Indiana Department of Health

CLINICIAN UPDATES

GUY CROWDER, M.D., M.P.H.T.M.
CHIEF MEDICAL OFFICER

SHIREESHA VUPPALANCHI, M.D.
MEDICAL DIRECTOR

2/23/2024

OUR MISSION:

To promote, protect, and improve the health and safety of all Hoosiers.

OUR VISION:

Every Hoosier reaches optimal health regardless of where they live, learn, work, or play.

Measles Confirmed in Lake County Area

- Case of measles has been confirmed in the Lake County area
- First case in Indiana since 2019
- Risk to the public is low
- As of Feb. 15, CDC reports 20 measles cases were reported by 11 states in 2024; there were 58 cases in 20 states in 2023
- IDOH sent a press release and IHAN this morning

Measles Reminders

- Clinicians should watch for additional cases of measles and immediately report suspected cases of measles to IDOH.
- Measles is a highly contagious viral illness. The R_0 value is 12-18. About one in five unvaccinated people in the United States who get measles is hospitalized, and 90 percent of unvaccinated people who are exposed to measles will become sick.
- Exposed individuals who do not have evidence of immunity to measles should be encouraged to be vaccinated and should quarantine and monitor for signs and symptoms for 21 days after exposure.

Measles Reminders

- Details on measles reporting, laboratory testing, infection control, clinical guidance and additional resources are included in the attached Indiana Health Alert Notification.
- Appropriate infection control practices should be implemented in healthcare facilities when caring for patients suspected of having measles. Try to get patients into airborne isolation or a single room immediately.
- Testing for measles is available through the IDOH Laboratories with prior authorization. To request testing authorization, clinicians and laboratories should contact the IDOH Infectious Disease Epidemiology and Prevention Division at 317-233-7125 during business hours (Monday – Friday, 8:15 a.m. – 4:45 p.m.) or 317-233-1325 after hours.

Measles testing

Measles testing should be performed for patients who:

- Meet the clinical case definition for measles (generalized maculopapular rash; **and** fever ≥101˚F; **and** cough, coryza, or conjunctivitis) **AND**
- Within the 21 days prior to symptom onset, had an elevated risk of exposure to measles including:
  - Had a known exposure to measles, or
  - Traveled internationally or to an area with known measles cases, or
  - Had contact with someone with a febrile rash illness, particularly if those individuals had traveled internationally or to an area with known measles cases.
- Clinicians should consult public health authorities regarding testing if:

- Measles is strongly suspected based on clinical presentation in patients with no known increased risk of measles exposure, particularly if the patient has no evidence of immunity to measles.
- Patients have had a known measles exposure and present with atypical signs or symptoms.

To avoid false positive results, testing is discouraged for patients with clinical presentation inconsistent with measles and no known increased risk of exposure to measles.

Measles clinical guidance

- There is no specific antiviral therapy for measles. Medical care is supportive to relieve symptoms and address complications. Severe measles cases among children, such as those who are hospitalized, should be treated with vitamin A per CDC guidelines.
- For people exposed to measles who are not immune, MMR vaccine given within 72 hours of exposure or immunoglobulin (IG) given within 6 days of exposure may prevent or reduce the severity of measles infection. Recommendations and dosage vary by age and underlying health conditions. Clinicians should refer to CDC guidance for up-to-date post-exposure prophylaxis recommendations.
- Except in healthcare settings, unvaccinated persons who receive their first dose of MMR vaccine within 72 hours postexposure may return to childcare, school, or work. Exposed, susceptible individuals who do not receive MMR vaccine within 72 hours of exposure should quarantine for 21 days after exposure.
- All individuals exposed to measles should monitor for signs and symptoms for 21 days after last exposure. If symptoms develop, patients should seek medical attention and should call ahead before visiting a healthcare facility so that appropriate infection control precautions can be taken.

Measles infection control

- Patients suspected of having measles should immediately be masked, if tolerated, and placed in an airborne infection isolation room (AIIR).
  - If an AIIR is not available, patients should be immediately placed in a single patient room with the door closed.
  - The room should not be used **for at least 2 hours** after the patient has left and should be disinfected before use by another patient.
- Facility infection prevention staff should be notified immediately of any suspected measles cases. If patients suspected of having measles must be transferred to another facility, contact the facility in advance so that appropriate infection control measures can be implemented.
- Staff caring for patients suspected of having measles should follow airborne precautions, including wearing an N95 respirator. Only healthcare providers with evidence of immunity to measles should provide care to patients suspected of having measles. Presumptive evidence of immunity for healthcare providers includes:
  - Written documentation of vaccination with 2 doses of live measles or MMR vaccine administered at least 28 days apart,
  - Birth before 1957,
  - Laboratory evidence of immunity, or
  - Laboratory confirmation of disease

Public Resources

- Expect an increase in public interest
- Best protection is vaccination: More than 93 percent of people who receive a single dose of MMR will develop immunity to measles, and more than 97 percent will be protected after second dose
- Opportunity to encourage vaccination
  - Three clinics planned for 3-7 p.m. CST Wednesday, Feb. 28
    - Gary Health Department, 1145 W. Fifth Ave., Gary
    - East Chicago Health Department. 100 W. Chicago Ave., East Chicago
    - Jean Shepard Community Center. 3031 J.F. Mahoney Drive, Hammond
- IDOH has set up a public information call center: 1-800-382-1563 from 8:15 a.m. to 4:45 p.m. EST Monday through Friday

Respiratory infections

Indiana Department of Health

Indiana | Marion County | Submit | Reset

High overall respiratory illness activity in Indiana

Based on healthcare visits for fever and cough or sore throat:

It is important to take the time now to get your recommended vaccinations to reduce your risk of serious illness. You can also protect yourself with preventive actions and seek medical advice if you have symptoms.

Find more respiratory illness data, including a national overview

Weekly Viral Respiratory Illness Snapshot

Illness trends in Marion County, Indiana

Based on visits to emergency departments:

Flu	RSV	COVID-19
INCREASING	DECREASING	NO CHANGE

Low COVID-19 hospitalization levels in Marion County, Indiana

Based on inpatient admissions for COVID-19:

- If you are at high risk of getting very sick from COVID-19, talk with a healthcare provider about additional prevention actions.

COVID-19 Situation in Marion County, Indiana

Protect yourself from COVID-19, Flu, and RSV (cdc.gov)

Indiana Influenza Dashboard

All data will be updated weekly beginning Friday, October 13, 2023. Data as of February 16, 2024.
Observed Current Week - February 4, 2024 - February 10, 2024

WEEKLY OVERVIEW | SYNDROMIC SURVEILLANCE | SENTINEL SURVEILLANCE | VIROLOGIC SURVEILLANCE | INFLUENZA-ASSOCIATED MORTALITY

Indiana Influenza-Like Illness (ILI) Surveillance – Week ending February 10, 2024

This influenza "flu" dashboard is to describe the spread and prevalence of influenza-like illness (ILI) in Indiana. It is meant to provide local health departments, hospitals, healthcare professionals, and the community with the general burden of ILI activity. Flu season for the U.S. typically occurs from October – May, however, flu can and does circulate year-round.

ILI Definition = fever of 100° F or higher (measured) AND cough and/or sore throat.

ILI Activity Code

High

Influenza-Associated Deaths

6

for current week

96 total for current season

Syndromic Percent ILI

3.82% ▲0.22%

reported by emergency department and urgent care chief complaints

Sentinel Percent ILI

3.96% ▲0.25%

reported by sentinel outpatient provider

Indiana Department of Health

Influenza-like illness (ILI) in Indiana

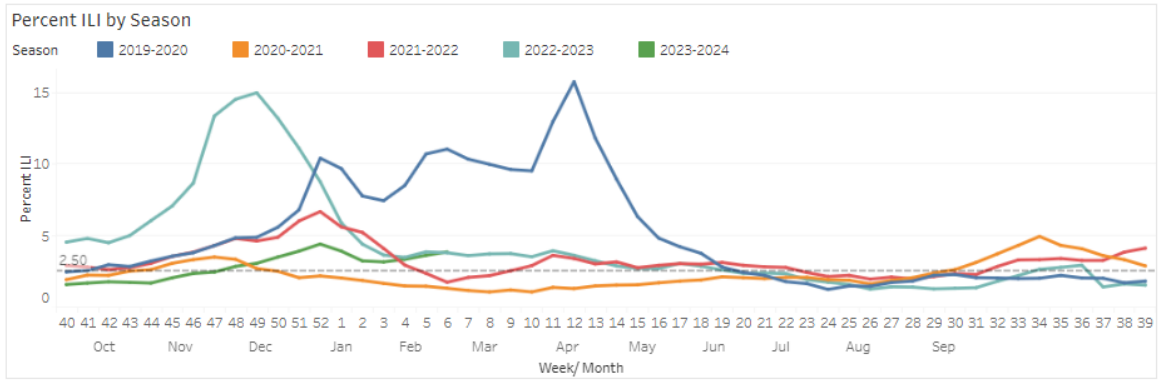
Indiana Influenza Dashboard

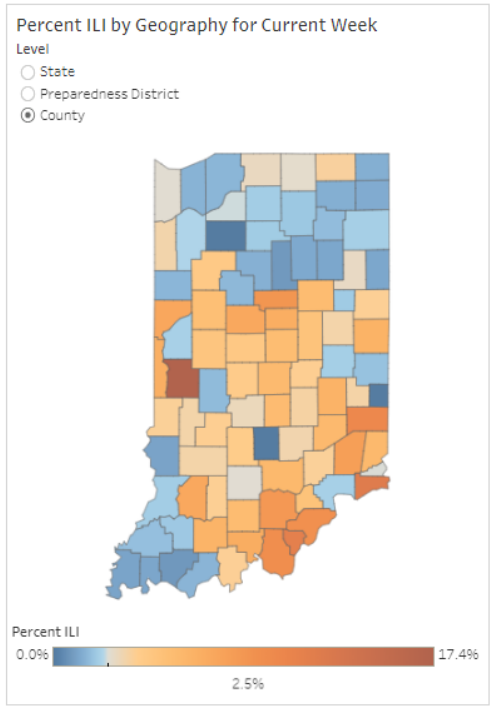
All data will be updated weekly beginning Friday, October 13, 2023. Data as of February 16, 2024.
Observed Current Week - February 4, 2024 - February 10, 2024

WEEKLY OVERVIEW | SYNDROMIC SURVEILLANCE | SENTINEL SURVEILLANCE | VIROLOGIC SURVEILLANCE | INFLUENZA-ASSOCIATED MORTALITY

Emergency Department and Urgent Care Visits for ILI

The Indiana Department of Health (IDOH) uses a system called ESSENCE (Electronic Surveillance System for the Early Notification of Community-based Epidemics) to track and monitor syndromic surveillance for ILI. In ESSENCE, a visit is classified as ILI when a patient presents with a chief complaint of fever (greater than or equal to 100 °F) accompanied by a cough and/or sore throat, or complaining of "influenza". Epidemiologists at IDOH analyze data from 119 emergency departments and 23 urgent care facilities across the state.





