

Perinatal Infectious Disease in Maine: Hepatitis C, HIV, and Syphilis

October 9, 2024

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Disclosure Statement

None of the planners or speakers for this activity have relevant financial relationships to disclose.

Objectives

1. Become familiar with the epidemiology of hepatitis C, HIV, and congenital syphilis in Maine, and risk factors associated with infection.
2. Understand current recommendations for testing and screening pediatric patients for hepatitis C, HIV, and congenital syphilis, including test types, timing, and how to interpret laboratory results.
3. Learn about the resources available in Maine for management of patients with hepatitis C, HIV, and congenital syphilis, and the role of Maine CDC.

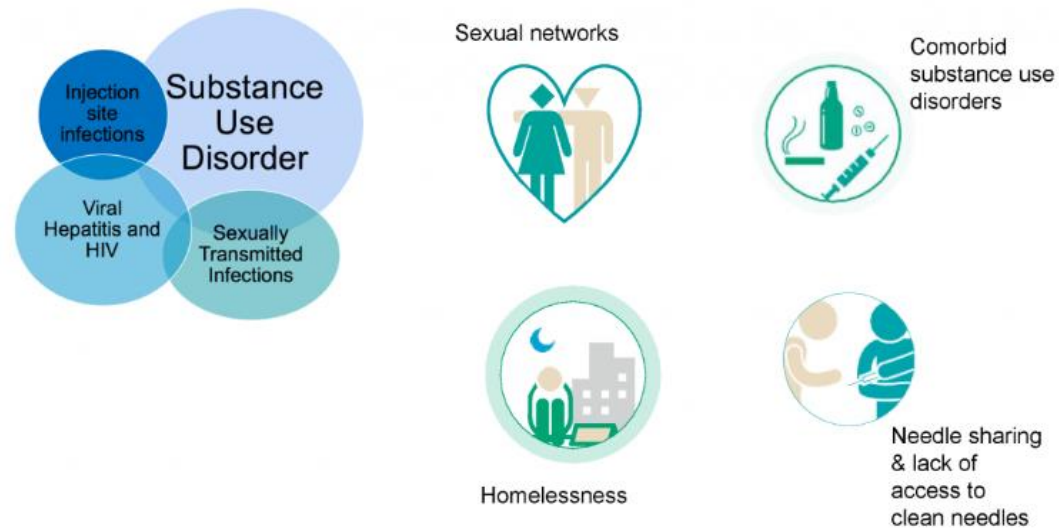
Maine Stats and Epidemiology

1. Become familiar with the epidemiology of hepatitis C, HIV, and congenital syphilis in Maine, and risk factors associated with infection.



The Syndemic Approach

The **syndemic of viral hepatitis, HIV, other STIs, substance use disorder** and other substance use-related harms is characterized by dramatic increases in STIs, hepatitis, and overdose, as well as outbreaks of HIV. **This syndemic is affecting the pediatric population of Maine.**

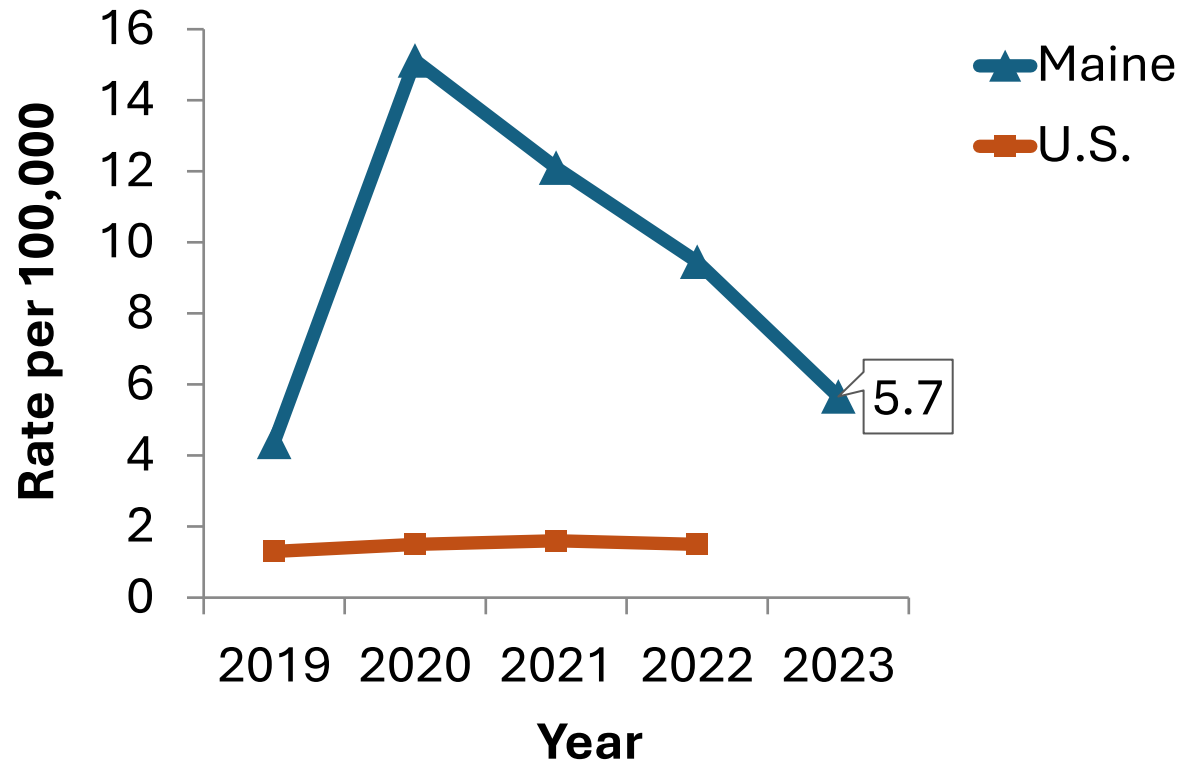


A **syndemic approach** embraces collaborative work on these intersecting conditions.

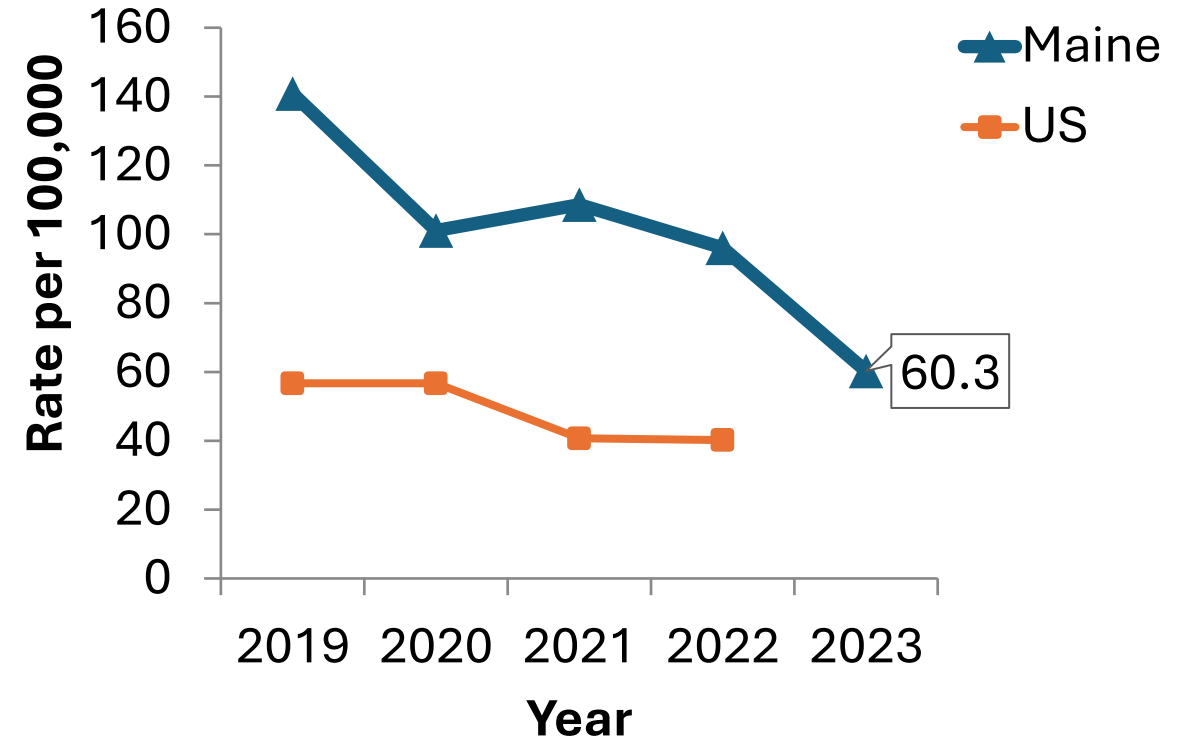
Rates of Hepatitis C in Maine have declined since 2020, but remain among the highest in the U.S.

Acute hepatitis C; 2019-2023, Maine

Maine had the highest rate of acute hepatitis C infections in the U.S. in 2020, 2021, and 2022



Chronic hepatitis C ; 2019-2023, Maine



HCV Risk Factors & Demographics in Maine

Risk Factors for Acute Hepatitis C (reported cases in Maine, 2023*)



59%

Were people
who injected
drugs



48%

Were people
who used non-
injection drugs



3%

Received an
unlicensed tattoo
prior to infection



5%

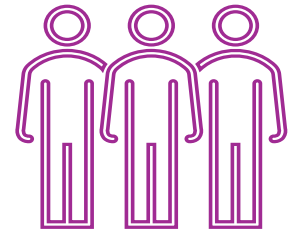
Had been
incarcerated

**Baby
Boomers**

8%

Were born
between
1945-1965

Demographics



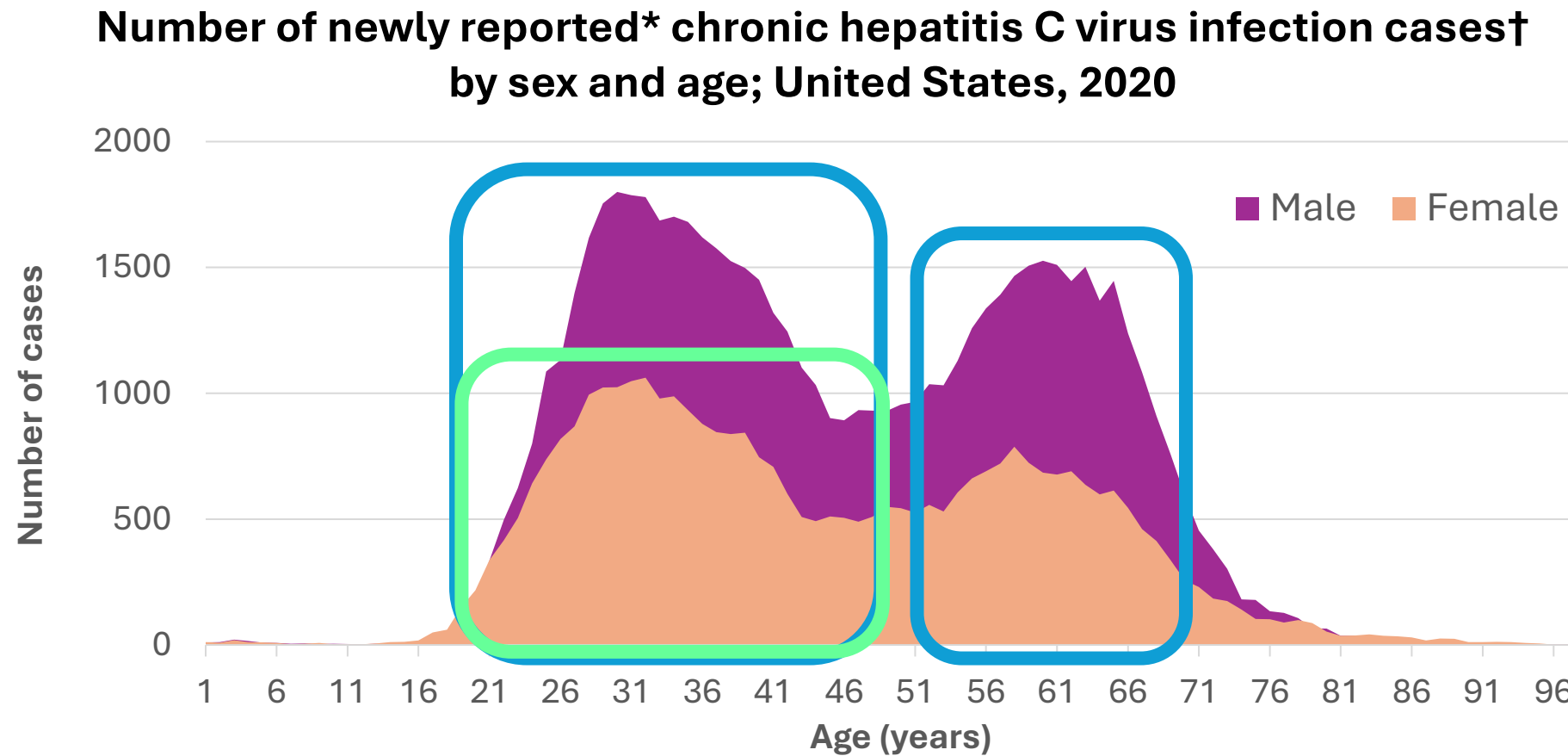
Acute Hepatitis C

- 41% of patients were female
- Median age of patients was 37 years

Chronic Hepatitis C

- 40% of patients were female
- Median age of patients was 41 years

22% of New Chronic Hepatitis C Cases in the U.S. are Women of Reproductive Age



* During 2020, cases of chronic hepatitis C were either not reportable by law, statute, or regulation; not reported; or otherwise, unavailable to CDC from Arizona, Delaware, District of Columbia, Hawaii, Indiana, Kentucky, Nevada, North Carolina, Rhode Island, and Texas.

