CDPH
Chicago Department of Public Health

MATERNAL TO CHILD TRANSMISSION (MTCT): HEPATITIS B, C, HIV, and SYPHILIS

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Magnitude of the Problem- U.S.

- 21 babies born with HIV in 2021
- 952 babies born with chronic Hepatitis B (HBV) in 2009
- 1700 babies born with Hepatitis C (HCV) in 2011-2014
- 3761 babies born with Congenital Syphilis (CS) in 2022

https://www.cdc.gov/pregnancy-hiv-std-tb-hepatitis/effects/index.html

Prevention Starts With Screening

Current screening statistics

Approximately **75%–80%** of pregnant women are screened for HIV infection [3] [4]

Approximately **84%–88%** of pregnant women are screened for HBV infection [5]

Approximately **85%** of commercially insured pregnant women are screened for syphilis [4]

Approximately **41%** of pregnant women are screened for HCV infection [6] *

*percentage reflects testing approximately one year after publication of the 2020 recommendation that all pregnant women be screened for hepatitis C during each pregnancy

HIV in Pregnancy-Case

21yo g4p3003 referred at 23 5/7 wks EGA with new Dx of HIV.

She tested HIV neg early in pregnancy.

Med Hx-Secondary syphilis treated in a prior pregnancy

ObGyne Hx-NSVD x 3, GC/CT/trich this pregnancy

Social Hx-lived with mother and her 3 children

Labs: HIV RNA 20,899, CD4 399, Syph EIA+/RPR neg/FTA+

She started Bictegravir/EMT/TAF.

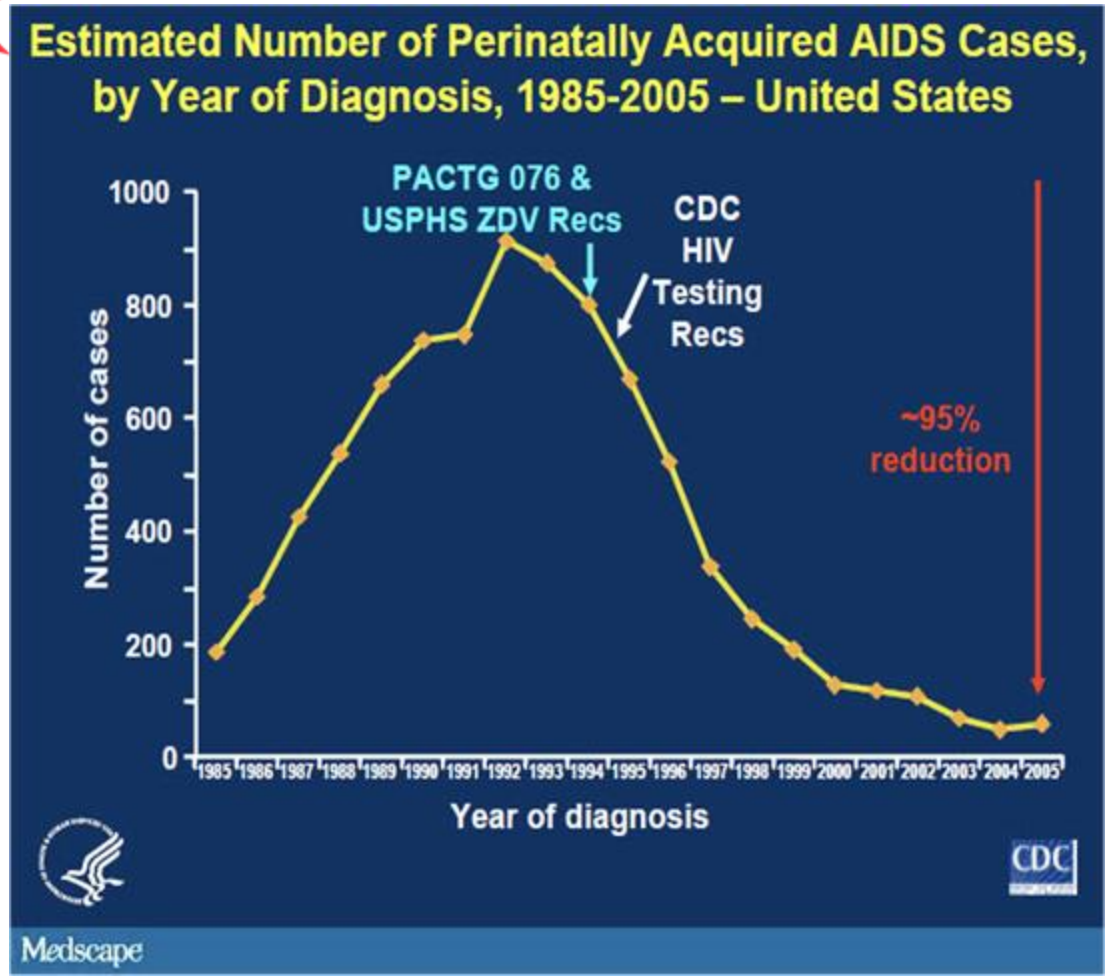
PPROM at 36 5/7 wks, IV AZT, NSVD 3180gm

baby, 9/9. Baby on ZDV/3TC/NVP x 2 wks, then ZDV alone.