ILI Count by Age Group for Current Season

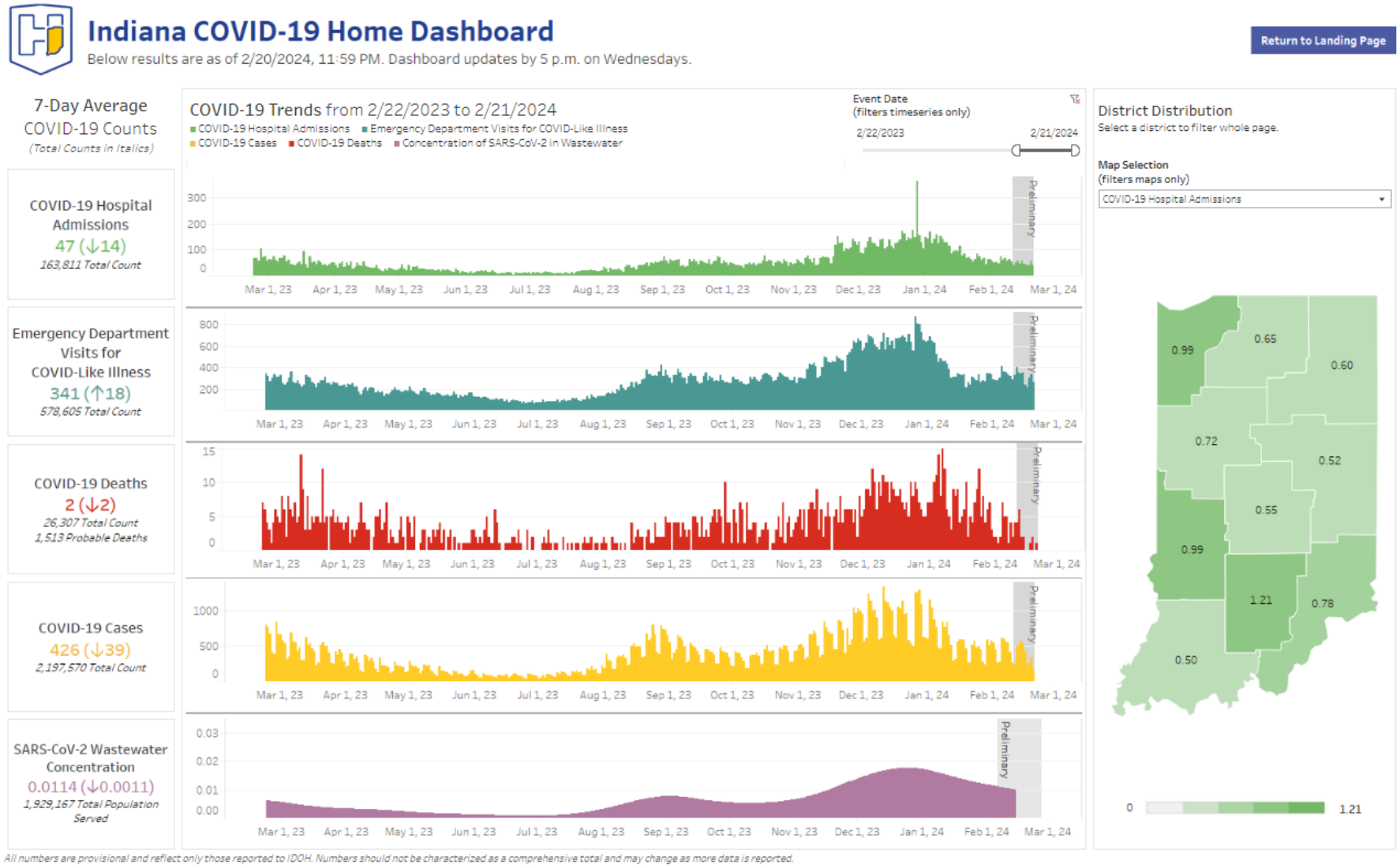
	Current Week	Previous Week
Age 0-4	416	475
Age 5-24	1,136	1,284
Age 25-49	780	785
Age 50-64	225	279
Age 65+	168	205
Total	2,725	3,028

Percent ILI by Age Group for Current Season

	Current Week	Previous Week
Age 0-4	7.9%	8.2%
Age 5-24	6.3%	6.7%
Age 25-49	3.2%	3.2%
Age 50-64	1.8%	2.2%
Age 65+	1.1%	1.3%

Indiana Department of Health

[Health: Infectious Disease Epidemiology & Prevention Division: Influenza Dashboard]

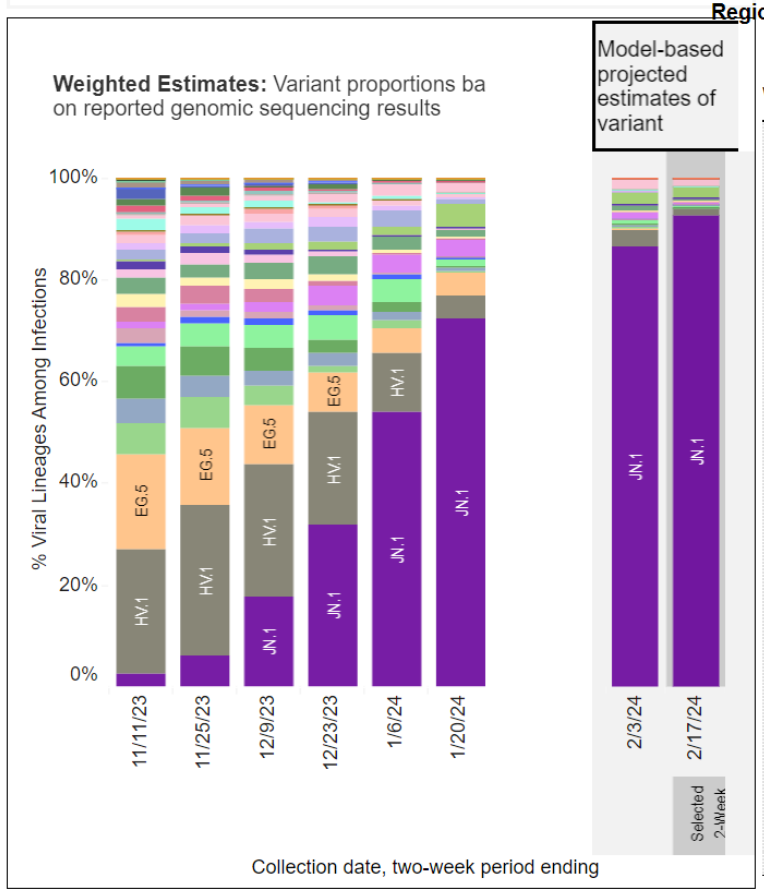


Indiana Department of Health

[Coronavirus: Indiana COVID-19 Home Dashboard]

Weighted Estimates in HHS Region 5 for 2-Week Periods in 10/29/2023 – 2/17/2024

Hover over (or tap in mobile) any lineage of interest to see the amount of uncertainty in that lineage's estimate.



Nowcast Estimates in HHS Region for 2/4/2024 – 2/17/2024

Region 5 - Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin

WHO label	Lineage #	%Total	95%PI
Omicron	JN.1	92.6%	86.8-96.0%
	BA.2	2.0%	0.0-13.9%
	GE.1	1.7%	0.3-6.4%
	HV.1	1.2%	1.0-1.5%
	BA.2.86	0.8%	0.4-1.4%
	JG.3	0.6%	0.4-0.9%
	JD.1.1	0.4%	0.3-0.6%
	HK.3	0.2%	0.2-0.3%
	EG.5	0.2%	0.1-0.2%
	XBB	0.1%	0.0-0.1%
	EG.5.1.8	0.0%	0.0-0.1%
	JF.1	0.0%	0.0-0.1%
	XBB.1.16.15	0.0%	0.0-0.1%
	FL.1.5.1	0.0%	0.0-0.0%
	XBB.1.9.1	0.0%	0.0-0.0%
	XBB.1.5.70	0.0%	0.0-0.0%
	XBB.1.16.6	0.0%	0.0-0.0%
	XBB.1.16.11	0.0%	0.0-0.0%
	HF.1	0.0%	0.0-0.0%
	GK.1.1	0.0%	0.0-0.0%
	XBB.2.3	0.0%	0.0-0.0%
	GK.2	0.0%	0.0-0.0%
	XBB.1.16	0.0%	0.0-0.0%
	XBB.1.5	0.0%	0.0-0.0%
	CH.1.1	0.0%	0.0-0.0%
	XBB.1.5.68	0.0%	0.0-0.0%
	XBB.1.16.17	0.0%	0.0-0.0%
	XBB.1.16.1	0.0%	0.0-0.0%
	EG.6.1	0.0%	0.0-0.0%
	XBB.1.9.2	0.0%	0.0-0.0%
	XBB.1.5.72	0.0%	0.0-0.0%
Other	Other*	0.1%	0.0-0.1%

* Enumerated lineages are US VOC and lineages circulating above 1% nationally in at least one 2-week period. "Other" represents the aggregation of lineages which are circulating <1% during all 2-week periods displayed.

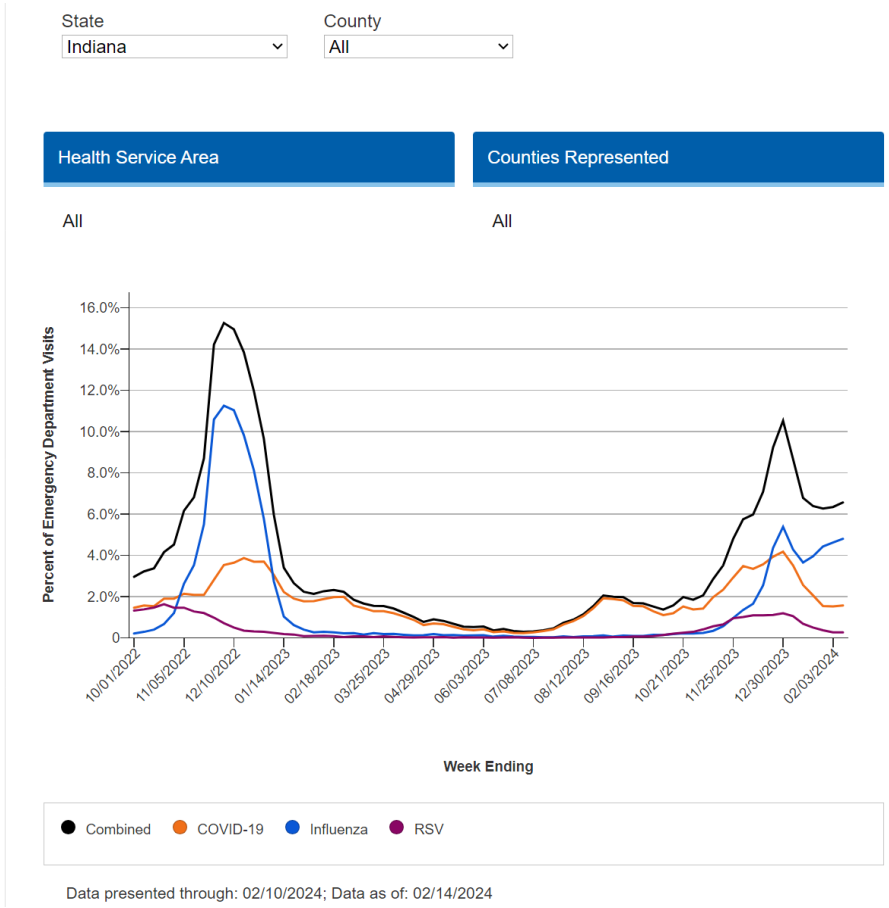
\# While all lineages are tracked by CDC, those named lineages not enumerated in this graphic are aggregated with their parent lineages, based on Pango lineage definitions, described in here: https://www.pango.network/the-pango-nomenclature-system/statement-of-nomenclature-rules/.