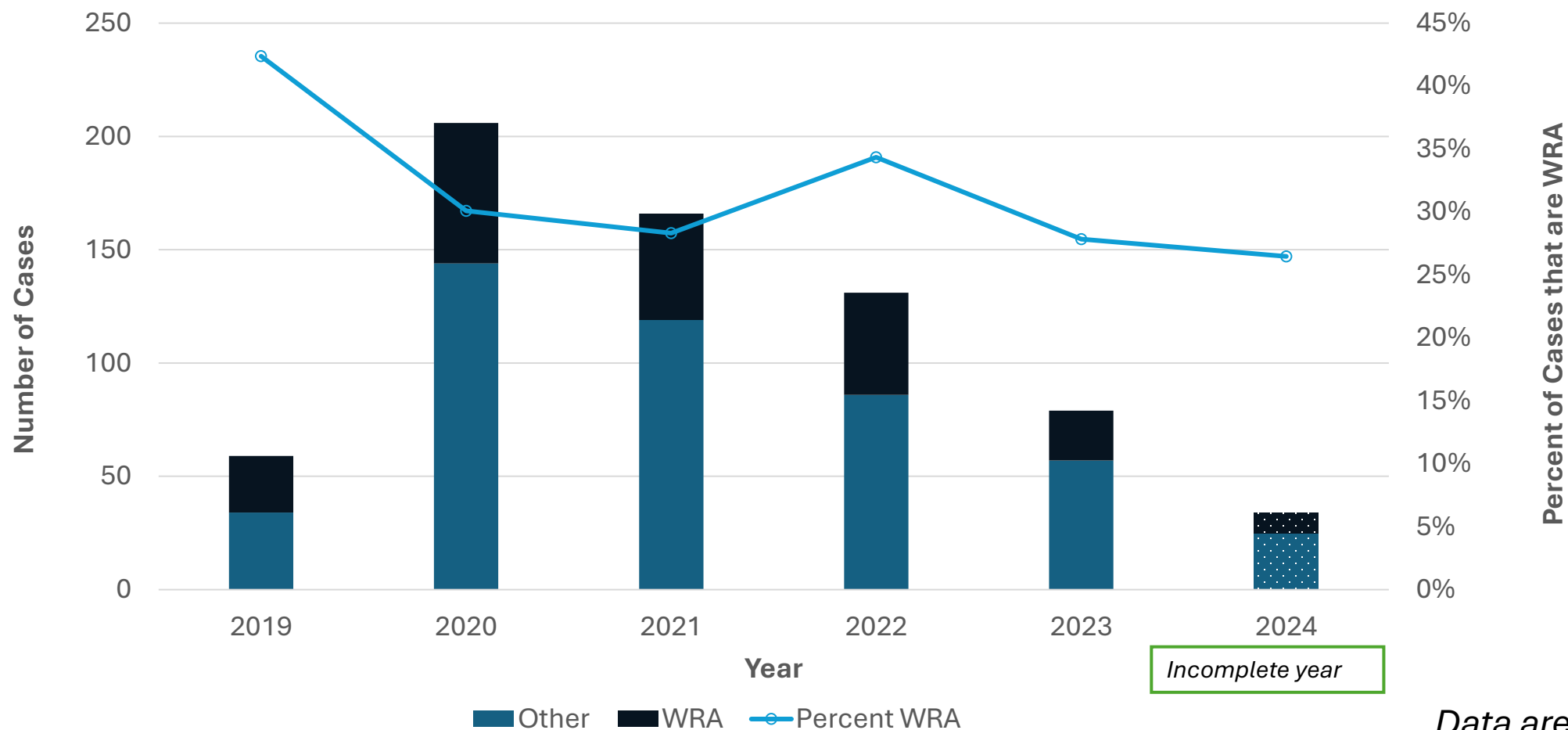
† Only confirmed, newly diagnosed, chronic hepatitis C cases are included. For the complete case definition, see <https://ndc.services.cdc.gov/conditions/hepatitis-c-chronic/>.

Maine Center for Disease Control and Prevention

Source: CDC, National Notifiable Diseases Surveillance System.

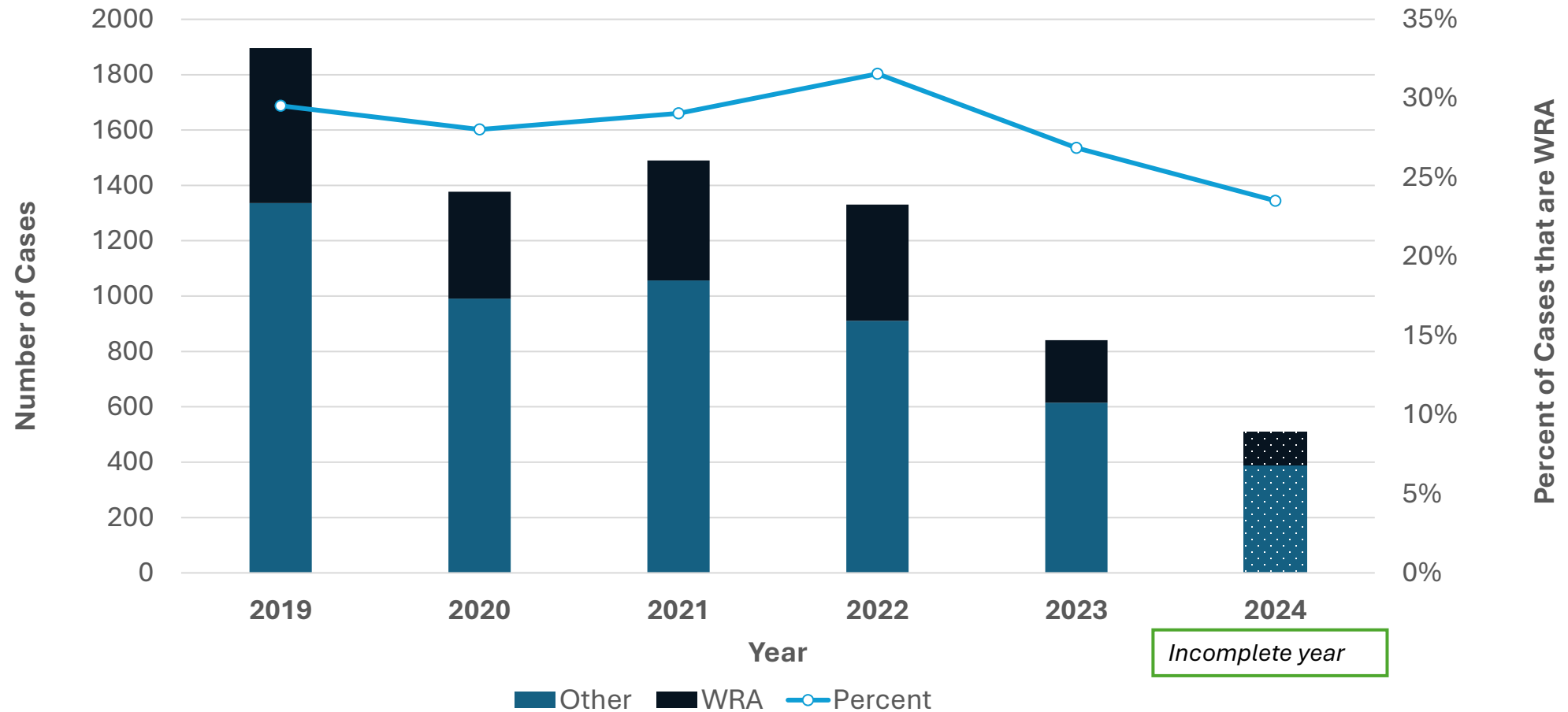
Centers for Disease Control and Prevention. Viral Hepatitis Surveillance Report – United States, 2020. <https://www.cdc.gov/hepatitis/statistics/2020surveillance/index.htm>. Published September 2022.