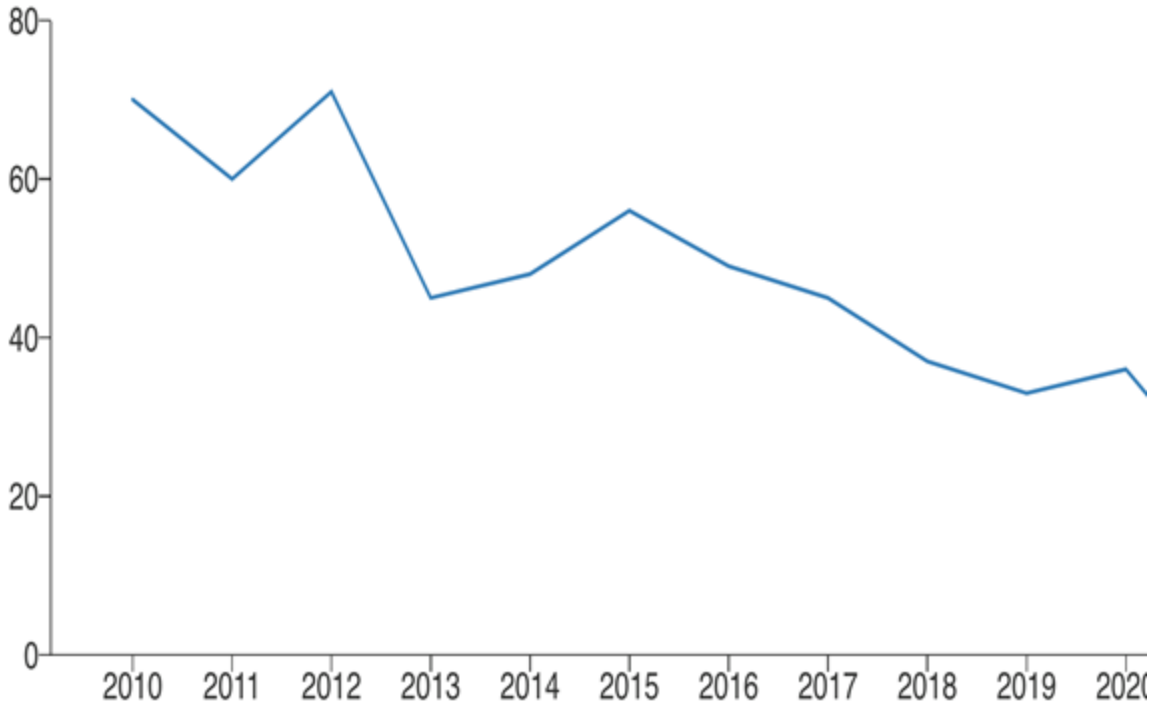
Birth PCR negative.

Perinatal HIV Transmission-U.S. Data

- 1985-2005



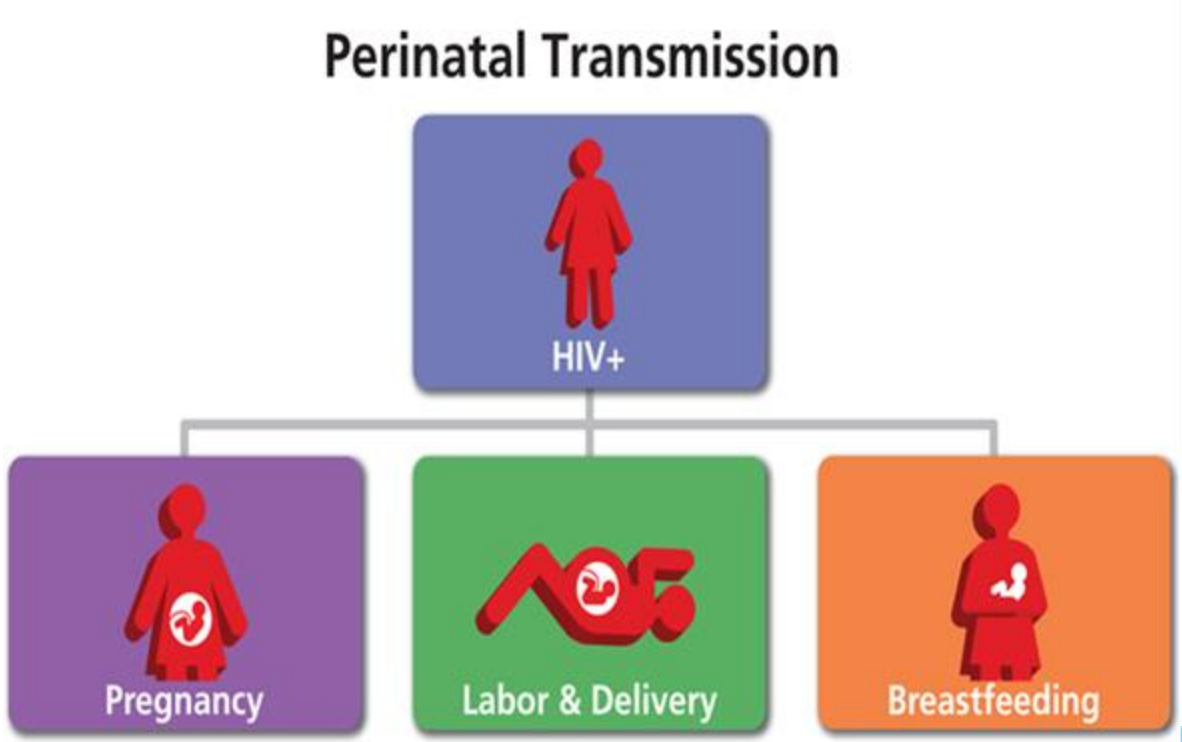
- 2010-2021



CHALLENGES: Late Diagnosis, Non-Adherence

Perinatal HIV Transmission

- 25-30% without treatment, <1% with perfect case
- Occurs *in utero*, at delivery, or with breastfeeding
- Very dependent on viral load (HIV RNA)