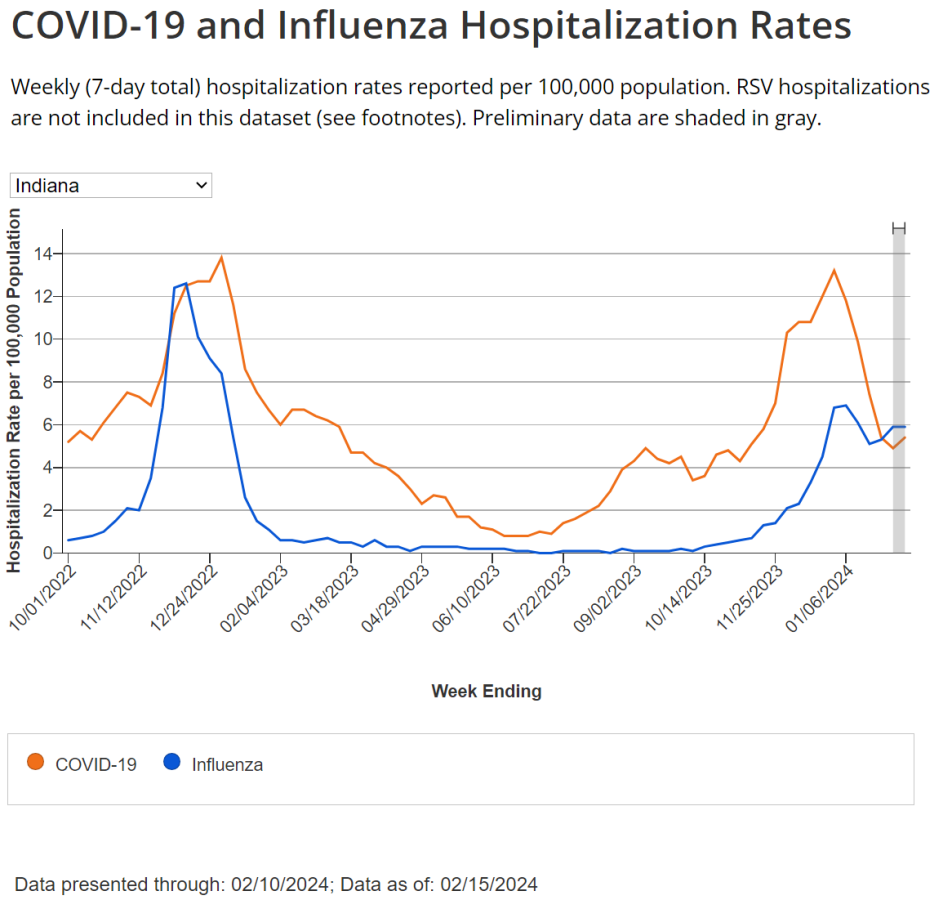
Nowcast Estimates for 2/4/2024 – 2/17/2024 by HHS Region

https://covid.cdc.gov/covid-data-tracker/#variant-proportions

Indiana Department of Health

Indiana ED Visits for Viral Respiratory Illness and Illness Severity



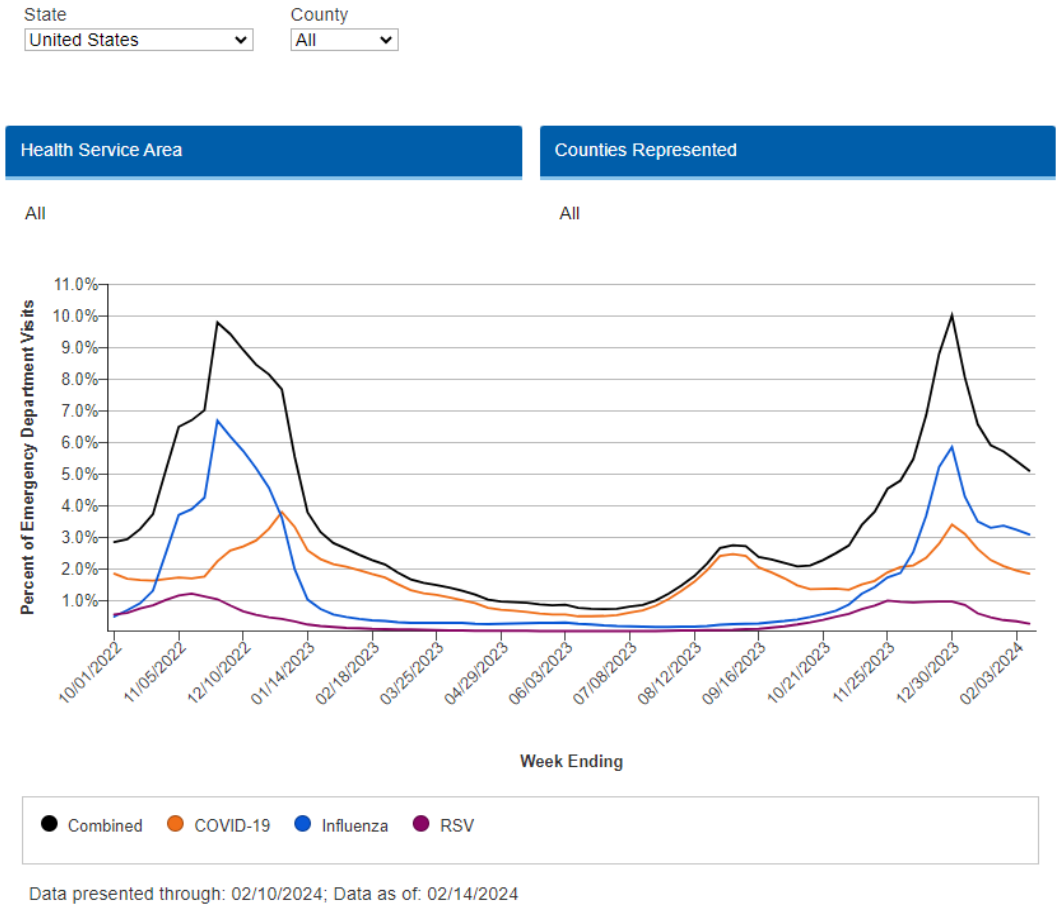


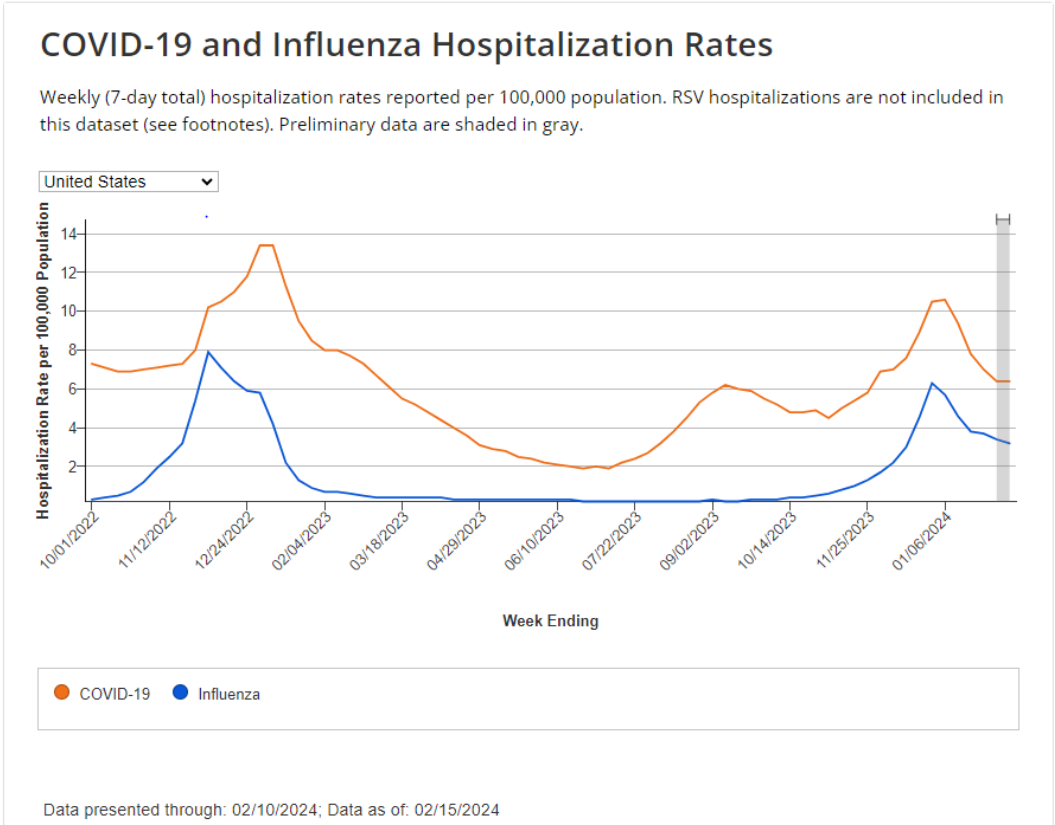
Indiana Department of Health

[Respiratory Virus Activity Levels (cdc.gov)](#)

[Severe Viral Respiratory Illness (cdc.gov)](#)

National ED Visits for Viral Respiratory Illness and Illness Severity





Indiana Department of Health

[Respiratory Virus Activity Levels (cdc.gov)](#)

[Severe Viral Respiratory Illness (cdc.gov)](#)

EUA labeled Paxlovid will no longer be authorized after March 8, 2024

On 01/29/2024, FDA announced a revision to the Paxlovid emergency use authorization (EUA):

- **EUA-labeled Paxlovid will no longer be authorized for emergency use after March 8, 2024, regardless of the labeled or extended expiration date.**
- **Patients who receive a prescription of EUA-labeled Paxlovid on or prior to March 8, 2024, and have initiated treatment on or prior to that date, may complete their course of treatment even if completion of treatment were to occur after March 8, 2024.**
- The deadline for the USG to receive credit for the return of EUA-labeled Paxlovid has been extended from January 31, 2024, to February 29, 2024. The USG requests that all remaining EUA returns be initiated as soon as possible to ensure product is received by Inmar by February 29 to be accepted for credit to the federal inventory.
- Link to website to look up Paxlovid expiration dates: https://www.paxlovidlotexpiry.com/

FDA revises letter of authorization for the emergency use authorization for Paxlovid | FDA

Updated COVID-19 Vaccine effectiveness

- Receipt of updated COVID-19 vaccine provided approximately 54% increased protection against symptomatic SARS-CoV-2 infection compared with no receipt of updated vaccine.
- Vaccination provides protection against JN.1 and other circulating lineages.