Acute Hepatitis C Cases in Maine in Women of Reproductive Age



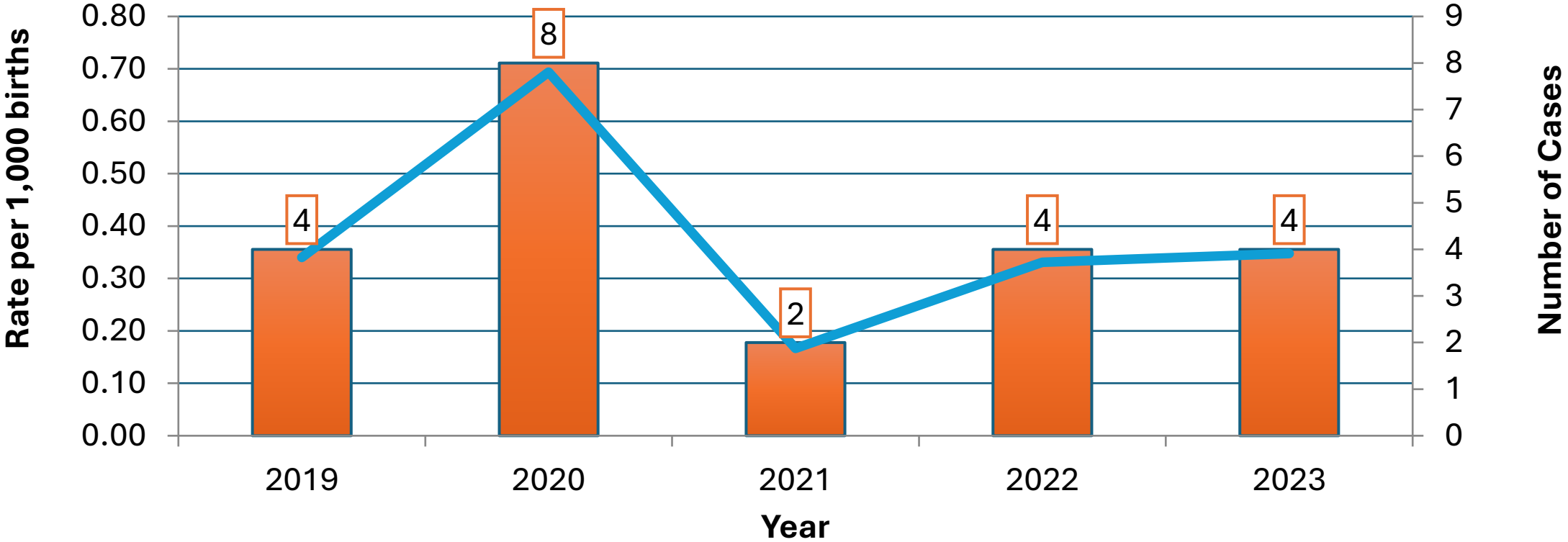
Data are preliminary

Chronic Hepatitis C Cases in Maine in Women of Reproductive Age



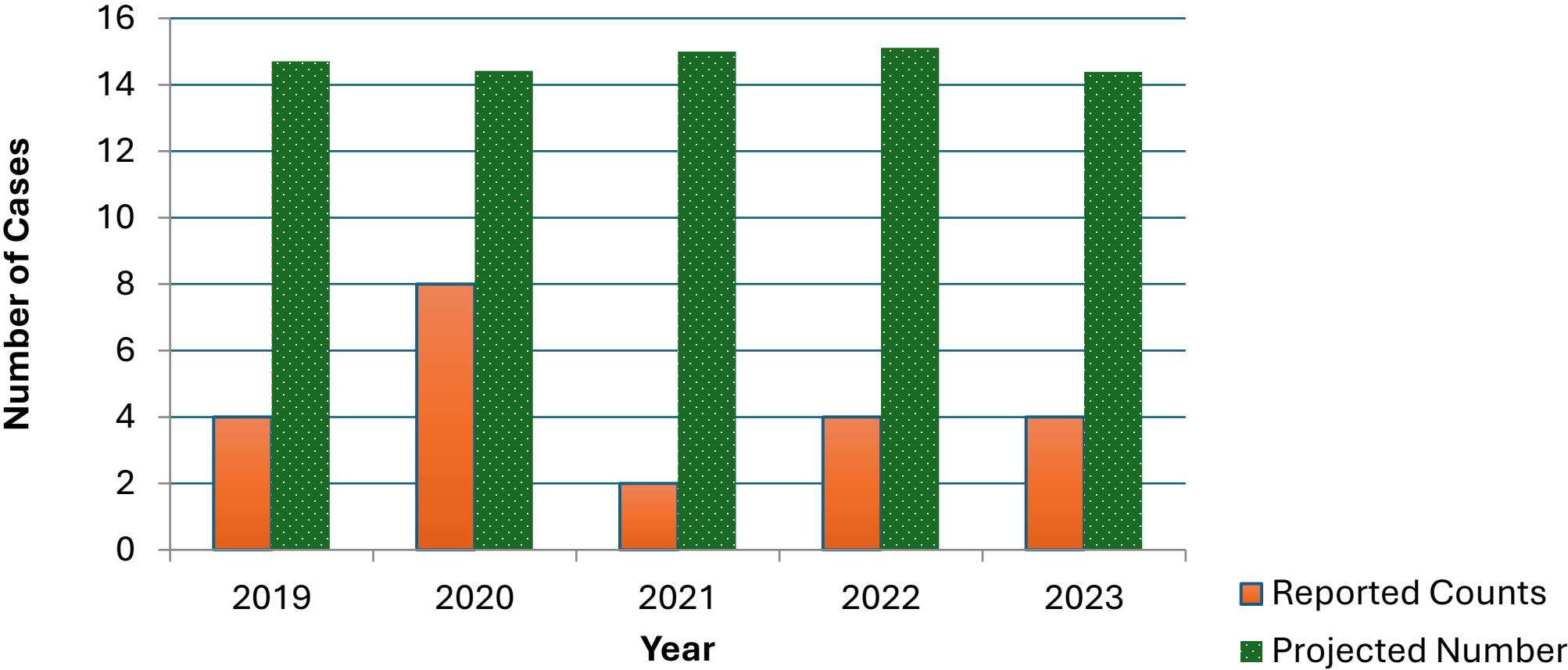
Data are preliminary

Cases and Rate of Perinatal Hepatitis C in Maine, 2019–2023



Data are preliminary

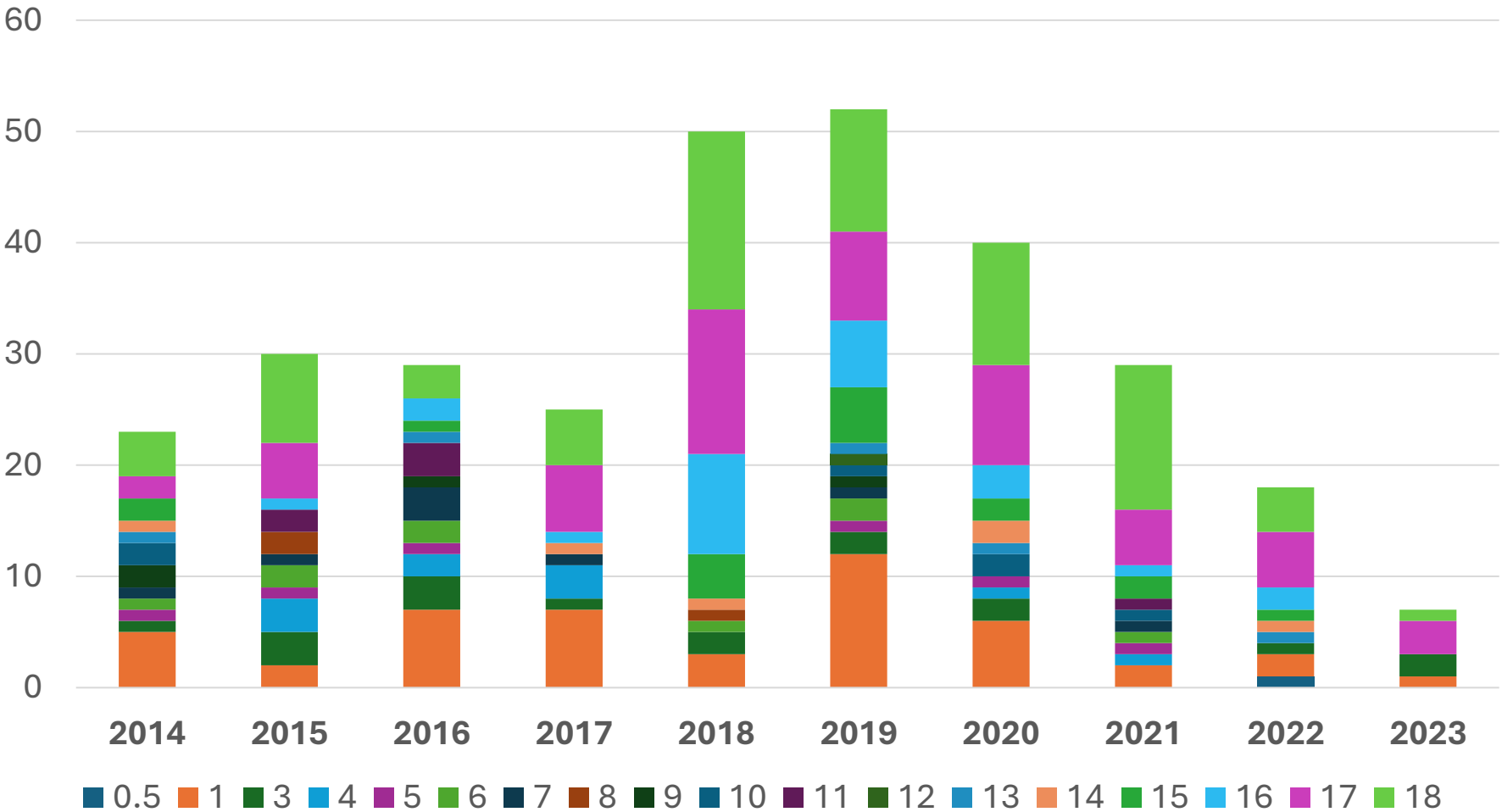
Hepatitis C is Likely Under-Screened in Maine Infants



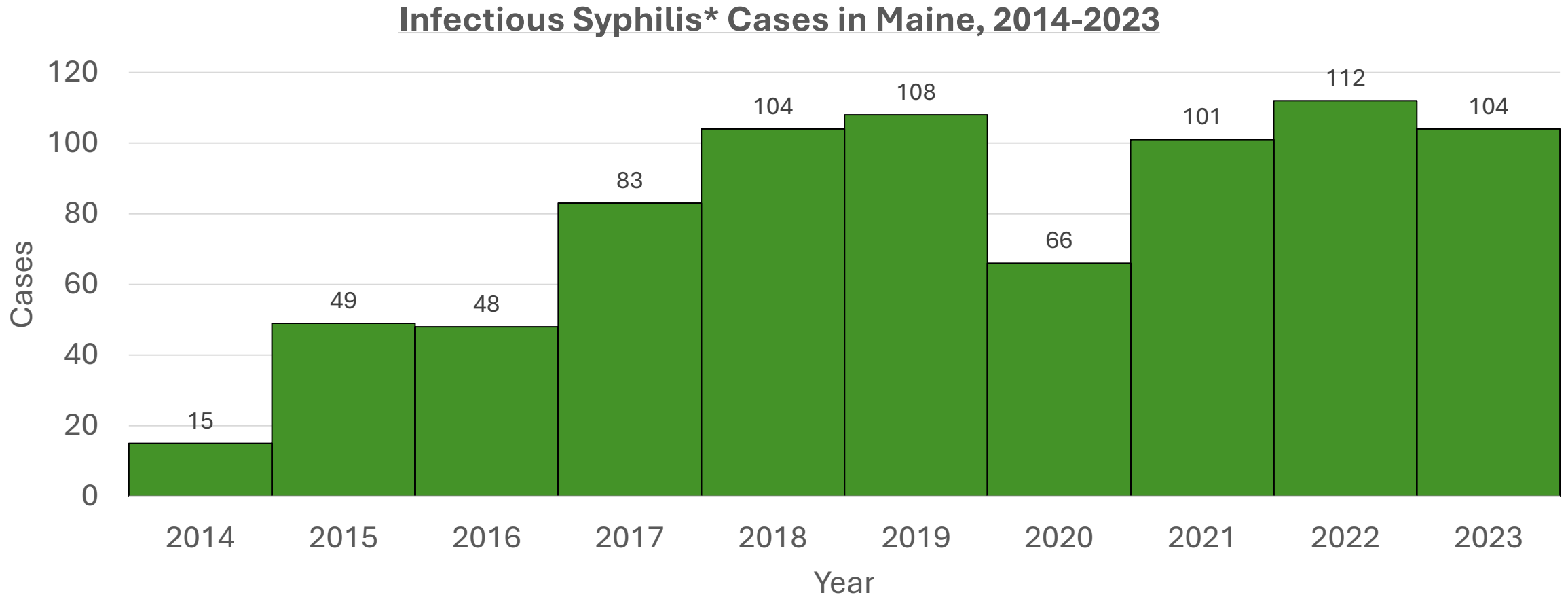
Adolescent Hepatitis C in Maine

Year	13	14	15	16	17	18
2014	1	1	2	0	2	4
2015	0	0	0	1	5	8
2016	1	0	1	2	0	3
2017	0	1	0	1	6	5
2018	0	1	4	9	13	16
2019	1	0	5	6	8	11
2020	1	2	2	3	9	11
2021	0	0	2	1	5	13
2022	1	1	1	2	5	4
2023	0	0	0	0	3	1
2024	1	0	0	1	2	5
TOTAL	6	6	17	26	58	82

