the pretest probability and the prevalence of HIV in the testing community.

Summary

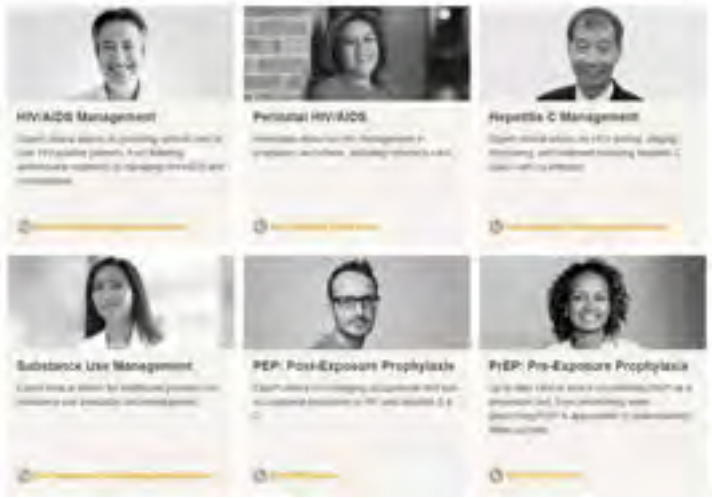
- In order to end both epidemics, syphilis and HIV screening should be done during each and every pregnancy at least once, and sometimes more than once.
- Those who test negative for HIV should be offered preventive services.
- Those who test positive for HIV should be immediately referred for treatment.

National Network of STD Clinical Prevention Training Centers

STD Clinical Consultation Network

https://www.stdccn.org/

NATIONAL CLINICIAN CONSULTATION CENTER



National Clinician Consultation Center