Early Estimates of Updated 2023–2024 (Monovalent XBB.1.5) COVID-19 Vaccine Effectiveness | MMWR (cdc.gov)

National Vaccination Trends Update, Feb 16

The percent of the population reporting receipt of COVID-19, influenza, and RSV vaccines remains low for children and adults.

- The percent of the population reporting receipt of the updated 2023-24 COVID-19 vaccine is 12.4% (95% confidence interval: 11.8-13.0) for children and 22.3% (21.7-22.9) for adults 18+, including 42.2% (40.6-43.8) among adults age 65+ (as of Feb 16, 2024)
- The percent of the population reporting receipt of a flu vaccine is 50.0% (95% confidence interval: 48.9-51.1) for children and 47.6% (46.9-48.4) for adults 18+, including 73.3% (71.6-75.0) among adults age 65+.
- The percent of adults age 60+ that report receiving an RSV vaccine is 21.9% (20.9-22.9).

Vaccination Trends—Adults (cdc.gov)

Influenza Virus Infection and Risk of Atherothrombotic events

- A case series study published this month in the Journal of Infectious Diseases finds that **even mild illness caused by influenza virus infections are associated with a twofold increase in the risk of acute cardiovascular events (AMI and Stroke) in older patients.**
- A meta-analysis published in November 2023 of studies involving more than 9,000 patients reported a 26% decreased risk of heart attacks in people who received a flu vaccine and a 33% reduction in cardiovascular deaths.
- Previous studies showed that
- People were six times more likely to have a heart attack in the week after being diagnosed with flu (2018 NEJM article).
    - A CDC study published in 2020 in the Annals of Internal Medicine reported that sudden, serious cardiac events are common in adults hospitalized with flu. The study, which looked at more than 80,000 adult patients hospitalized with flu over eight flu seasons, found that almost 12% of patients, or 1 in 8, had an acute cardiac event, such as acute heart failure or acute ischemic heart disease. Of these, 30% were admitted to the ICU and 7% died while in the hospital.

Miscellaneous COVID-19 updates

- Some at-Home OTC COVID-19 Diagnostic Tests have extended expiration dates, and the table can be found here.
- CDC is tracking and analyzing BA.2.87.1, a new variant of SARS-CoV-2. To date, this variant has been detected nine times in the Republic of South Africa. These viruses came from specimens collected from September-December 2023 and were then posted to a public database on January 31. No clinical cases of BA.2.87.1 have been identified in the United States or anywhere outside of South Africa. CDC is monitoring sequences from patient cases and other surveillance systems that include incoming international travelers and wastewater. The fact that only nine cases have been detected in one country since the first specimen was collected in September suggests it does not appear to be highly transmissible – at least so far.
- Nationally, 6.4% of noninstitutionalized U.S. adults reported ever having experienced Long COVID. Age- and sex-standardized prevalence of reporting ever having experienced Long COVID among Behavioral Risk Factor Surveillance System survey respondents in U.S. states and territories ranged from 1.9% (95% CI = 0.9%–4.1%) in the U.S. Virgin Islands to 10.6% (95% CI = 9.5%–11.8%) in West Virginia; prevalence of Long COVID exceeded 8.8% in seven states.

Other Infections

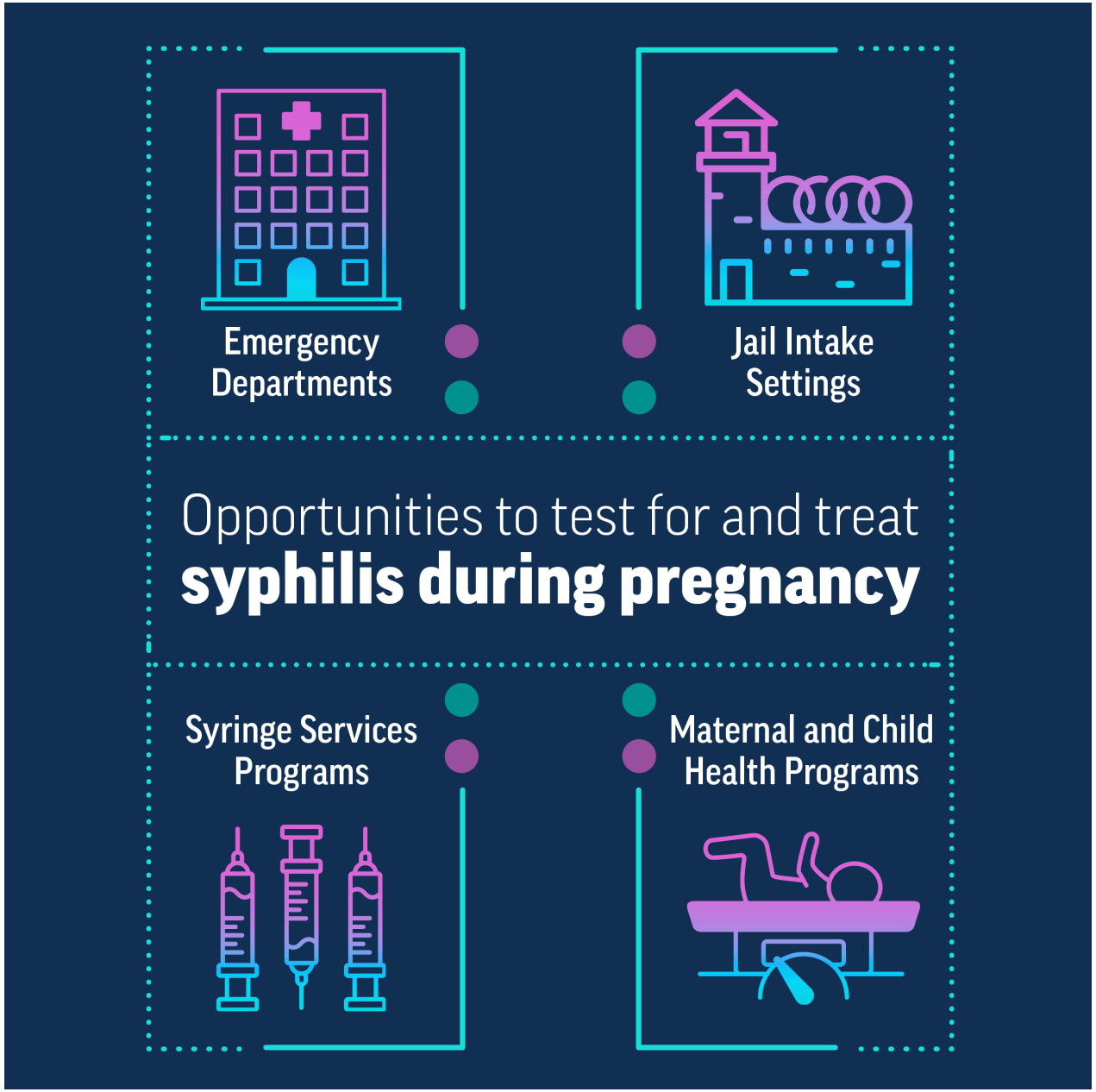
Indiana Department of Health

Syphilis in Babies Reflects Health System Failures | VitalSigns | CDC

All you need to do is test!

These are potential opportunities to improve testing and, ultimately, treatment.

If a test is collected from any of these places and is positive, local health departments can assist with investigating and managing the cases.



Indiana Department of Health

Cipro resistant meningococcal disease

- Meningococcal disease cases caused by ciprofloxacin-resistant strains of Neisseria meningitidis have increased in the United States. Use of ciprofloxacin for antibiotic prophylaxis in areas with ciprofloxacin resistance might result in prophylaxis failure.
- CDC provides implementation guidance for health departments for the preferential use of other recommended prophylaxis options (i.e., rifampin, ceftriaxone, or azithromycin) in place of ciprofloxacin when two or more ciprofloxacin-resistant meningococcal disease cases that account for ≥20% of all cases are reported in a local catchment area during a 12-month period.

Selection of Antibiotics as Prophylaxis for Close Contacts of Patients with Meningococcal Disease in Areas with Ciprofloxacin Resistance — United States, 2024 | MMWR (cdc.gov)

Salmonella infections from contaminated cantaloupes

Summary

What is already known about this topic?

A 2020 outbreak of *Salmonella* infections was found to be associated with melons after conclusion of harvesting, when melons were no longer likely to be on the market.

What is added by this report?

In 2022, whole genome sequencing (WGS)–based *Salmonella* surveillance, historical melon farm environmental sampling results, and patient interviews were used to rapidly link a *Salmonella* Typhimurium outbreak to contaminated cantaloupes.

What are the implications for public health practice?

WGS-based surveillance, combined with rapid collection of epidemiologic data by state and local agencies, can be used to reduce the time to outbreak detection and response.

AUTHORS: Colin Schwensohn, MPH[1]; Benjamin Schneider, MPH[1,2]; Erin Jenkins, MPH[3]; Allison Wellman, MPH[3]; Sharon Seelman Federman, MS, MBA[3]; Oluwakemi Oni, MPH[4]**; Nicole Stone, MPH[5]**; Jennifer Adams[1,6]; Laura Gieraltowski, PhD[1]

Notes from the Field: Rapidly Linking an Outbreak of Salmonella Typhimurium Infections to Domestically Grown Cantaloupes Through Early Collaboration — United States, 2022 | MMWR (cdc.gov)

Serotypes in 2020- 2022- 2023

- The recent multi-state outbreak was caused by two serotypes: the main strain was Salmonella Sundsvall followed by Salmonella Oranienberg. The outbreak was initially identified in Canada through routine food testing, and then subsequent clinical samples were identified that matched the outbreak strains by whole genome sequencing. Four serotypes were identified in Canada (Salmonella Soahanina, Sundsvall, Oranienburg, and Newport)
- WGS of samples from 2022 outbreak was closely related to that from the environmental sampling from 2020 (S. Typhimurium). The combination of epidemiologic and traceback 2022 data and relationship to the 2020 environmental strain indicated that cantaloupes grown in the Midwest were the likely outbreak source.