Number of Cases 18 and under by age; Maine, 2014-2023

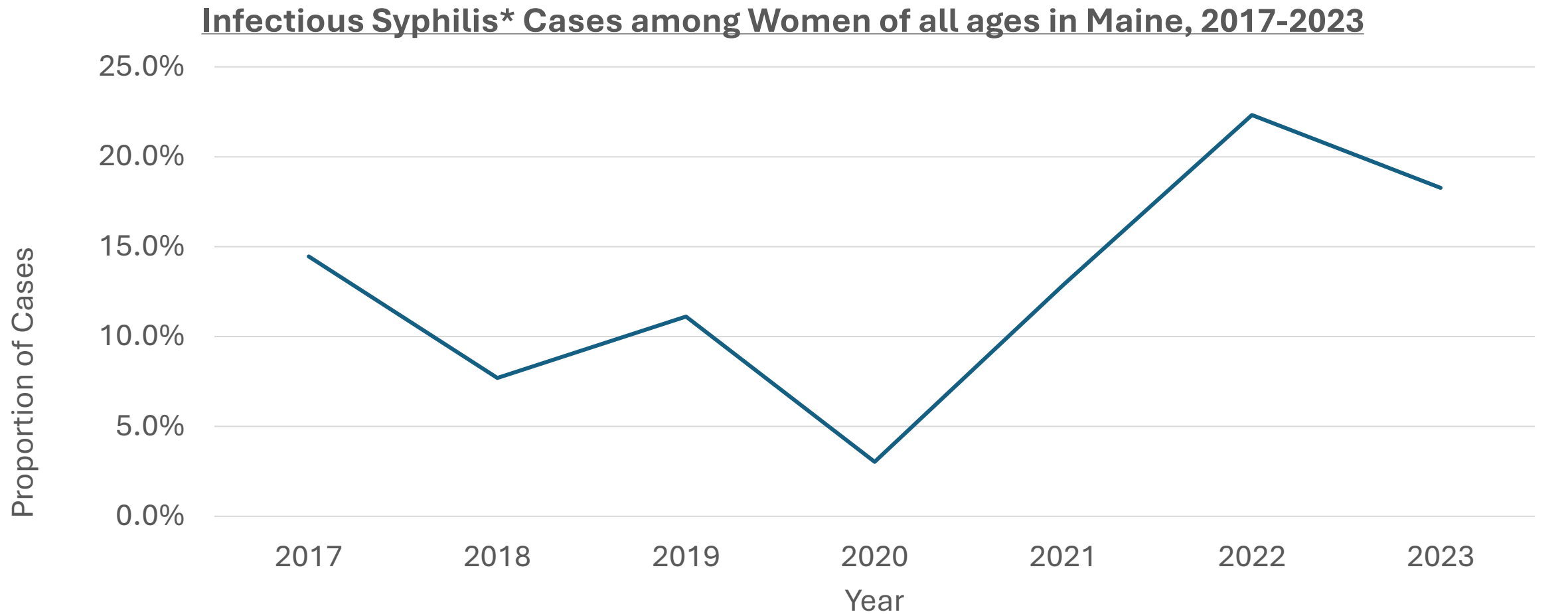


Cases of Syphilis in Maine Increased >500% from 2014 to 2023



*Infectious syphilis includes primary, secondary, and early latent stages

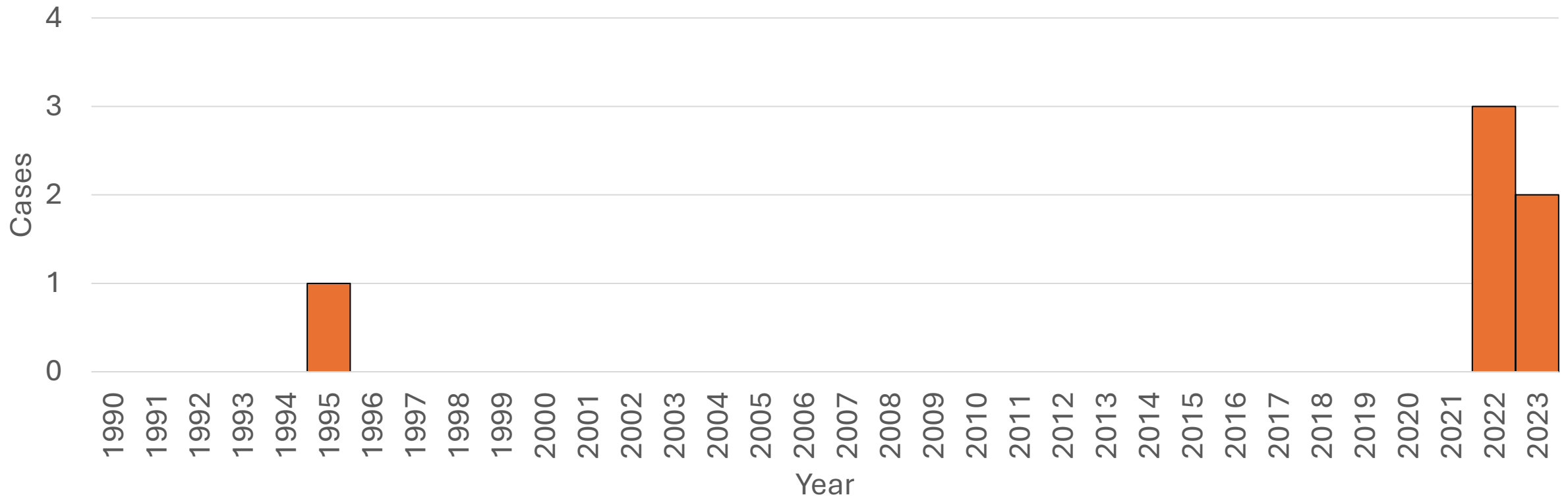
Proportion of Cases of Syphilis among Women in Maine is Increasing



*Infectious syphilis includes primary, secondary, and early latent stages

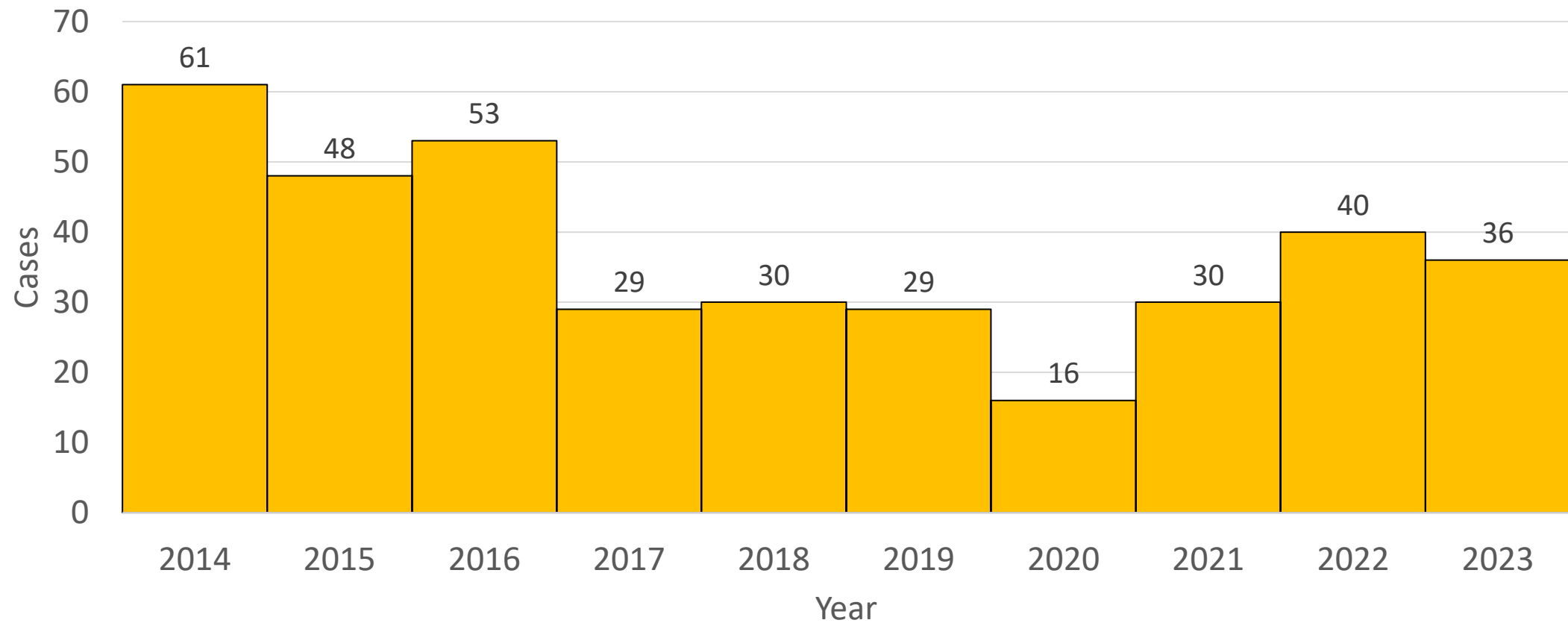
Since 2022, 5 cases of congenital syphilis have been reported to Maine CDC

Maine Congenital Syphilis Cases by Birth Year, 1990 through 2023



HIV in Maine

New HIV Diagnoses



Pediatric HIV in Maine

- Maine CDC received notification of an infant with perinatally acquired HIV in Maine in 2024.
- The last infant in Maine with HIV infection attributed to perinatal transmission was born in 2019.
- Perinatal infections are rare, with 21 cases of HIV attributed to perinatal HIV in the U.S. in 2021 (most recent data available)
- There are currently less than 20 individuals under the age of 18 living with diagnosed HIV in Maine

HIV Cluster in Penobscot County

Penobscot County HIV Cluster Case Counts (Updated 10/08/2024)	
Number of cases	Cumulative Total (10/01/2023 - 10/08/2024)
Confirmed	13
Injection drug use (IDU) within 1 year of diagnosis	13 (100%)
Unhoused within 1 year of diagnosis	11 (83.3%)
Hepatitis C coinfection	13 (100%)
Outcomes	
Linked to care within 30 days of diagnosis	8 (61.5%)
Virally suppressed at last test (of 12 cases currently living in Maine)	4 (33.3%)

Screening Guidelines

2. Understand current recommendations for testing and screening pediatric patients for hepatitis C, HIV, and congenital syphilis, including test types, timing, and how to interpret laboratory results.



US CDC Guidelines for ID Screening at the First Prenatal Visit

- **Syphilis**

- All pregnant women at the first prenatal visit
- Retest at 28 weeks gestation & at delivery if at increased risk due to geography or personal risk

- **HIV**

- All pregnant women should be screened at first prenatal visit (opt-out)
- Retest in the 3rd trimester if at high risk

- **HCV:** Test at first prenatal visit of each pregnancy

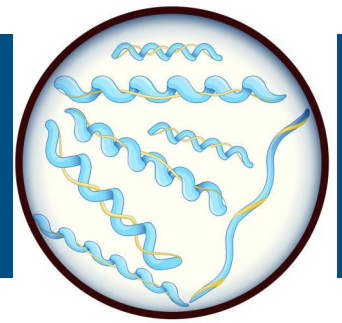
- **HBV**

- Test for HBsAg at first prenatal visit of each pregnancy. (ideally also anti-HBs & anti-HBc)
- Retest at delivery if at high risk

- **Chlamydia & Gonorrhea**

- Test at first prenatal visit of each pregnancy under 25 years of age and anyone at increased risk
- Retest during the 3rd trimester for women under 25 or at risk
- Retest within 3 months after treatment

Syphilis Screening in Pregnancy



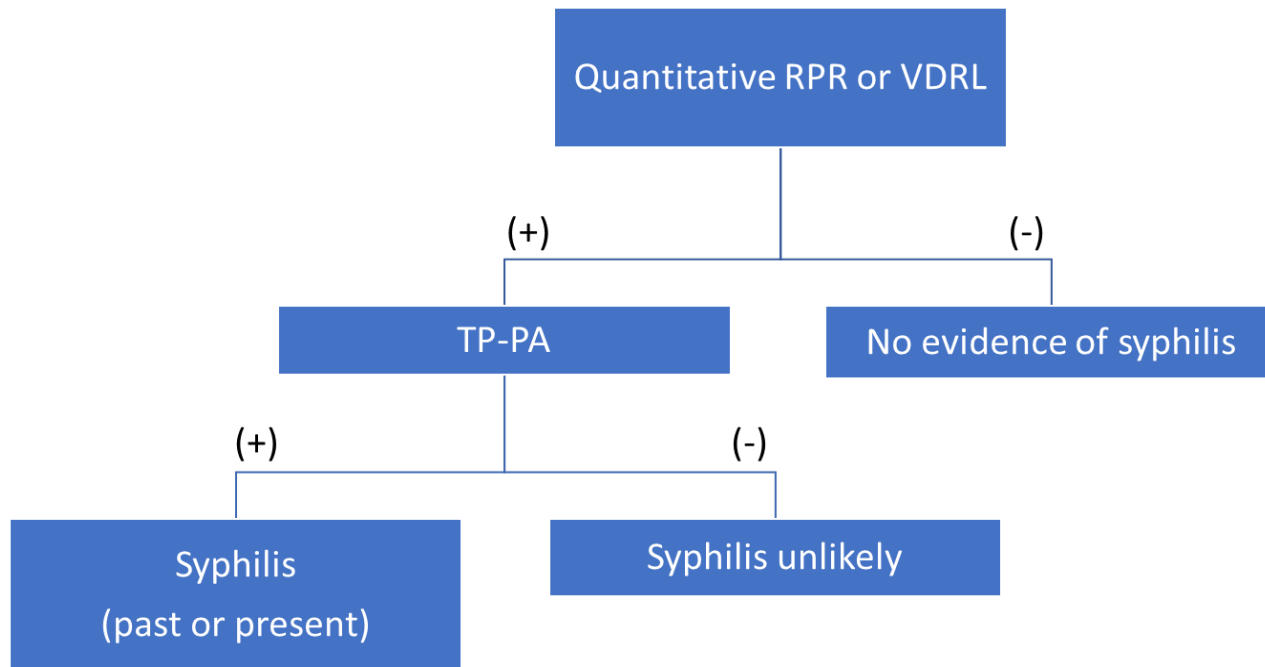
- Health care providers in Maine are required by [law](#), and with patient consent, to test for syphilis at least once during pregnancy.
- [U.S. CDC recommends](#) testing:
 - All pregnant persons AT LEAST once during pregnancy, ideally at the first prenatal visit
 - And testing again at 28 weeks & at delivery, if at high risk*
- [Maine CDC recommends](#) testing:
 - All pregnant people whenever they present for care
 - People at high risk for syphilis regardless of known pregnancy status

* This recommendation is also applicable to ongoing risk factors for HCV, HIV, and the other infectious diseases.