HIV SCREENING RECOMMENDATIONS

Regular Screening with risk factors: new STI, IDU, transactional sex, partner with HIV or IDU, >1 partner since last test

- Pregnancy Screening:

  U.S./CDC: universal at 1st prenatal visit

  early 3rd tri with risks/geography

  all unscreened women in labor (rapid test)

  Illinois-Perinatal HIV Prevention Act 410 ILCS 335:

  Universal at 1st prenatal visit

  Universal in early 3rd tri

  Universal at delivery if not screened in 3rd tri

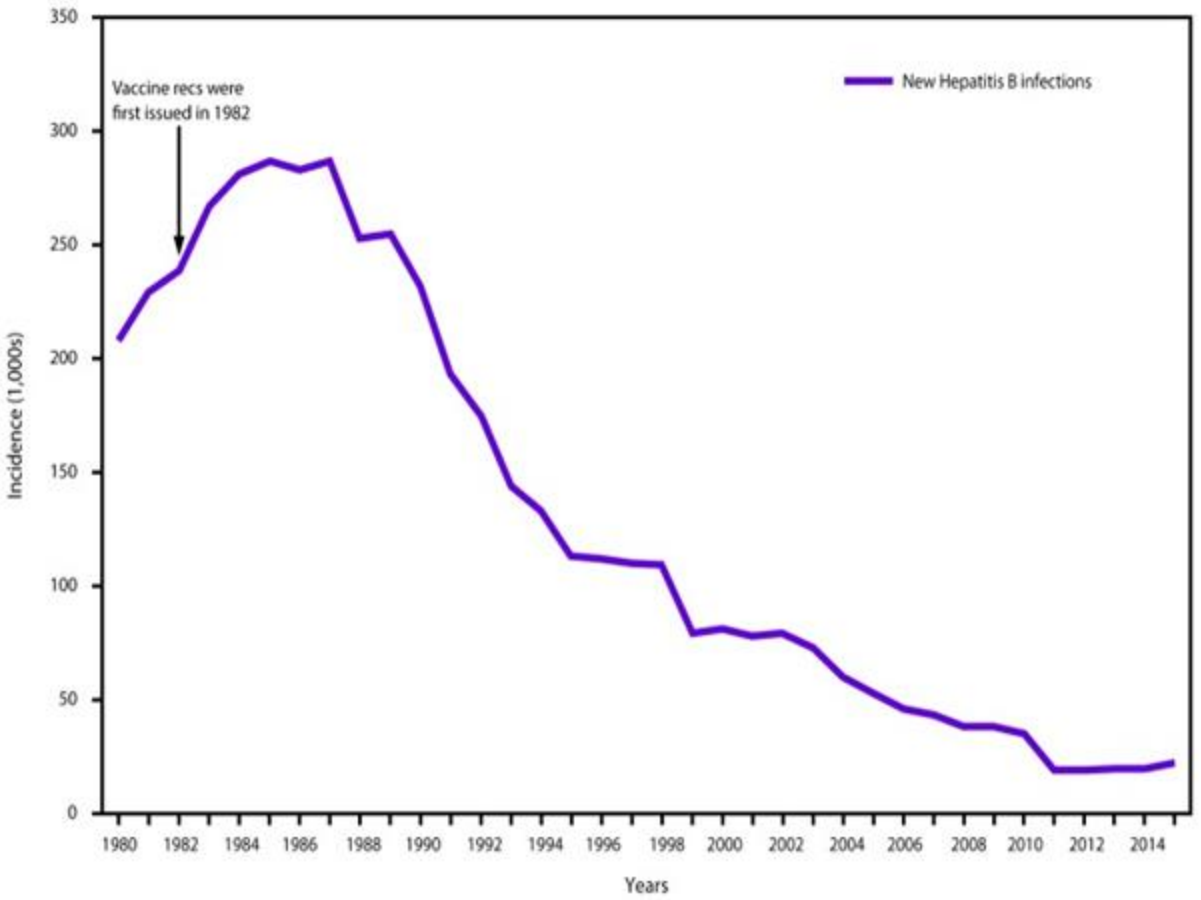
  Newborn if no 3rd tri test/mother refuses testing

HIV Treatment In Pregnancy

- Start ART ASAP-guidelines*
- Preferred, Alternative, Insufficient Data, Not Recommended
- Late Presenters-start on INSTI-based regimen
- Elective CS at 38 wks if viral load >1000 copies/ml
- Intrapartum IV AZT
- Newborn ART: 1-3 meds for 2-6 wks
- Infant feeding-shared decision-making