CDC Urges Mpox Vaccination for Those Eligible Given Continued U.S. Mpox Cases

Feb 12, 2024

- Although reported cases of mpox in the United States have significantly declined since the outbreak peak in the summer of 2022, small clusters have continued to occur. Severe mpox manifestations, including deaths, also continue to occur.
- Currently, only one in four of the approximately 2 million people eligible to receive JYNNEOS in the United States have received both doses.
- The Centers for Disease Control and Prevention (CDC) encourages providers to remain diligent about taking their patient's sexual history and recommending the two-dose JYNNEOS vaccine to those who are eligible to help reduce the risk of continued mpox transmission.

emergency.cdc.gov/newsletters/coca/2024/021224.html

Hepatitis A Exposure Response and Outbreak Prevention in a Large Urban Jail — Los Angeles County, California, May–July 2023

What is already known about this topic?

Risk for hepatitis A transmission in correctional settings is high because of the high proportion of homelessness and injection drug use among persons who are incarcerated.

What is added by this report?

On May 30, 2023, the Los Angeles County Jail system was notified that an incarcerated person had received a positive hepatitis A test result. Using electronic health records and the state immunization registry, investigators identified persons eligible for hepatitis A vaccination, and a vaccination response was initiated within 48 hours: 2,766 persons were offered vaccine, and 1,510 (54.6%) agreed to receive it. No additional cases were identified.

What are the implications for public health practice?

Identifying contacts promptly and using immunization and serology records to ensure rapid delivery of postexposure prophylactic vaccine can help prevent hepatitis A transmission during exposures among incarcerated populations.

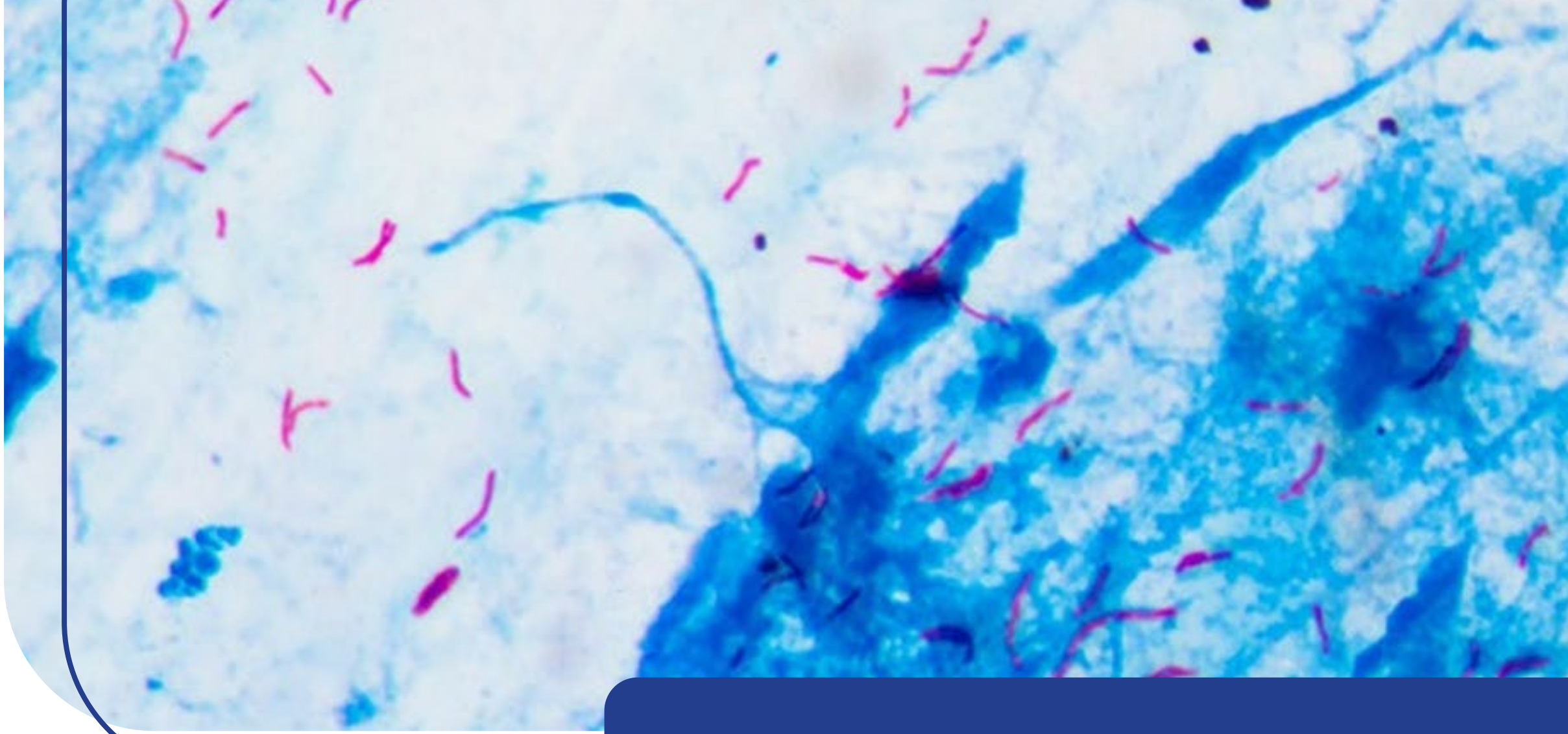
Mycoplasma pneumoniae trending up

Mycoplasma pneumoniae is a common cause of respiratory infections, particularly in school-aged children. Most infections display as a mild respiratory illness sometimes referred to as “walking pneumonia.” However, some persons experience severe pneumonia and require hospitalization. Significant cyclical increases in M. pneumoniae infections have been observed every 3–5 years, likely because of changes in the predominant circulating strain.

M. pneumoniae infections decreased globally during the COVID-19 pandemic. Data from the National Syndromic Surveillance Program and the New Vaccine Surveillance Network showed an increase in M. pneumoniae in the United States beginning in fall 2023, though below pre-pandemic levels.

Indiana Department of Health

Reemergence of Mycoplasma pneumoniae Infections in Children and Adolescents After the COVID-19 Pandemic, United States, 2018–2024 | MMWR (cdc.gov)



Tuberculosis

Indiana Department of Health

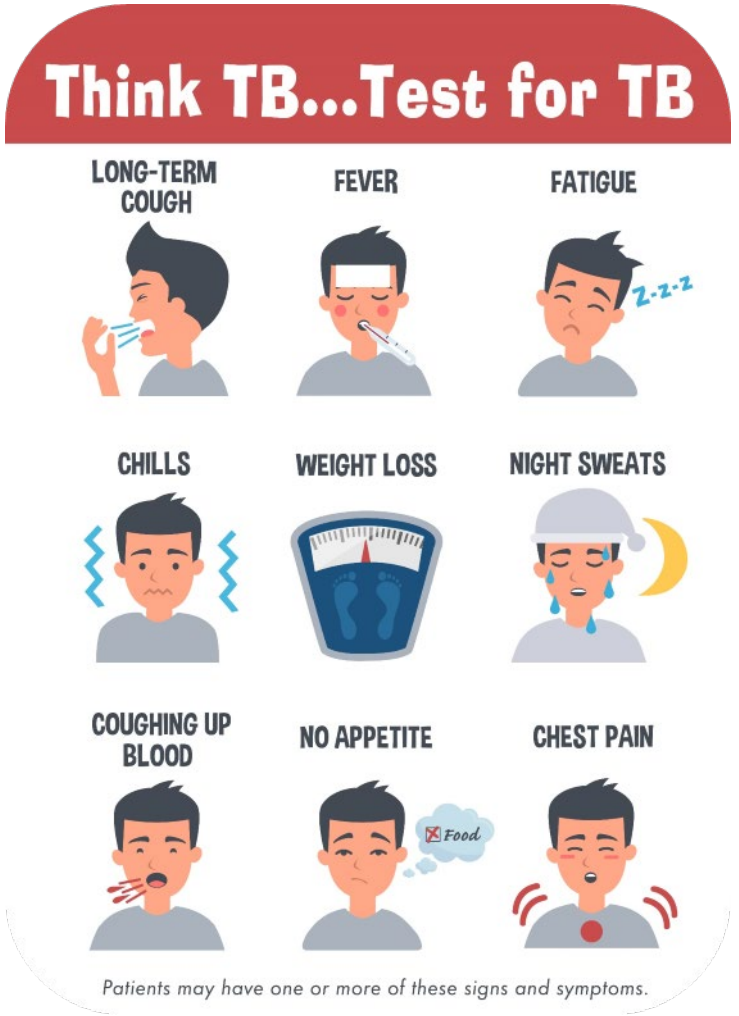
Tuberculosis Recent Updates in Indiana

Increase in TB cases in Indiana in 2023, especially in Marion County and Vanderburgh County

- 31% increase across Indiana
- 47% increase in Marion County

Vigilance is recommended in at-risk populations

- Individuals who have spent time in countries with endemic TB
- People experiencing homelessness or have spent time in congregate living settings
- Individuals with HIV infection or other immune-suppressing conditions or treatments