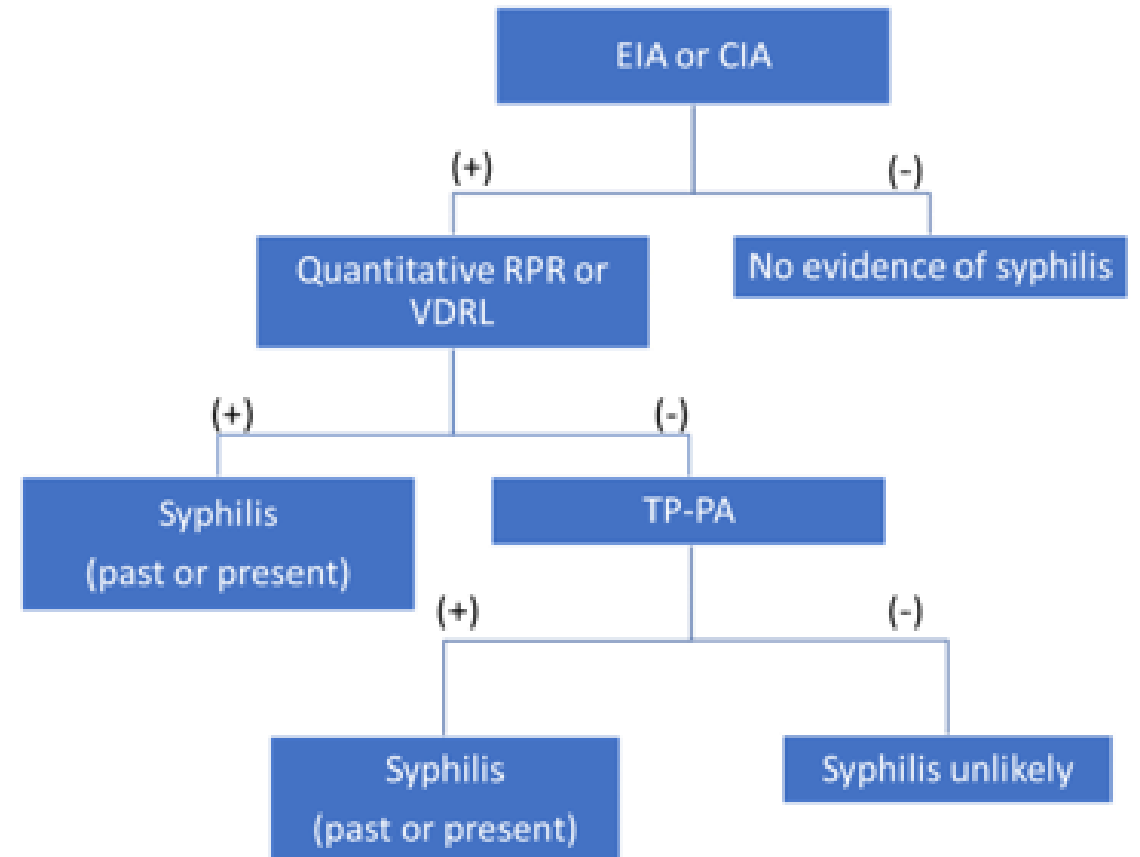
Adult Syphilis Testing:

at least two different tests are needed to confirm a diagnosis

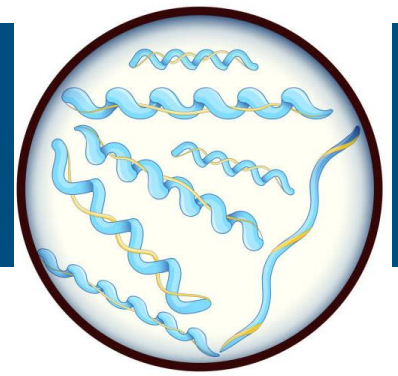
Traditional Sequence Algorithm



Reverse Sequence Algorithm



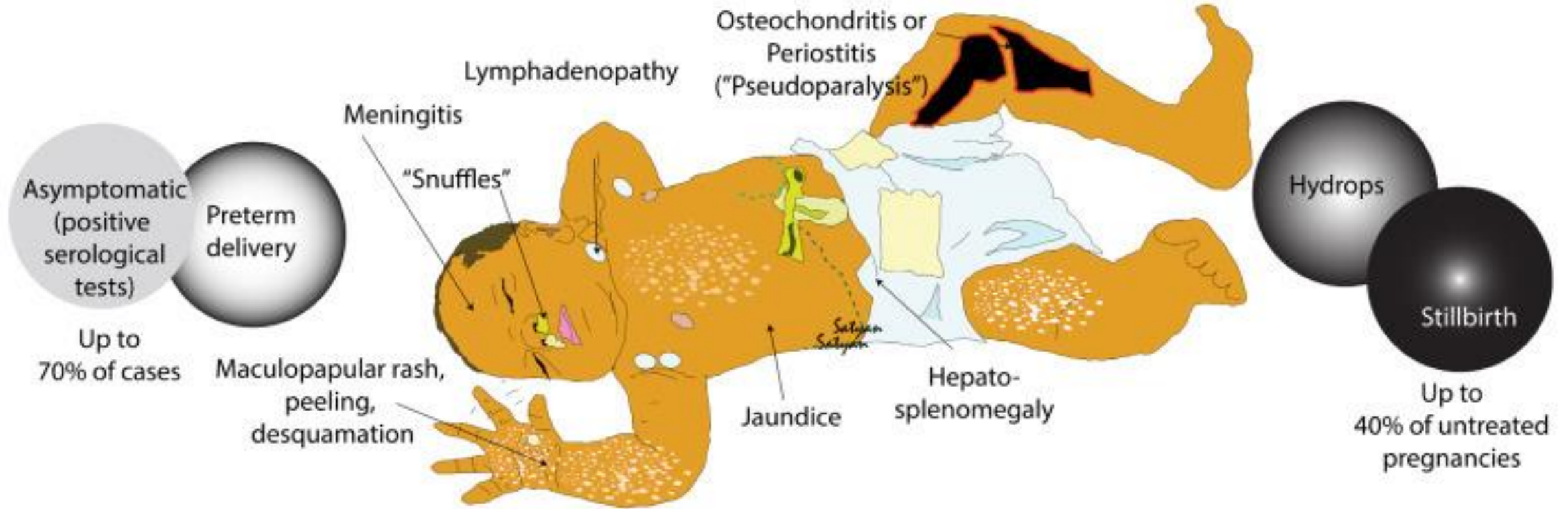
Newborn Screening for Syphilis



Syphilis

- Maternal-to-fetal transmission of syphilis infection can occur in utero at any trimester via transplacental transmission or during delivery via direct contact with an infected lesion.
- **Neonates born to persons with reactive syphilis tests should be evaluated with a quantitative nontreponemal serologic test (RPR or VDRL) performed on the neonate's serum.**
 - Conducting a treponemal test (e.g., TP-PA, EIA, CIA) on neonatal serum is not recommended.
- Neonates born to persons with reactive syphilis tests at delivery should be examined thoroughly for evidence of congenital syphilis.

Clinical Presentation of Congenital Syphilis



Primary and secondary syphilis are associated with 60–100% transmission of infection to the fetus.

Latent syphilis is associated with 8% to 40% risk of transplacental transmission of syphilis infection to the fetus.

Missed Perinatal Prevention Opportunities for Congenital Syphilis



No timely prenatal care



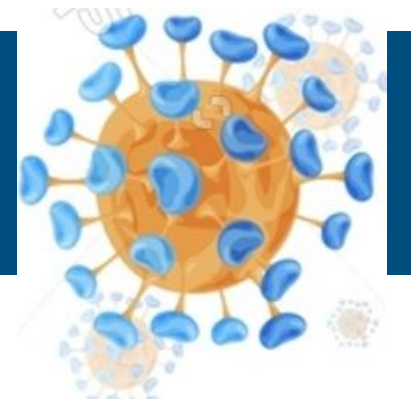
Absent or insufficient
perinatal syphilis testing



Syphilis diagnosed but
not adequately treated
during pregnancy

**Adequate, timely treatment of syphilis in pregnancy is
98% effective in preventing congenital syphilis.**

Universal Screening for HIV



The U.S. CDC advises:

Everyone ages 13 to 64 should be tested for HIV at least once.

Pregnant people should be tested for HIV **during each pregnancy.**

People with certain risk factors should be tested at least once a year.

HIV Testing Recommendations by Risk Factor

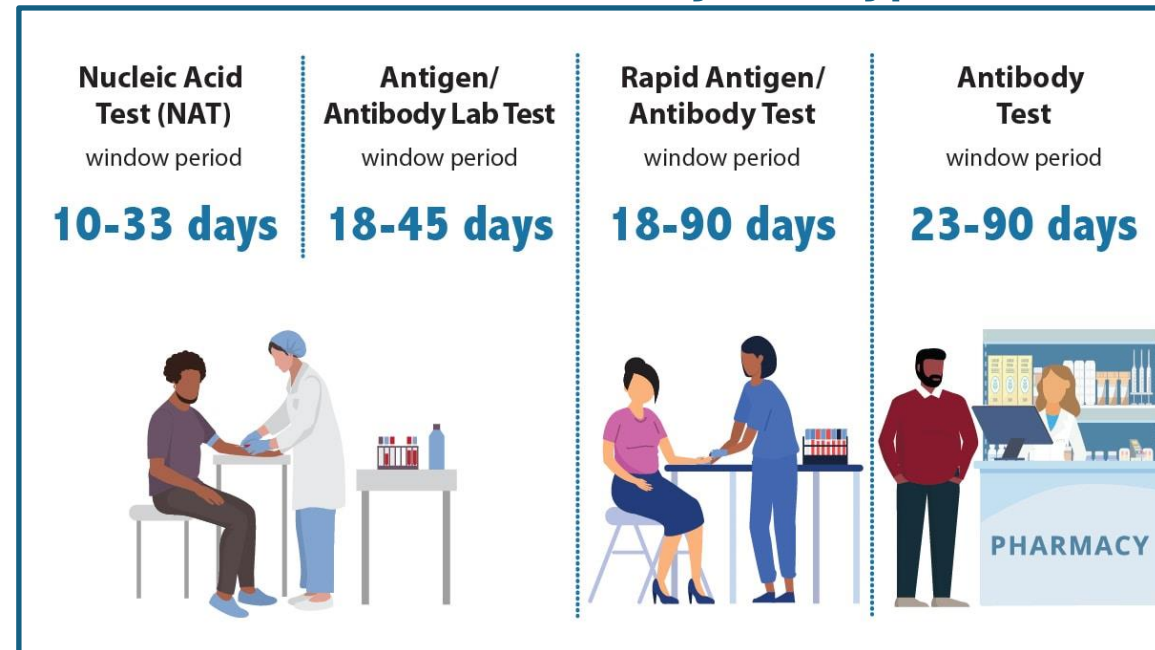
U.S. CDC recommendations			Maine CDC
Population	At least once	Once per year	Every 3 months
Everyone between the ages of 13 and 64 years	X		
Men who have sex with men		X	X
People who have a sex partner living with HIV		X	X
People with more than one sex partners since their last HIV test		X	X
People who shared needles, syringes, or other drug injection equipment		X	X
People who exchanged sex for drugs or money		X	X
People diagnosed with or treated for another sexually transmitted infection (STI)		X	X
People diagnosed with or treated for hepatitis or tuberculosis (TB)		X	X
People who have a sex partner with any of the risk factors listed above or with someone whose sexual history they don't know		X	X

Adult Testing Algorithm for HIV

- 1. Initial screening:** tests for antigen and antibody
If screening test is negative, then the person is HIV negative.*
If a screening test is reactive →
- 2. Supplementary testing:** differentiate between HIV-1 & HIV-2 antibodies
If a supplementary test is positive for either kind of antibody, after a reactive screening test, then the person is HIV positive.
If a supplementary test is negative or indeterminate →
- 3. Nucleic Acid Testing: (RNA/PCR)**
If a NAT is negative, then the person is HIV negative.
If a NAT is positive after a reactive screen and a negative or indeterminate supplementary test, then the person is diagnosed with **acute HIV**.

*If the initial screening only includes an antibody test, additional testing may be needed to rule out infection.

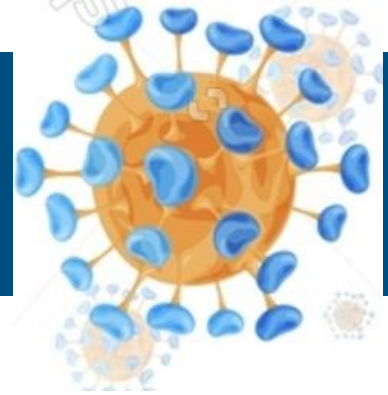
Window Periods by Test Type



PrEP & PEP in Pregnancy

- Pregnancy has been shown to increase the chances of getting HIV through sex.
- Tenofovir disoproxil fumarate/emtricitabine (TDF/FTC) is currently the only FDA-approved PrEP (pre-exposure prophylaxis) option with known safety and efficacy data during pregnancy and breastfeeding/chestfeeding.
- People who become pregnant while using TDF/FTC as PrEP can continue PrEP throughout pregnancy and breastfeeding.
- Long-acting injectable cabotegravir (CAB-LA) is FDA-approved for people with vaginal exposure to HIV; however, for people with PrEP indications in pregnancy, CAB-LA dosing, efficacy, and safety remain unknown.
- PEP (post-exposure prophylaxis) is indicated at any time during pregnancy when a significant HIV exposure has occurred, using the standard adult PEP regime.