*clinicalinfo.hiv.gov

HEPATITIS B INFECTION–A SUCCESS STORY



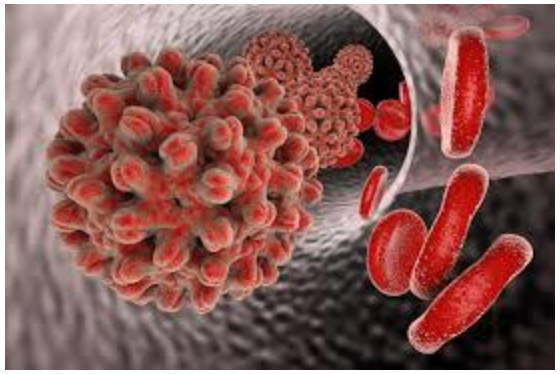
- 1988-Screen all pregnant people for Hep BsAg, give neonatal prophylaxis (HBIG) if mother HBsAg+
- 1991-Give HBV to all neonates
  - Catch-up HBV up to age 19 y
  - HBV to all high-risk adults
  - HBV to all who request it

Stable numbers in last decade

Challenges: Under-identification of chronic hep B in pregnancy

Hepatitis B Infection

- Infected adults-2-6% become chronically infected
- Infected infants-90% become chronically infected
- Chronic Hep B associated with cirrhosis, Hepatocellular Carcinoma (HCCA), death



Hepatitis B Screening

- Regular Screening With Risk Factors- new STI, IDU, HBsAg+ partner, >1 partner in 6 mos
- Pregnancy Screening:

    U.S./CDC guidelines:

        Universal at first prenatal visit (even if vaccinated, tested previously)

            Initial test-HBsAg/Anti-HBs/Anti-HBc if not previously done (3/2023)

            Hep BsAg acceptable if triple tested

            At delivery-if undocumented in pregnancy, if high risk, if S/Sx

- Vaccinate in pregnancy if Hep B sAb negative/incomplete series (Energix)

Hepatitis B MTCT

- Majority occurs at delivery
- Transmission 30-85% without PEP (HBIG)
- Transmission 0.7-1.1% with PEP
- *IN UTERO* Transmission only with very high viral loads

Hepatitis B In Pregnancy

- Chronic (HBsAg+)-check transaminases, HBV RNA, Hep C Ab, Hep A Ab, HIV
- Hep A Vaccine, avoid hepatotoxins, vaccinate household, precautions
- Notify peds at delivery-infant needs HBIG and HBV within 12 hrs
- CS only for obstetric purposes
- Breastfeeding NOT contraindicated

Hepatitis B Treatment In Pregnancy*

- Only needed if viral load >1,000,000 copies/ml (=200,000 IU/ml)
- 9% MTCT at this viral load-even with PEP, occurs *in utero*
- Use Lamivudine, Telbivudine, and Tenofovir
- Begin treatment at 28-32 wks EGA
- Refer to specialist