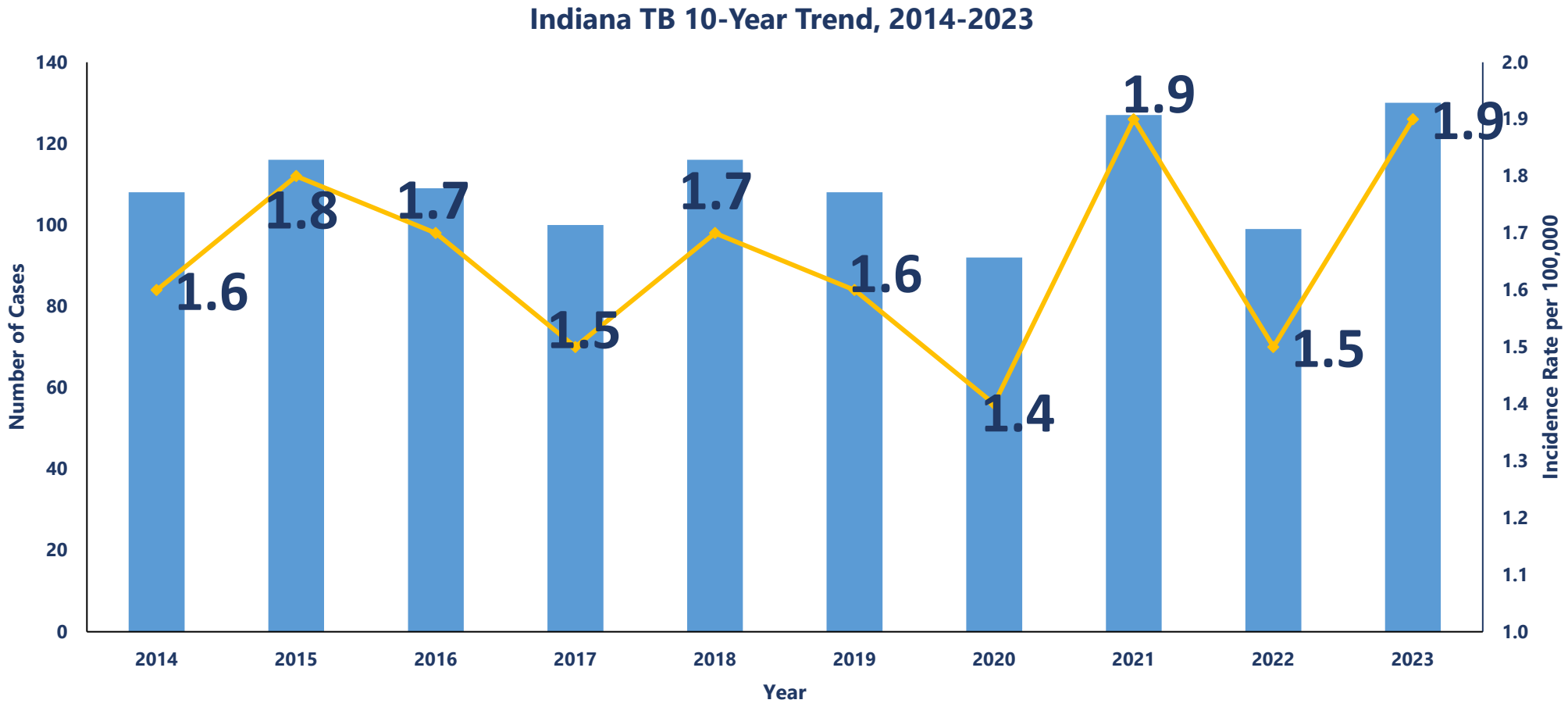


Indiana Department of Health

Think TB

- Providers should have a low threshold to evaluate individuals who have spent time in Haiti, the Marshall Islands, or other countries with endemic TB, especially those with respiratory symptoms or findings consistent with extrapulmonary disease
- Providers should also screen for exposure and treat **latent TB** when identified
- Please reach out to your local health department or IDOH for guidance

Indiana TB 10-Year Trend, 2014-2023



Indiana Department of Health

Compare to U.S. incidence of 2.5 (2022)

TB & Latent TB Infection Reporting

TB disease is reportable by providers within one working day of diagnosis or ***suspicion***

Latent TB Infection is reportable by providers within one working day of diagnosis

Providers should report via NBS or TB-specific reporting forms found on www.TB.IN.Gov

Indiana Department of Health

Ordering Medication for TB & LTBI

Treatment for TB & LTBI can be ordered free of cost for any patient in Indiana through Purdue Pharmacy

Providers should e-prescribe to Purdue Pharmacy:

- Search for ZIP code 47907. Purdue Pharmacy is the only pharmacy in this zip code OR search for West Lafayette and search for Purdue Pharmacy.
- In the free text of the script, please include the following:
  - The patient's county of residence—Purdue will send the medications to the local health department
  - The patient's language, if not English
  - The patient's weight

Medical Consultation

Medical consultation for questions on TB or LTBI is available via IDOH TB Prevention & Care Team

- Reach out to your local health department
- Contact TB Prevention & Care team directly at 317-233-7434 or TBprogram@health.in.gov

- Global TB Institute at Rutgers is Indiana's designated TB Center of Excellence
  - TB consultation service at Rutgers.IDCrowd.org or mc_gtbi@njms.Rutgers.edu

Thank you to our friends in Vanderburgh County!

REGISTRATION IS NOW OPEN!

WORLD TB DAY SUMMIT

DATE: Wednesday, March 20th, 2024
LOCATION: Garrison Conference Center
TIME: 9:00AM to 3:30PM

REGISTER HERE

https://action.lung.org/site/TR?fr_id=26460&pg=entry

*Space is limited and registration will close once full.

Hosted by:
Indiana Department of Health TB/Refugee Health and the American Lung Association

Questions:
Rose Dunbar | RoDunbar@health.in.gov

Indiana Department of Health

Indiana Department of Health

Indiana Department of Health

VIRAL HEPATITIS

ROXANNE KREPPER, MA
VIRAL HEPATITIS PREVENTION COORDINATOR

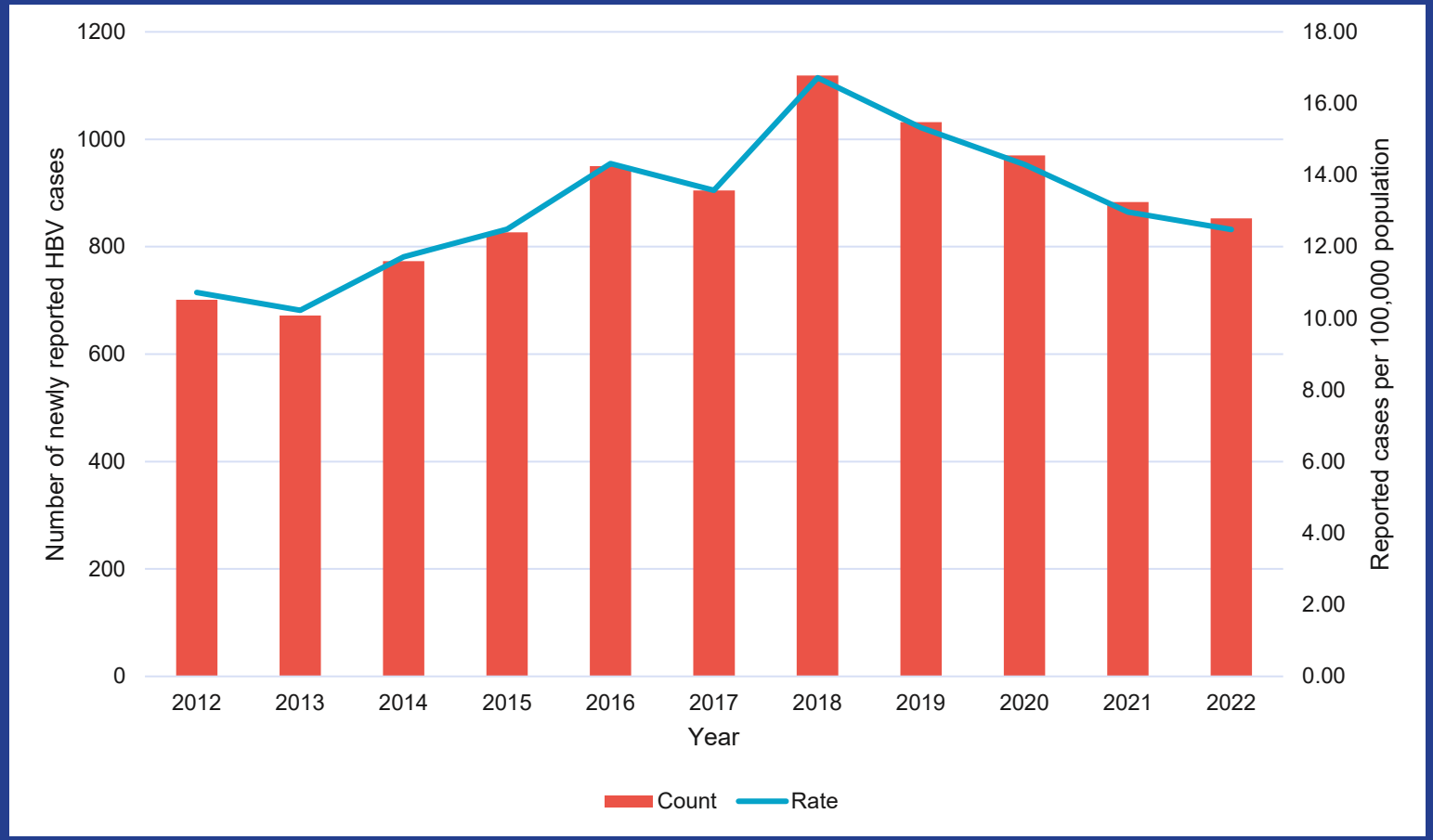
2/23/2024

Viral Hepatitis

- Asking for your partnership to reduce the burden of viral hepatitis among Hoosiers
- Summary of new recommendations on screening, vaccinations and treatment of viral hepatitis
- Information on provider trainings, opportunities and resources

Count and rate of newly reported acute and chronic hepatitis B cases* – Indiana, 2011-2022

Reported cases of hepatitis B have decreased 23% since 2018



Indiana Department of Health

*Cases include classifications of confirmed, probable, and suspect.

Updated hepatitis B screening recommendations

CDC, 2023

The Centers for Disease Control and Prevention (CDC) recently published updated recommendations for hepatitis B screening and testing which includes:

- Screening all adults aged 18 and older at least once in their lifetime using a triple panel test which includes: hepatitis B surface antigen (HBsAg), antibody to hepatitis B surface antigen (anti-HBs), and total antibody to hepatitis B core antigen (total anti-HBc)
- Screening during each pregnancy for hepatitis B surface antigen (HBsAg)
- Expand periodic risk-based testing to include people who have been incarcerated, people with a history of sexually transmitted infections or multiple sex partners, and people living with hepatitis C
- Test anyone who requests HBV testing regardless of disclosure of risk

Indiana Department of Health

Hepatitis B Vaccine Update and Reporting

ACIP recommends an expanded age range for universal HepB vaccinations, which includes:

- adults aged 19-59 years
- adults 60 and above with risk factors for hepatitis B, and
- those without identified risk factors but seeking protection

HepB vaccinations should be reported through Children and Hoosiers Immunization Registry Program (CHIRP).