Newborn Screening for HIV



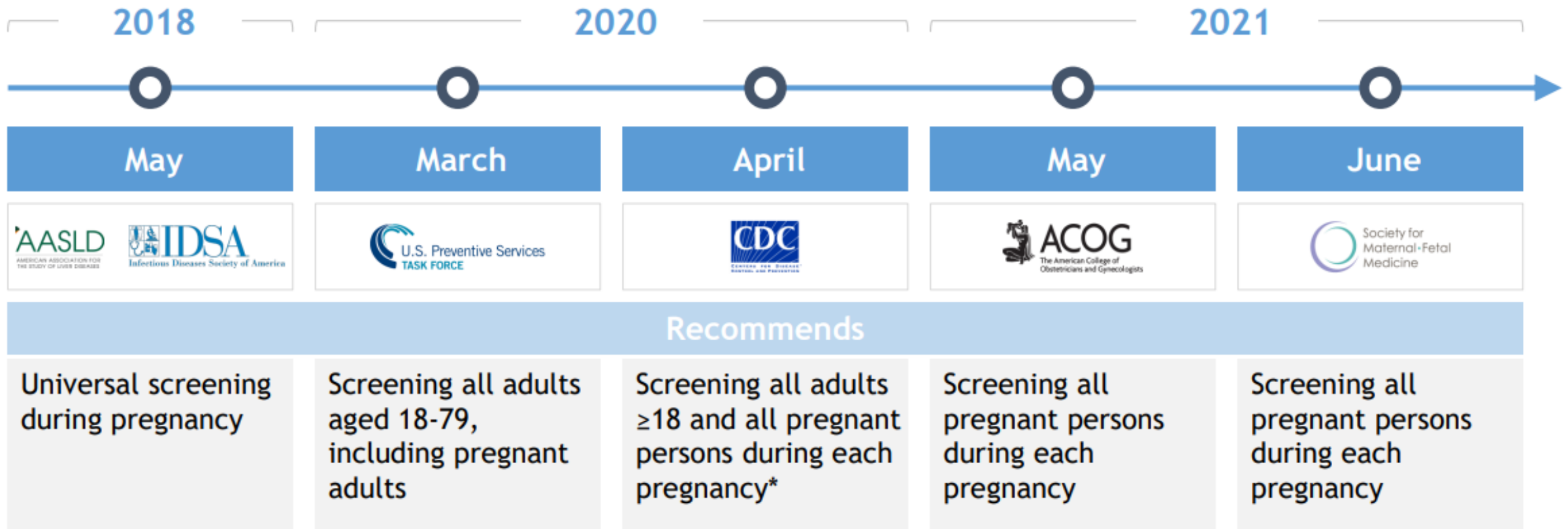
- **Rapid screening for the birthing person during labor and delivery or during the immediate postpartum period, if their HIV status is unknown**
- Nucleic acid tests are required to diagnose HIV infection in infants <18 months old
- **All newborns with perinatal HIV exposure should receive postpartum antiretroviral (ARV) drugs to reduce the risk of perinatal transmission of HIV**, preferably initiated within 6 hours of delivery.
- The National Perinatal HIV hotline (1-888-448-8765) provides free clinical consultation on all aspects of perinatal HIV, including newborn care.

HIV and Breastfeeding/Chestfeeding



- People with HIV should receive evidence-based, patient-centered counseling to support shared decision-making about infant feeding.
- Achieving and maintaining viral suppression through ARV during pregnancy and postpartum decreases breastfeeding transmission risk to <1% (but not zero).
- Individuals with HIV who are on ARV with a sustained undetectable viral load and who choose to breastfeed/chestfeed should be supported in this decision.
- Clinicians are encouraged to consult the national Perinatal HIV/AIDS hotline with questions about infant feeding by individuals with HIV: 1-888-448-8765
- For more information, see also: [Special Populations: Infant Feeding for People With HIV in the United States | NIH](https://clinicalinfo.hiv.gov/en/guidelines/perinatal/infant-feeding-individuals-hiv-united-states?view=full) (<https://clinicalinfo.hiv.gov/en/guidelines/perinatal/infant-feeding-individuals-hiv-united-states?view=full>)

Timeline for Adoption of Universal Prenatal HCV Screening



AASLD, American Association for the Study of Liver Disease; IDSA, Infectious Diseases Society of America; USPSTF, United States Preventative Services Task Force; CDC, Centers for Disease Control and Prevention; ACOG, American College of Obstetricians and Gynecologists; SMFM, Society for Maternal-Fetal Medicine *except in settings where the prevalence of HCV

CDC 2020: Universal Hepatitis C Screening

WHO SHOULD GET TESTED FOR HEPATITIS C?

EVERY ADULT



At least once

**EVERY PREGNANT
WOMAN**



Every pregnancy

**EVERYONE WITH
RISK FACTORS**



Regularly

SOURCES: CDC Recommendations for Hepatitis C Screening, MMWR, April 2020
CDC Vital Signs, April 2020

Perinatal Hepatitis C Screening

PERINATAL HEPATITIS C

SCREEN patients for hepatitis C during each pregnancy.

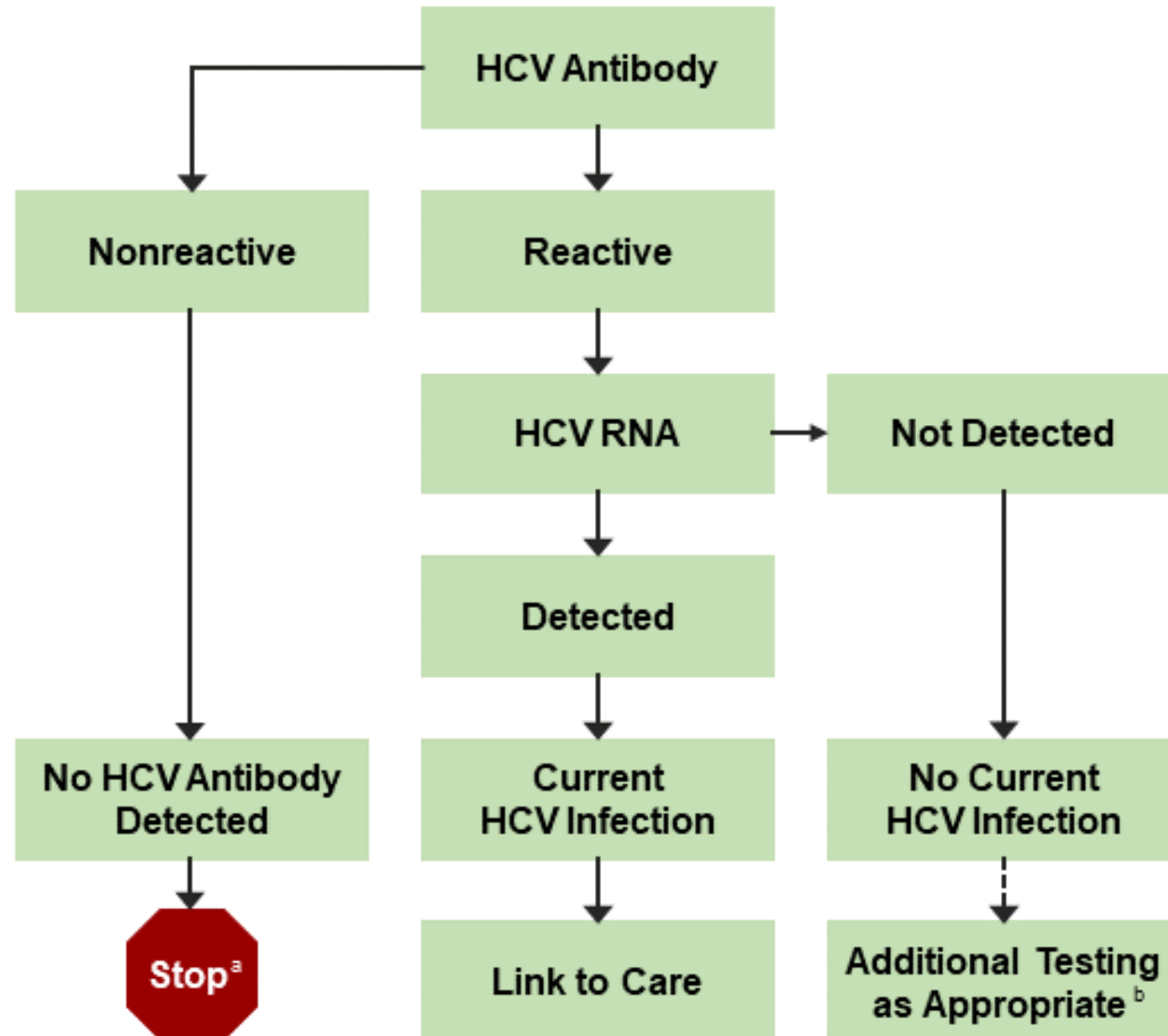
Treat in the post-partum period

TEST all perinatally exposed infants for hepatitis C infection at age 2 – 6 months.

Test all maternal siblings of perinatally exposed children

MANAGE infants with an HCV RNA+ test alongside a provider with pediatric hepatitis C expertise.

Hepatitis C Testing Algorithm for Adults



Step 1

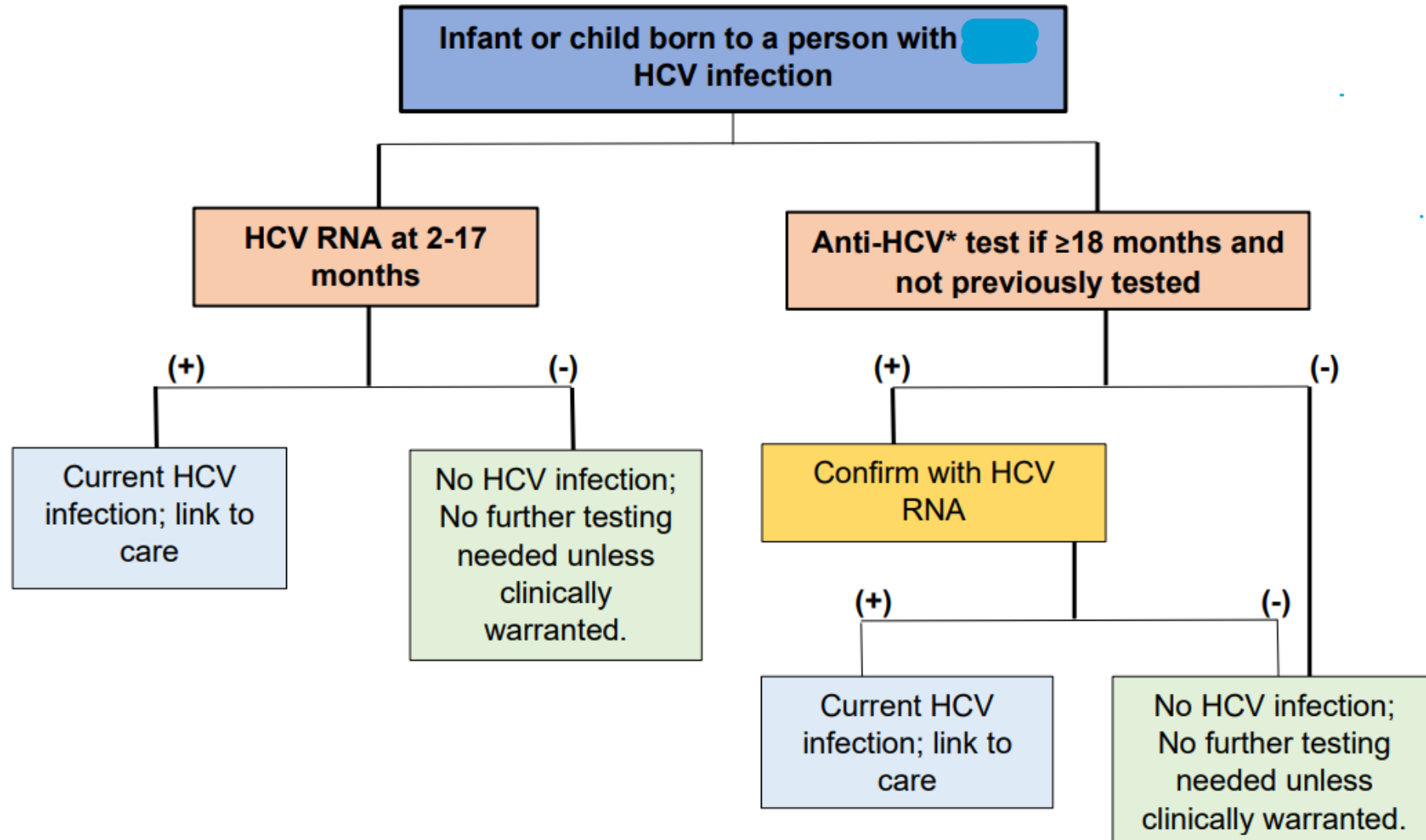
Step 2

Step 3

Hepatitis C Testing for Infants

- Perinatally exposed infants should receive an **HCV RNA test at 2–6 months**.
 - ***Infants with detectable HCV RNA** should be managed in consultation with a pediatric hepatitis C specialist.
 - ***Infants with an undetectable HCV RNA are not infected with HCV** (no further follow-up is required unless clinically warranted)
- Infants and children aged 7–17 months who were perinatally exposed to HCV and have not previously been tested should receive an HCV RNA test.
- **Children aged ≥ 18 months** who were perinatally exposed to HCV and have not previously been tested should receive an **anti-HCV test with reflex to NAT for HCV RNA**.