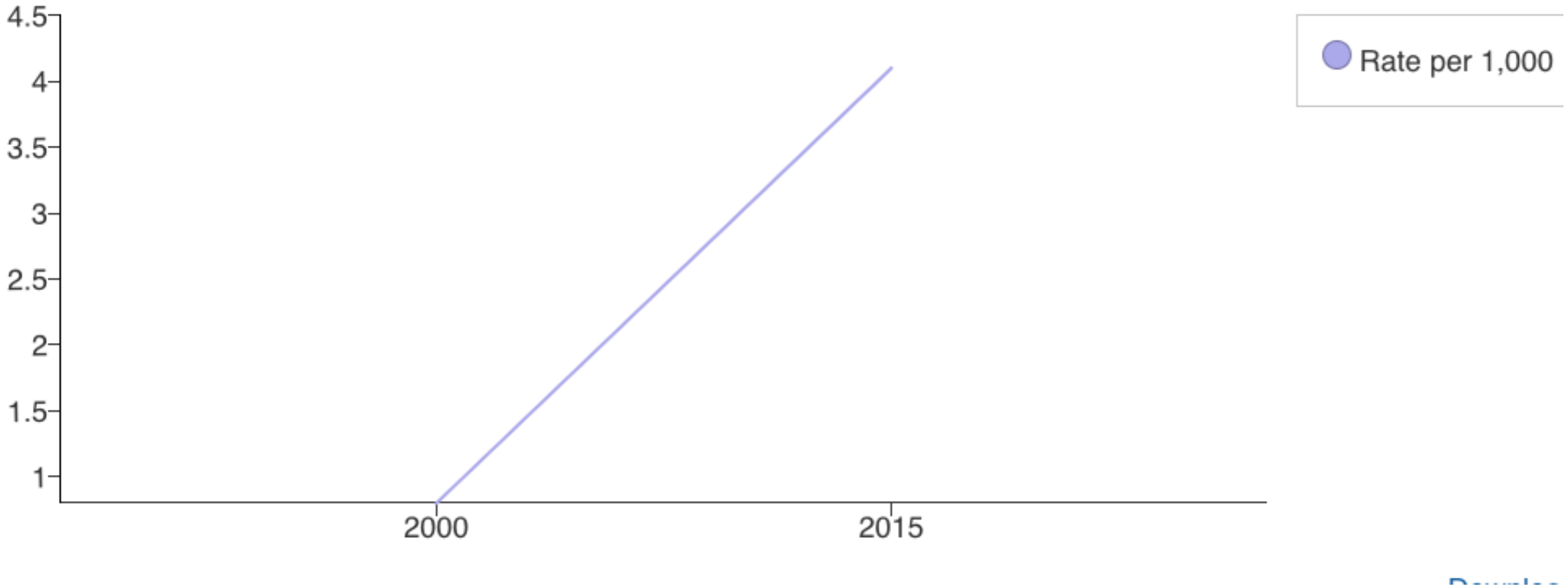
*Weng MK 2022

Hepatitis C In Pregnancy-Case

- 31yo g8p4034 presented at 22 3/7 wks with SI
- PMHx-med hx-bipolar disorder, SUDS-on methadone, asthma, ankle fracture, Hep C
- Meds-methadone 155mg daily
- Social issues-unhoused, no tob or etoh, cocaine daily, incarcerated until 12/2023, custody
- Labs: Hep C Ab+, HCV RNA 1-2,144,299, 2-6.33
- US-coarsened echotexture of liver parenchyma with increased echogenicity
- Child class A-well compensated
- Pt started on citalopram 20mg daily, referred to inpatient program
- HBV and HAV given
- HD #3-no longer SI
- HD #4-left AMA

HEPATITIS C IN PREGNANCY

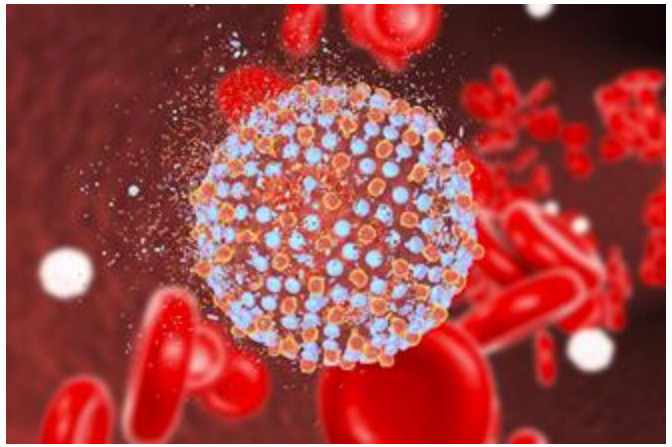
Rate of maternal HCV infection at delivery, United States [16]



CHALLENGES: Under-identification in pregnancy, no Rx in pregnancy

Hepatitis C Infection

- Most common blood borne pathogen in the US
- 70% asymptomatic, ***>50%*** progress to chronic
- Chronic hep C associated with cirrhosis, hepatocellular carcinoma, death
- Accelerated liver injury if HIV coinfected
- MTCT 6%, higher if HIV+, must have +HCV RNA



Hepatitis C Screening

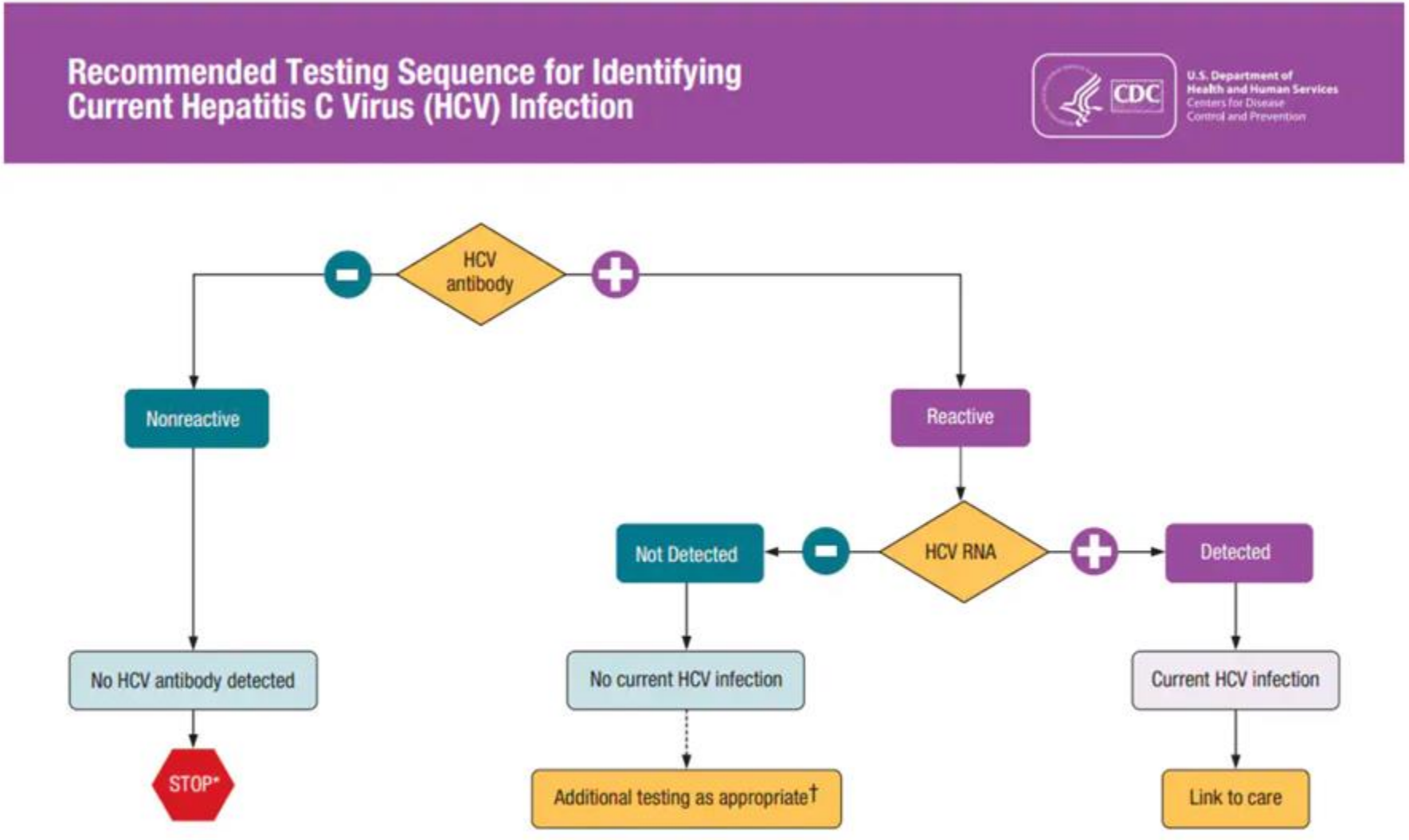
- Regular screening with risk factors-HIV, IDU, dialysis, occupational exposures, transplant/transfusion prior to 1992, persistent elevated ALT, unregulated tattoo/piercing, rare sexual transmission