https://www.cdc.gov/mmwr/volumes/71/wr/mm7113a1.htm?s_cid=mm7113a1_w

Communicable Disease Rule Updates

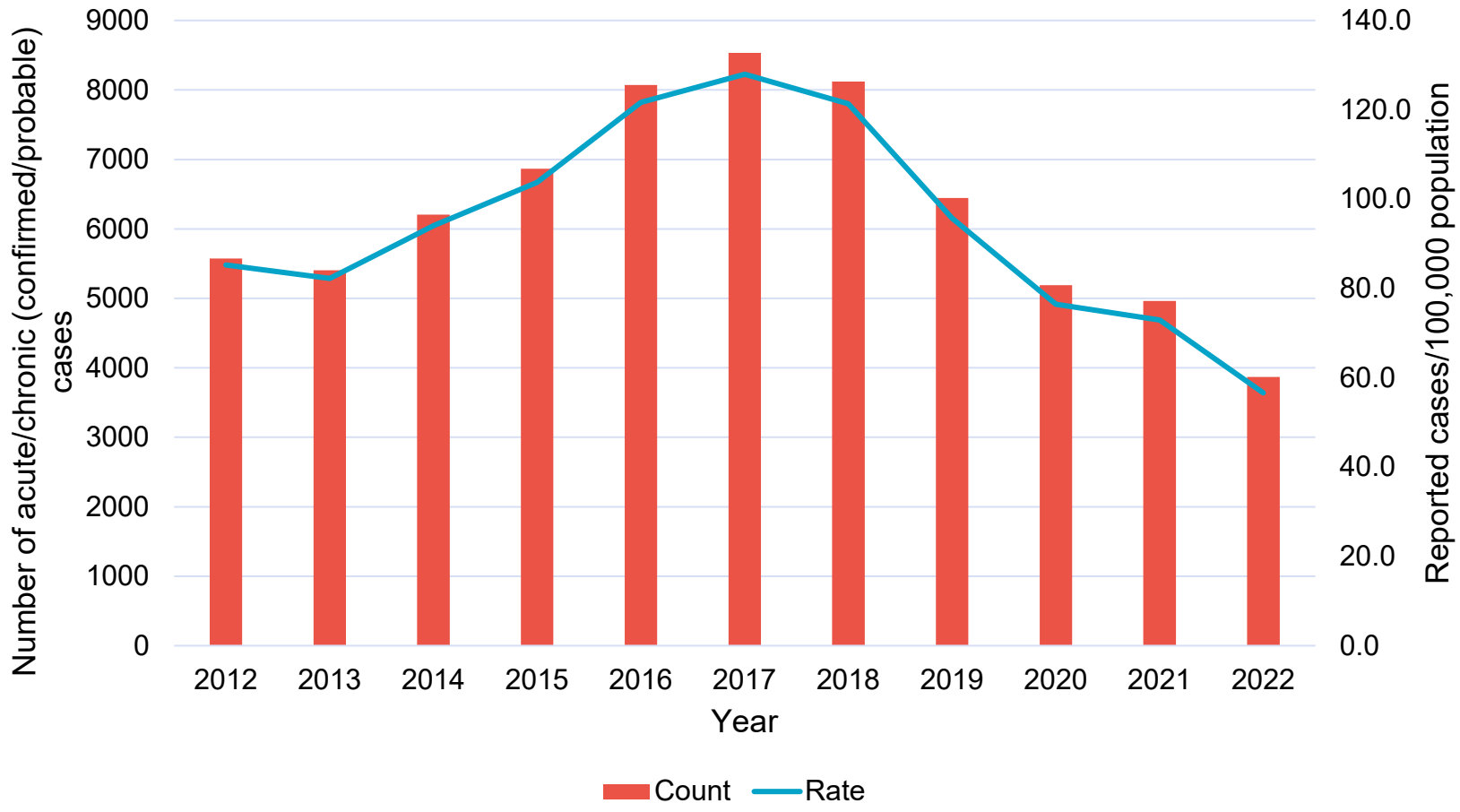
The Indiana Communicable Disease Rule was updated in 2023 and again earlier this year. Healthcare Providers and Hospitals are required to report the following viral hepatitis conditions to IDOH:

- Hepatitis, viral, Type B, pregnant woman (acute and chronic) or perinatally exposed infant
- Hepatitis, viral, Type A
- Hepatitis, viral, Type B (acute and chronic)
- Hepatitis, viral, Type C (acute and chronic)
- Hepatitis, viral, Type C, pregnant woman (acute or chronic) or perinatally exposed infant
- Hepatitis, viral, Type Delta
- Hepatitis, viral, Type E
- Hepatitis, viral, unspecified

To view the updated provider specific reporting guidance on viral hepatitis please visit https://www.in.gov/health/idepd/communicable-disease-reporting/

Count and rate of newly reported acute and chronic hepatitis C cases* – Indiana, 2012-2022

Rates of HCV significantly increased starting in 2013 and peaking in 2017, but have been steadily declining since 2018.



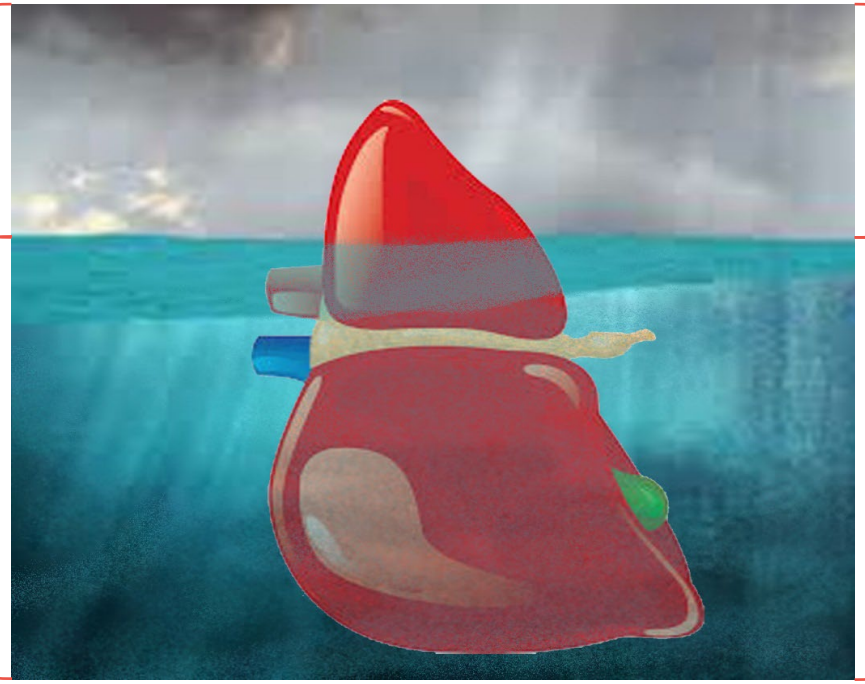
Indiana Department of Health

*Cases include classifications of confirmed, probable, and suspect.

The Indiana Hepatitis C Iceberg, 2022

1 Reported Acute Case*

13.9 Estimated Acute Infections*



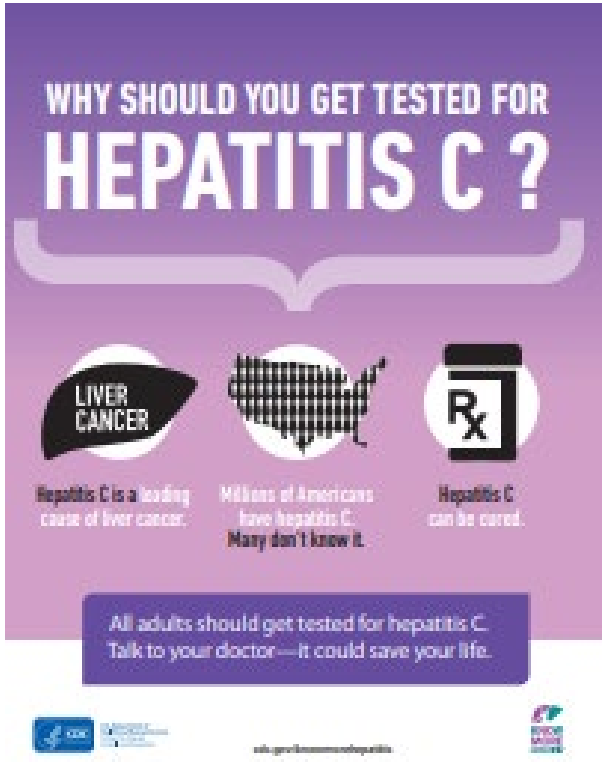
151 Reported Acute Confirmed Cases

2098 Estimated Acute Infections

*Klevens RM, Liu S, Roberts H, Jiles RB, Holmberg SD. Estimating acute viral hepatitis from nationally reported cases. Am J Public Health. 2014;104:482-487.

Indiana Department of Health

Hepatitis C screening recommendations



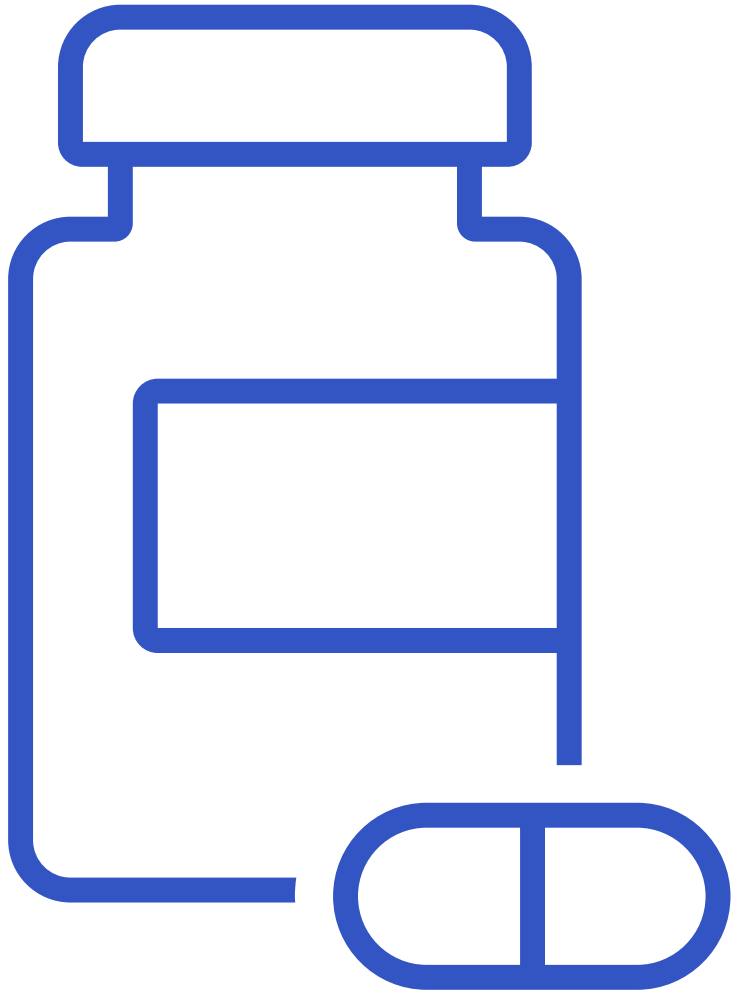
CDC, 2020

- Centers for Disease Control and Prevention (CDC) recommends all patients 18 years and older be screened and tested for hepatitis C at least once in their lifetime, except in settings where prevalence of hepatitis C is less than 0.1%
- Patients with risk factors for hepatitis C should be tested regularly, as long as the risk persists.
- Screen for all pregnant women during each pregnancy.