Pediatric HCV Testing Algorithm



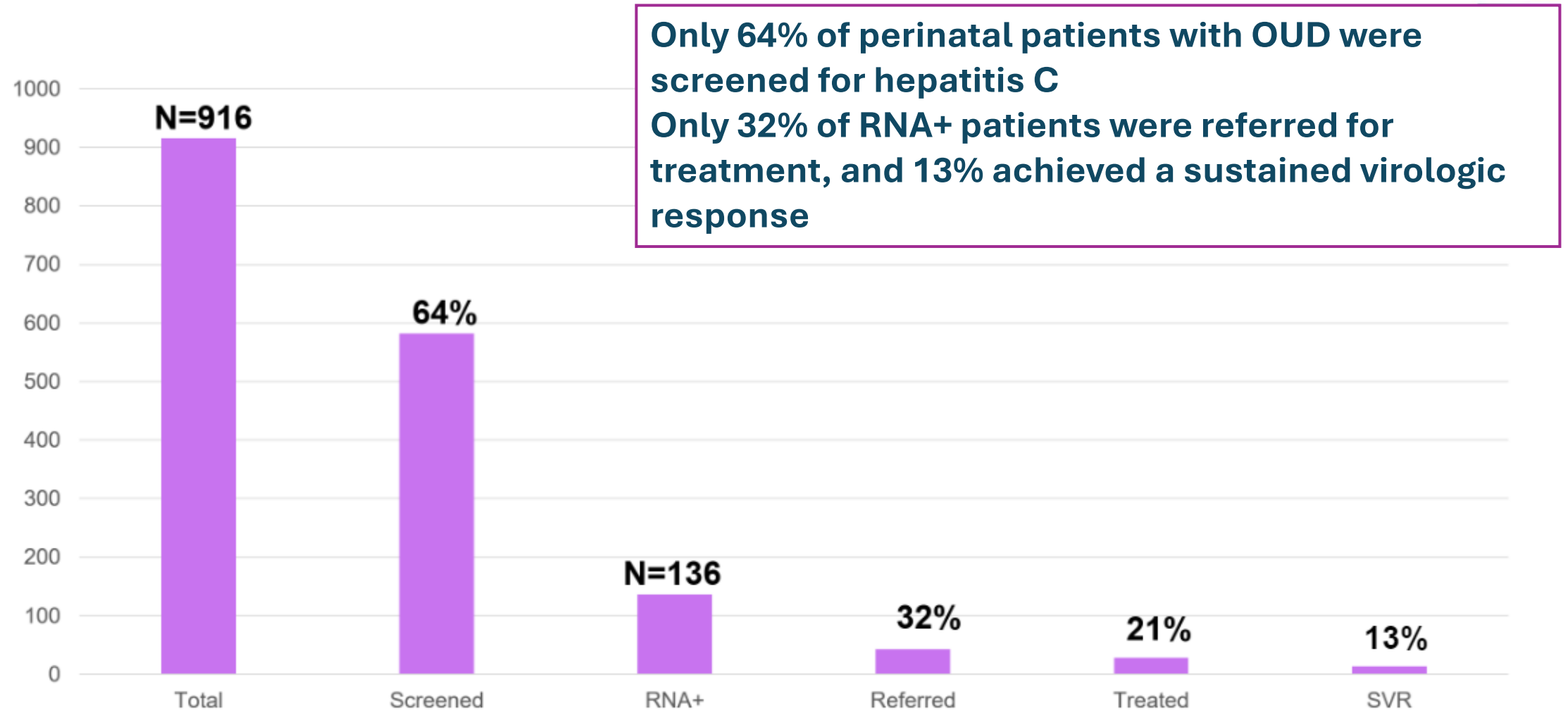
Maine Resources

3. Learn about the resources available in Maine for management of patients with hepatitis C, HIV, and congenital syphilis, and the role of Maine CDC.



Maine CDC Perinatal Hepatitis C Program and Linkage to Care

Hepatitis C Virus Cascade of Care Among Perinatal Patients in Maine Diagnosed With Opioid Use Disorder, 2015–2020



Maine CDC Perinatal Hepatitis C Case Workflow

Case Follow up Provided:

Birth parent

- During pregnancy and/or
- Post-partum

PCP for infant/child

- Titer reminder at 2-6 months (and/or antibody at 18 months)
- Treatment reminder at 3 years

Parent &/or PCP

- For other potentially exposed children

Positive HCV result received by Maine CDC for a female of reproductive age and/or a child <36 months old

Perinatally exposed infant identified through vital records

Assigned to field investigator to investigate (per Perinatal Hepatitis C Investigation Protocol)

Field investigator notifies Hepatitis C Navigator about case

HCV Navigator initiates perinatal case follow-up

Maine CDC Perinatal Hepatitis C Materials

Education for parent(s)/ guardian(s) and persons of reproductive capacity:

Common questions for pregnant people with Hepatitis C:

Is it safe to breastfeed my baby?

- Yes! Hep C is not transferred through breastmilk.

What kind of delivery should I have?

- You can have a vaginal delivery or a C-section. Neither route of delivery has been shown to increase transmission to your baby.

Is it safe for me to hug and kiss my baby?

- Yes! Hep C is NOT transmitted through saliva, coughing, or sneezing. Hep C is spread through blood. You can hug and kiss your baby without fear of spreading H

OTHER RESOURCES

Maine Center for Disease Control and Prevention
1-800-821-5821
www.maine.gov/dhhs/hepatitis

US Centers for Disease Control and Prevention
www.cdc.gov/hepatitis

Hepatitis C & Pregnancy

A Guide for Pregnant People with Hep C



Hepatitis C Fact Sheet

Hepatitis C is a liver disease caused by the hepatitis C virus (HCV).

Hepatitis C spreads primarily through contact with the blood of an infected person.

Common Signs and Symptoms



Fever



Feeling Very Tired



Loss of Appetite



Nausea and Vomiting



Abdominal Pain



Dark Urine

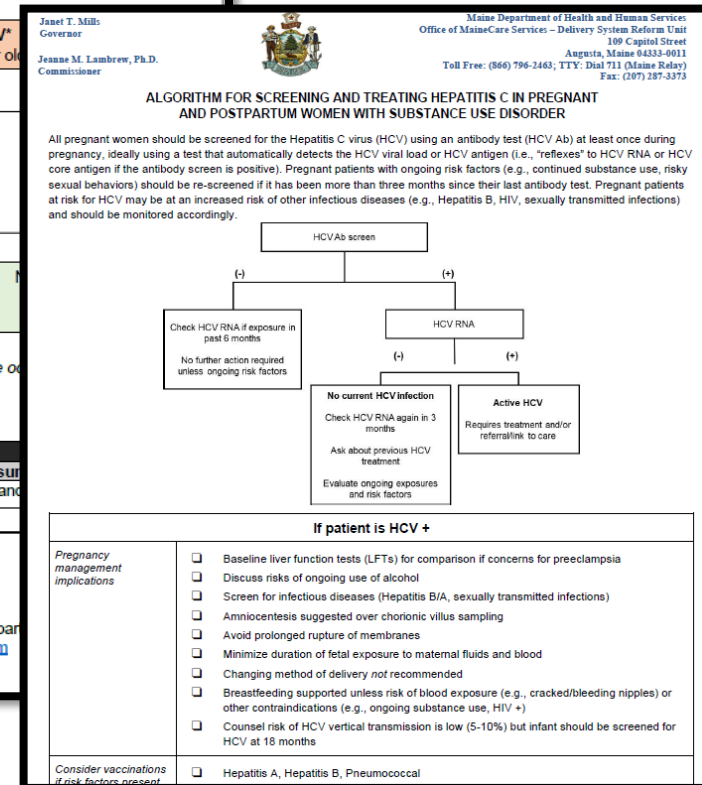
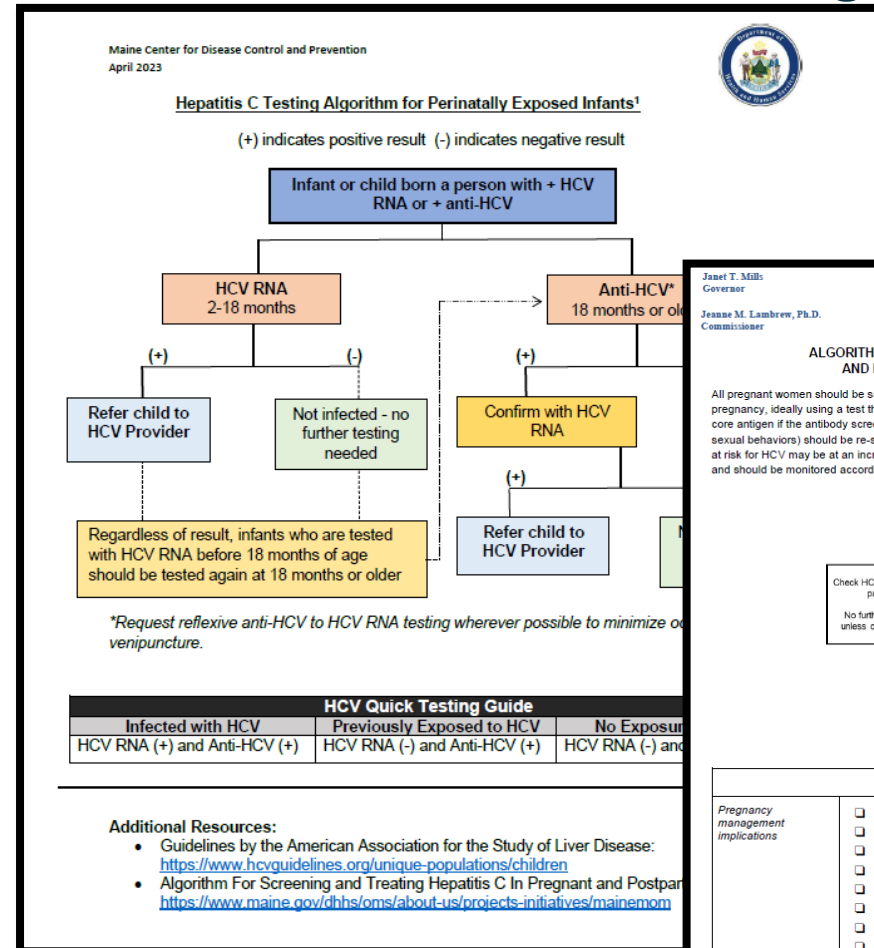
Signs and symptoms of hepatitis C can also include clay-colored bowel movements, joint pain, and jaundice (yellow color in the skin or eyes). Most people do not show any signs or symptoms. If symptoms do occur, they usually start six to seven weeks after exposure, but can range from two weeks to six months.



Talk to your doctor if you think you have hepatitis C. Hepatitis C is diagnosed with blood tests.

There is no specific treatment for acute hepatitis C, but several drugs are available to treat chronic hepatitis C.

Health Care Provider testing algorithms:



Maine CDC Hepatitis C Linkage to Care Service

- Card and poster versions continue to be distributed to community partners throughout Maine.
- Maine CDC has compiled a resource with information on where Mainers can obtain testing and treatment, and how to interface with these providers.
- Assistance with obtaining care is provided through the Maine CDC Hepatitis C Navigator, including linkage to community resources and warm hand-offs.