- Pregnancy Screening

  U.S./CDC Guidelines

  Once every pregnancy (unless <0.1% prevalence)

Testing sequence flow chart



* For persons who might have been exposed to HCV within the past 6 months, testing for HCV RNA or follow-up testing for HCV antibody is recommended. For persons who are immunocompromised, testing for HCV RNA can be considered.

† To differentiate past, resolved HCV infection from biologic false positivity for HCV antibody, testing with another HCV antibody assay can be considered. Repeat HCV RNA testing if the person tested is suspected to have had HCV exposure within the past 6 months or has clinical evidence of HCV disease, or if there is concern regarding the handling or storage of the test specimen.

Hepatitis C In Pregnancy

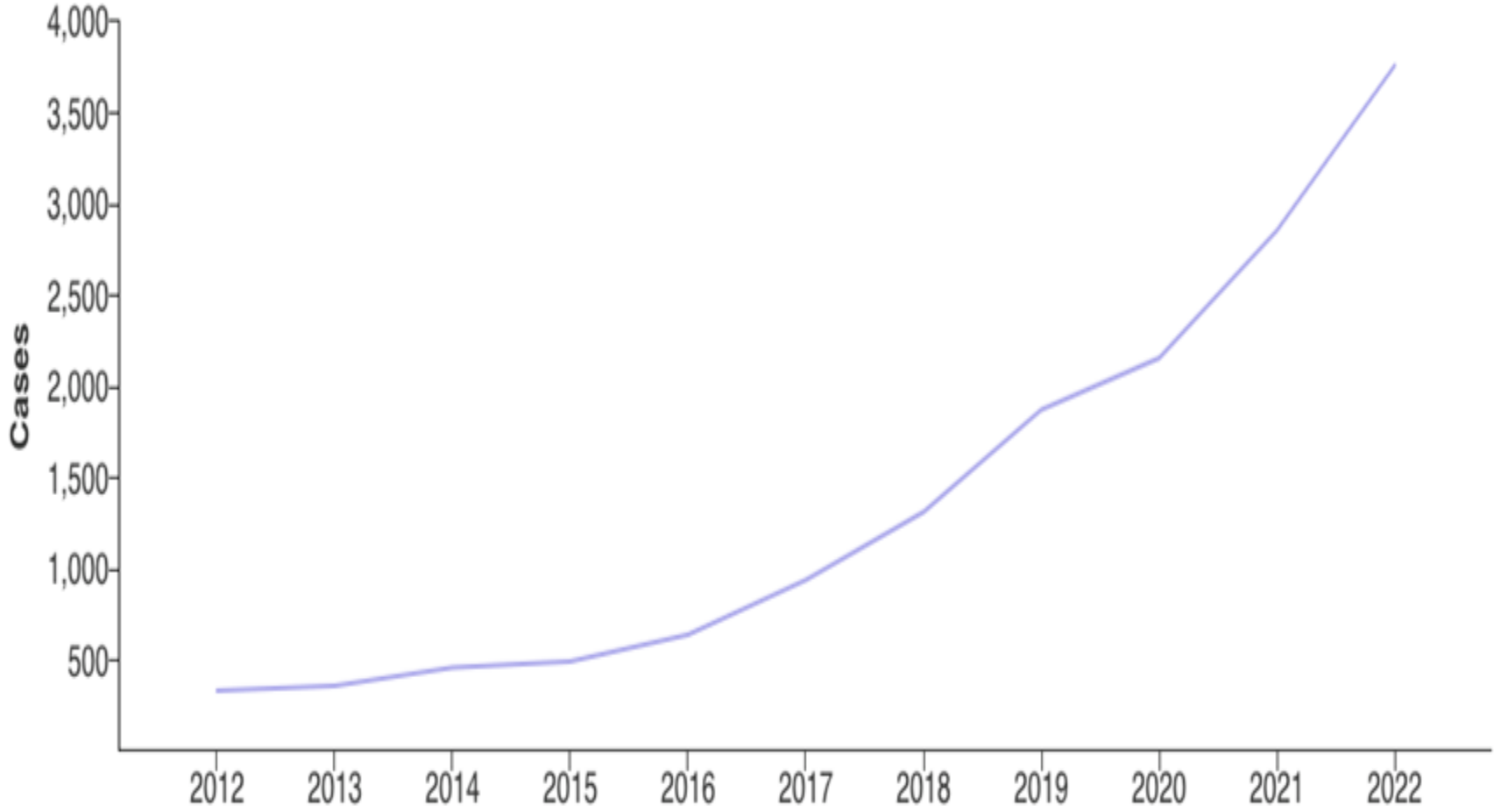
- Increased risk of GDM, ICP, PTD, FGR
- Check HCV RNA, genotype, LFTs, assess for cirrhosis
- Hep A, B vaccines, avoid hepatotoxins, condoms
- CS for obstetric indications only
- Breastfeeding not contraindicated-watch with bleeding nipples
- Avoid: FSE, early AROM, limited amnio data
- DAA-very effective, contraindicated in pregnancy
- Treatment postpartum, linkage to care in pregnancy