Linkage to care for hepatitis C diagnosis and treatment -
https://redcap.link/HCV_Linkage

Hepatitis C Link to Care In Maine



Hepatitis C is a viral infection primarily affecting the liver. Most people do not have symptoms and do not know they are infected.

Do you believe you might have Hepatitis C?

We can assist if you are seeking:

- Information
- Testing
- Medication
- Treatment



Please get in touch with
Helen T. Price-Wharff, FNP
Hepatitis C Patient Navigator



Fill out the online form!

<https://tinyurl.com/HepCMaine>



Contact information

Email: helen.price-wharff@maine.gov

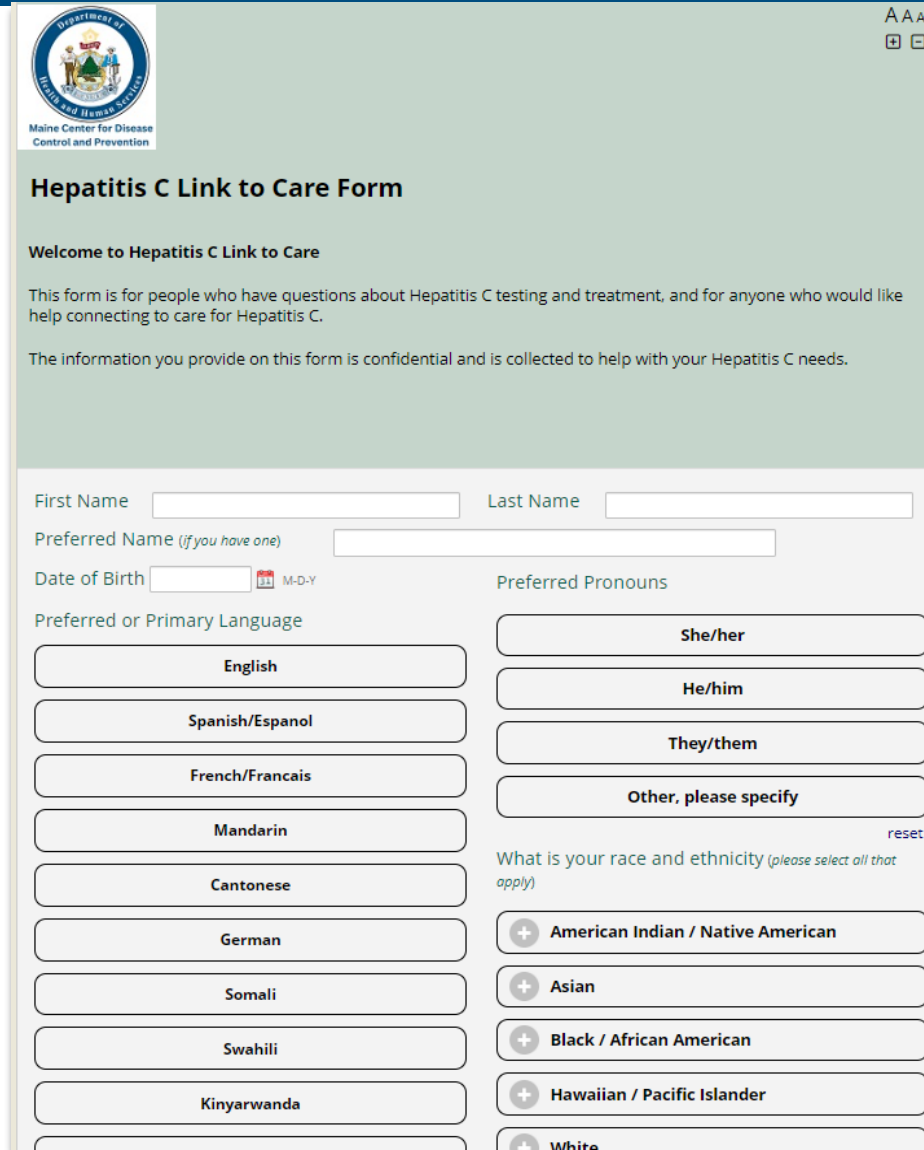


Hepatitis C Linkage to Care: Online Form

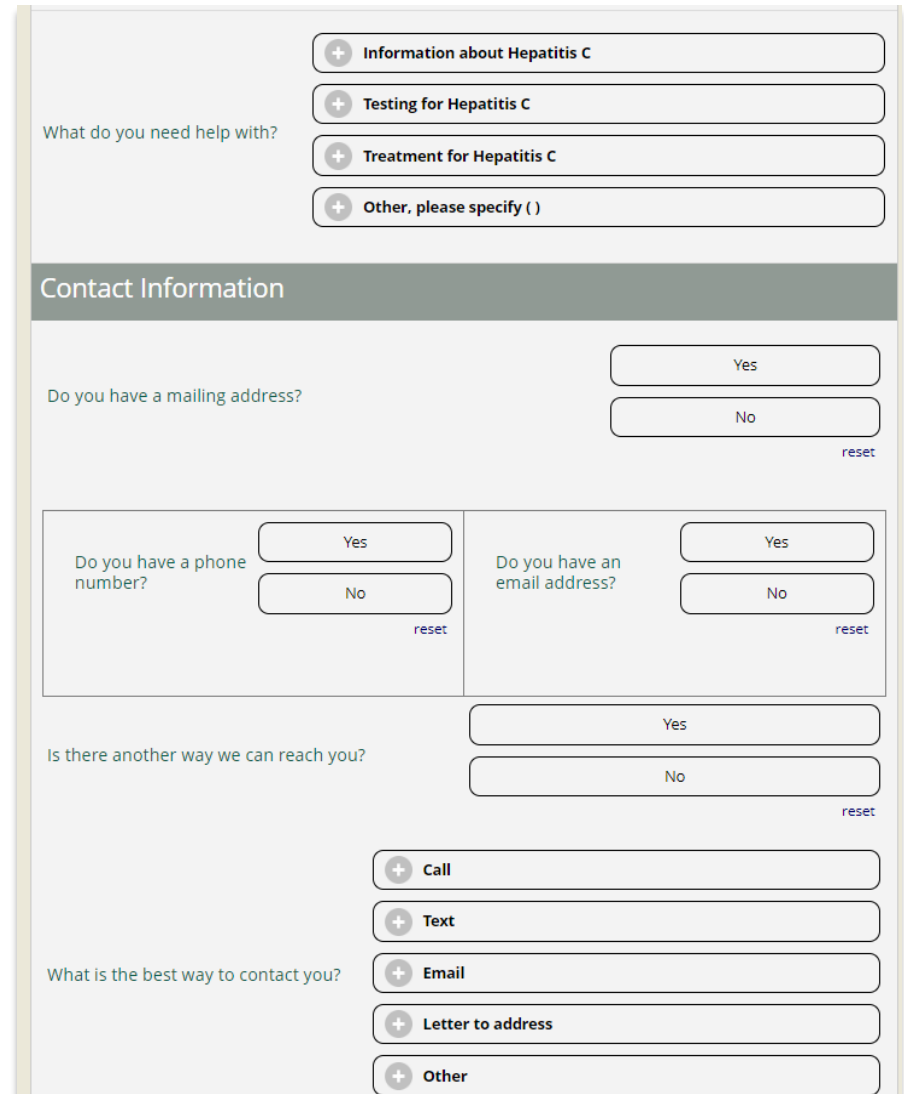
A confidential online form that can be completed by anyone.

Can be utilized by Mainers to connect with:

- General information about hepatitis C
- Testing
- Medication/Treatment



The screenshot shows the top portion of the 'Hepatitis C Link to Care Form'. At the top left is the logo of the Maine Center for Disease Control and Prevention. The title 'Hepatitis C Link to Care Form' is centered. Below the title, a welcome message states: 'Welcome to Hepatitis C Link to Care. This form is for people who have questions about Hepatitis C testing and treatment, and for anyone who would like help connecting to care for Hepatitis C. The information you provide on this form is confidential and is collected to help with your Hepatitis C needs.' The form fields include: 'First Name' and 'Last Name' text boxes; 'Preferred Name (if you have one)' text box; 'Date of Birth' with a calendar icon and 'M-D-Y' label; 'Preferred or Primary Language' with a list of languages (English, Spanish/Espanol, French/Francais, Mandarin, Cantonese, German, Somali, Swahili, Kinyarwanda); 'Preferred Pronouns' with buttons for 'She/her', 'He/him', 'They/them', and 'Other, please specify'; and 'What is your race and ethnicity (please select all that apply)' with a list of options including 'American Indian / Native American', 'Asian', 'Black / African American', 'Hawaiian / Pacific Islander', and 'White'. A 'reset' button is located next to the 'Other, please specify' option.



The screenshot shows the 'Contact Information' section of the form. It begins with a question 'What do you need help with?' followed by four buttons: '+ Information about Hepatitis C', '+ Testing for Hepatitis C', '+ Treatment for Hepatitis C', and '+ Other, please specify ()'. Below this is a section titled 'Contact Information'. It contains the question 'Do you have a mailing address?' with 'Yes' and 'No' buttons and a 'reset' button. Next is a section with two questions: 'Do you have a phone number?' and 'Do you have an email address?', each with 'Yes' and 'No' buttons and a 'reset' button. Below these is the question 'Is there another way we can reach you?' with 'Yes' and 'No' buttons and a 'reset' button. At the bottom, the question 'What is the best way to contact you?' is followed by five buttons: '+ Call', '+ Text', '+ Email', '+ Letter to address', and '+ Other'.

Hepatitis C Clinician Survey

Survey Goals:

- Identify healthcare providers who are treating hepatitis C in Maine.
- Learn about the barriers healthcare providers in Maine face in treating hepatitis C, and how the Maine CDC might assist with overcoming these barriers.
- Connect clinicians to information and training resources.

Complete the survey here:

https://redcap.link/MECDC_HepC_Treatment_Survey



Other Maine State Programs and Resources

Disease Intervention Specialists (DIS)

Public health professionals who use contact tracing and case investigation to prevent and control sexually transmitted infections

- Trained counselors: help providers inform patients about positive results
- Investigators: help locate patients who have been tested but did not return for results or treatment
- Educators: provide education on STIs, testing, and treatments



DIS Case Investigation & Management

Treatment Call	Interview	Partner Services
<ul style="list-style-type: none">• Verify patient information• Symptoms at time of visit• Sexual history• Treatment plan	<ul style="list-style-type: none">• Review recommendations• Prevention counseling• Discuss prophylaxis (PrEP, PEP, mpox vaccine, etc.)• Partner elicitation	<ul style="list-style-type: none">• Notification of exposure• Linkage to care• Review treatment recommendations

Disease Reporting/Consultation:
1-800-821-5821 (24 hours a day)

Resources for People Living with HIV



- MaineCare special benefit waiver program
 - Limited MaineCare benefit for individuals living with HIV or AIDS who do not qualify for full MaineCare benefits because they are over the income limit or do not have a coverage group
 - Contact: 207-624-4008
- Ryan White/AIDS Drug Assistance Program (ADAP)
 - Helps low-income people living with HIV pay for medications, medical insurance, and some blood work
 - Financial assistance for dental care, housing, and food
 - Contact: 207-287-3747, RyanWhitePartB@maine.gov



Where to Refer Pediatric Patients



Maine Medical Partners Division of Pediatric Gastroenterology (HCV only)

887 Congress Street, Suite 300
Portland, ME 04102
Phone: 207-662-5522
Fax: 207-662-5526

Maine Medical Partners Pediatric Infectious Diseases

887 Congress Street, Suite 300
Portland, ME 04102
Phone: 207-662-5522
Fax: 207-662-5526

Northern Light Pediatric Gastroenterology (HCV only)

417 State Street, Webber Medical Building, Suite 121
Bangor, ME, 04401
Phone: 207-973-7107
FAX: 207-973-9003

Northern Light Pediatric Infectious Disease Care

417 State Street, Webber Medical Building
Bangor, ME, 04401
Phone: 207-973-4051
FAX: 207-973-9003

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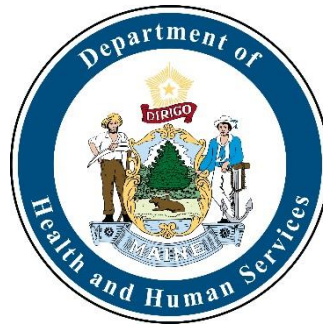
Thoughts & Questions



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Thank you to all my colleagues who contributed to this presentation!



Maine Department of Health and Human Services
Maine Center for Disease Control and Prevention