*ACOG, 142(3), Sept 2023

Syphilis In Pregnancy-Case

- 30yo g7p2042 at 32 wks EGA presents with new onset of a rash extending to palms and soles. Her EIA was neg at her first prenatal visit.
- PMHx-med hx, surg hx-none
- Meds-pnv
- Allergies-pcn-hives
- OB Hx-NSVD x 2
- Labs: EIA+/RPR 1:128
- Pt was desensitized and treated with PCN x 1 at 35 wks EGA.
- At 38 wks she developed ICP and had IOL, delivered 22 days after treatment.
- Neonate was treated with IV PCN x 10 days.

Congenital Syphilis in the U.S.

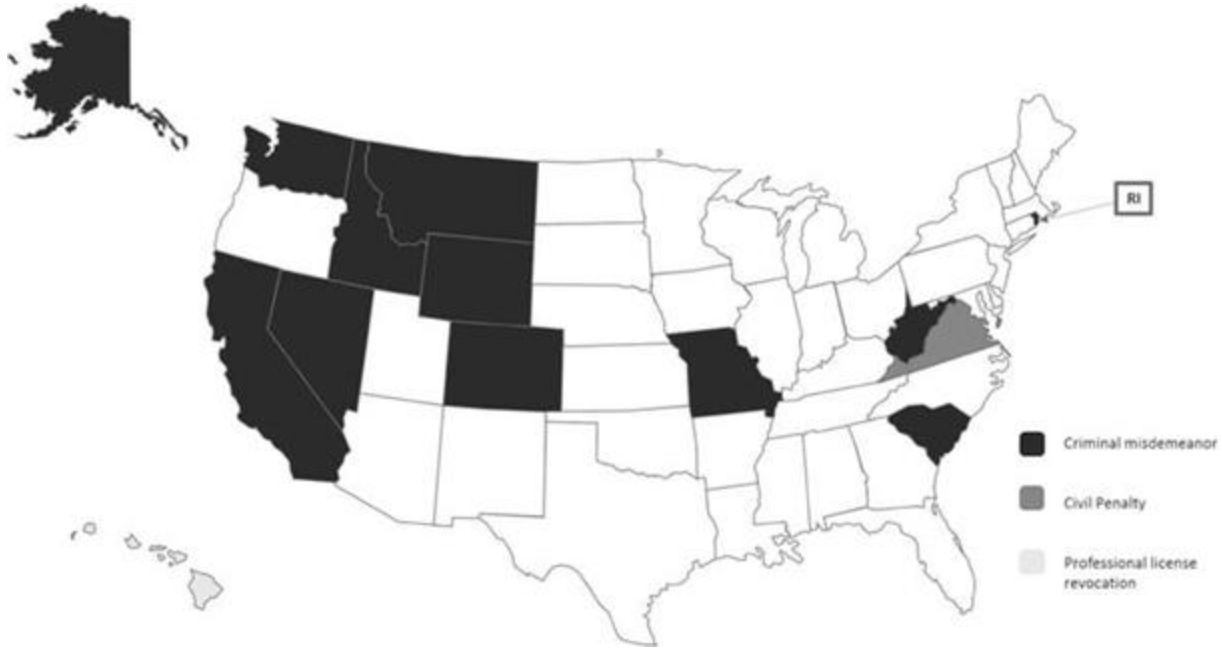


CHALLENGES: LACK OF PNC, GAPS IN DIAGNOSIS AND TREATMENT

SYPHILIS SCREENING

- Regular Screening with risk factors: new STI, IDU, HIV, new partner, incarceration, transactional sex

- Pregnancy Screening:
- Variation by state
- 7 states without laws
- Variable punishment



- U.S./CDC: Universal at 1st prenatal visit
  3rd tri and delivery ***with risks/geography***

- Illinois: Universal at 1st prenatal visit
  Universal in 3rd trimester

- ACOG: ***Universal*** screening at 1st prenatal visit, 3rd trimester, and ***again at delivery***

https://www.cdc.gov/std/treatment/syphilis-screenings.htm

ACOG Practice Advisory April 2024

CONGENITAL SYPHILIS

- MTCT at any stage, at any trimester
- Results in spont ab, preterm delivery, IUFD, neonatal death, disability
- Preventable if treatment initiated ≥30 days before delivery
- Treatment: must stage, check prior labs, treatment history, physical, symptoms

Benzathine PCN-only acceptable treatment in pregnancy (1/24/24 Extencillin approved)

If PCN-allergic need testing/desensitization (requires ICU)

Early Syphilis (1°, 2°, early latent)-IM PCN 2.4 mill units x 1

Late Syphilis (late latent/unknown duration)-IM PCN 2.4 mill units weekly x 3

(5-9 day apart)

Oto/Ophtho/Neuro Syphilis-IV PCN x 10-14 d

- CS for obstetric indications only
- Breastfeeding encouraged
- Treatment of neonate requires IV PCN

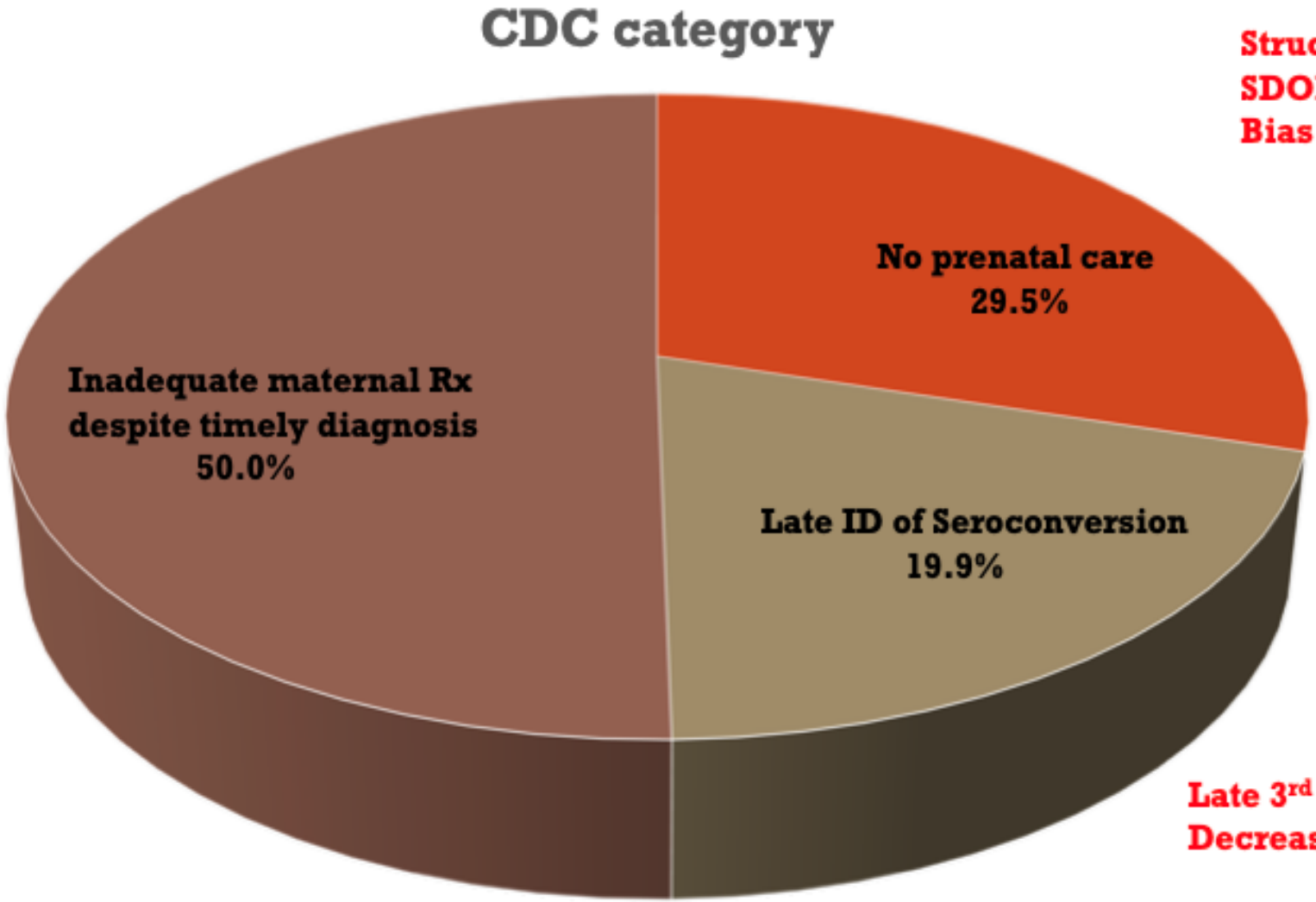
*https://www.cdc.gov/std/treatment-guidelines/p-and-s-syphilis.htm

MISSED OPPORTUNITIES-Systems approach

- No adequate maternal treatment despite receipt of a timely syphilis diagnosis
- No timely prenatal care and no timely syphilis testing
- Late identification of seroconversion during pregnancy
- No timely syphilis testing despite receipt of timely prenatal care,
- Clinical evidence of syphilis despite maternal completion of treatment

CHICAGO CS DATA: 2019-2024, N=146

Loss to f/u
Provider Error
PCN shortage
PCN allergy
Record Search



Structural Racism
SDOH
Bias

Late 3rd Trimester test
Decreased Rx in community

*Cejtin HE, MMWR 2023

QUESTIONS?