Note: Indiana estimated prevalence 1.3% for ages >17 years

Removal of HCV Prescribing Restrictions

Family and Social Service Administration, Indiana Office of Medicaid Policy and Planning has removed all prescribing restrictions for HCV treatment naïve individuals.



Indiana Department of Health

https://provider.indianamedicaid.com/ihcp/Bulletins/BT201916.pdf

HCV linkage to care program

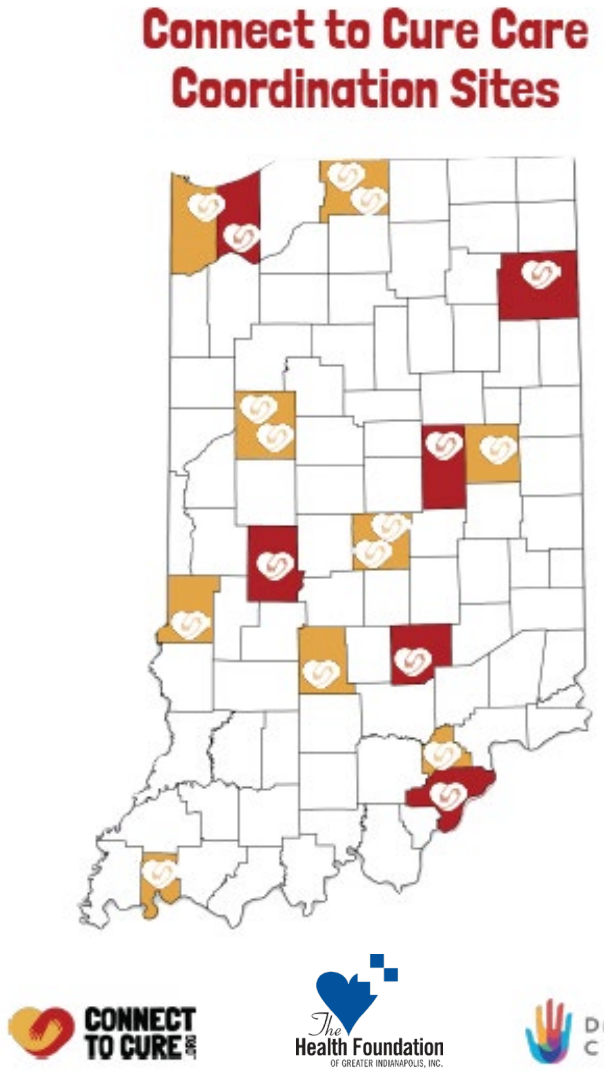
Connect to Cure Program (2022)

Creates a community of practice for care coordinators through:

- Training
- Data management system
- Outreach and community engagement
- Outreach supplies

Assists those living with hepatitis C through:

- Testing/peer specialist
- Telehealth
- RNA testing through dried blood spot testing
- Insurance navigation
- Hep Medical Assistance Program or Hep MAP
- Nutrition and transportation assistance cards



Provider Training and Resources

Hepatitis C ECHO Trainings

Extension for Community Healthcare Outcome (ECHO) is a collaborative program that uses technology to provide case-based learning to improve access to high-quality treatment for hepatitis B and C.

IN-HAMP

The Indiana Hepatitis Academic Mentorship Program (IN-HAMP) is a medical education training program for clinicians who are new to treating hepatitis C.

INDIANA UNIVERSITY INDIANAPOLIS
ECHO CENTER

IN-HAMP
Hepatitis Academic Mentorship Program

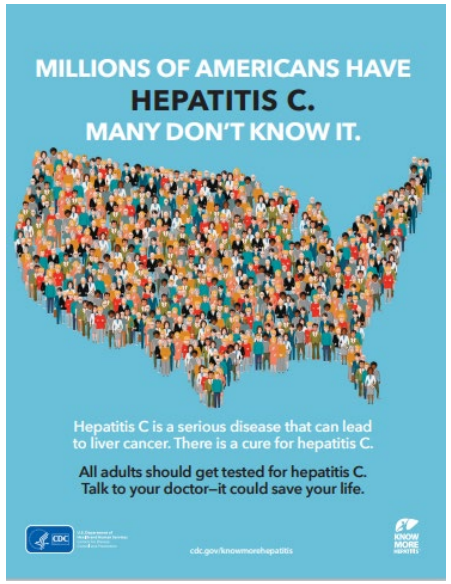
Indiana Department of Health

Provider Training and Resources

NATIONAL CLINICIAN CONSULTATION CENTER

The National Clinical Consultations Center provides no cost clinician-to-clinician advice on hepatitis virus mono-infections and co-infections management. Monday through Friday 9am to 8pm EDT, call: (844) HEP-INFO
https://nccc.ucsf.edu/clinician-consultation/hepatitis-c-management/

Informational fact sheets and posters for your patients and offices can be found at https://www.in.gov/health/hiv-std-viral-hepatitis/viral-hepatitis-surveillance/ and https://www.cdc.gov/knowmorehepatitis/materials.htm



Indiana Department of Health

Viral Hepatitis Contact Information

Roxanne Krepper, MA
Viral Hepatitis Prevention Coordinator
RKrepper@health.in.gov

Jena Rasor, MPH
Viral Hepatitis Surveillance Supervisor
JRasor@health.in.gov

Brittany M. Gross, MPH, CHW
Viral Hepatitis Services Program Manager
bgross@health.in.gov

Miscellaneous

Indiana Department of Health

Tianeptine

Summary

What is already known about this topic?

Tianeptine, an antidepressant not approved for use in the United States by the Food and Drug Administration, is readily purchased in elixir formulations online or at gas stations and convenience stores.

What is added by this report?

Twenty cases of tianeptine ingestion associated with severe clinical effects were reported in New Jersey during June–November 2023, representing a sharp increase from the poison center's baseline of two or fewer exposure calls per year.

What are the implications for public health practice?

It is important for members of the public and health care professionals to be aware that readily purchased tianeptine products might be adulterated with synthetic cannabinoid receptor agonists or other drugs and can produce severe adverse effects.

Indiana Department of Health

[Notes from the Field: Cluster of Severe Illness from Neptune's Fix Tianeptine Linked to Synthetic Cannabinoids — New Jersey, June–November 2023 | MMWR (cdc.gov)]

Neptune Resources, LLC Issues Voluntary Nationwide Recall of Neptune's Fix

- On Jan. 28, 2024, Neptune Resources, LLC voluntarily recalled all lots of Neptune's Fix Elixir, Neptune's Fix Extra Strength Elixir, and Neptune's Fix Tablets to the consumer level. Neptune Resources LLC's distribution channels have not reported any adverse events from the use of its products. The products are being recalled because they contain tianeptine, an ingredient that is not FDA-approved for any medical use. The presence of tianeptine renders the products unapproved drugs for which safety and efficacy have not been established and, therefore, are subject to recall.
- Risks from tianeptine include suicidal ideation, confusion, seizures, dry mouth, SOB, unintentional overdose. Taking it in conjunction with MAO inhibitors can be life threatening.
- FDA had already warned consumers not to purchase or use Neptune's fix due to presence of tianeptine. FDA warns consumers not to purchase or use Neptune's Fix or any tianeptine product due to serious risks | FDA

Routes of Drug Use Among Drug Overdose Deaths — United States, 2020–2022

Summary

What is already known about this topic?

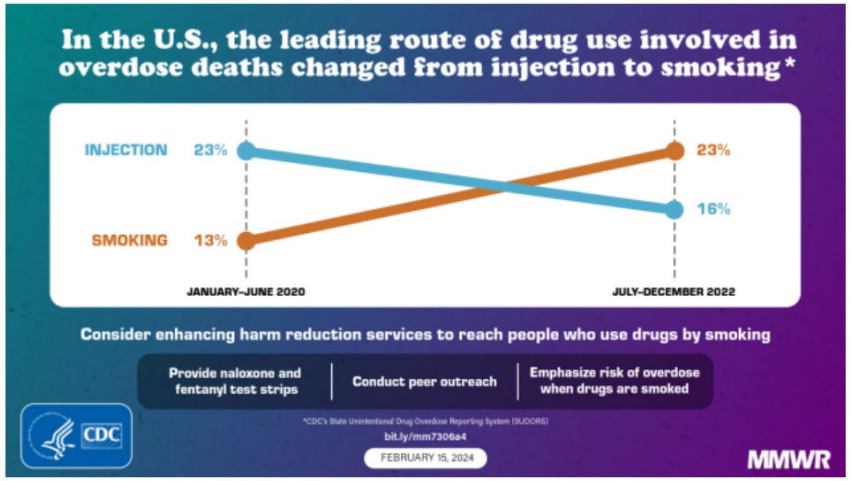
More than 109,000 drug overdose deaths occurred in the United States in 2022; nearly 70% involved illegally manufactured fentanyls (IMFs). Data from the western United States suggested a transition from injecting heroin to smoking IMFs.

What is added by this report?

From January–June 2020 to July–December 2022, the percentage of overdose deaths with evidence of smoking increased 73.7%, and the percentage with evidence of injection decreased 29.1%; similar changes were observed in all U.S. regions. Changes were most pronounced in deaths with IMFs detected, with or without stimulant detection.

What are the implications for public health practice?

Strengthening and expanding public health and harm reduction services to address overdose risk with smoking and other noninjection routes might reduce deaths.



Indiana Department of Health

Routes of Drug Use Among Drug Overdose Deaths — United States, 2020–2022 | MMWR (cdc.gov) Feb 15, 2024

Upcoming CDC webinar

Overdoses Involving Xylazine Mixed with Fentanyl: Clinical and Public Health Implications

Print

CE = Free Continuing Education

Overview

The non-opioid drug xylazine has been found in the U.S. illegal drug supply and is associated with overdose deaths from fentanyl. Xylazine is not approved for use in people and can cause sedation and other adverse health effects. During this COCA Call, presenters will discuss the epidemiology of overdoses involving xylazine mixed with fentanyl, the current understanding of health risks related to these overdoses, and acute treatment strategies. Presenters will also review the state of laboratory testing, outline potential harm reduction activities, and provide an example of an ongoing public health and clinical partnership to mitigate harms from xylazine mixed with fentanyl.

Presenters

Josh Schier, MD, MPH
CAPT, U.S. Public Health Service
Senior Medical Officer, Health Systems and Research Branch
Division of Overdose Prevention
National Center for Injury Prevention and Control
Centers for Disease Control and Prevention

Call Details

When:
Thursday, February 29, 2024
2:00 PM – 3:00 PM ET

Webinar Link:
https://www.zoomgov.com/j/1606034857

Webinar ID: 160 603 4857

Passcode: 432103

Telephone:
+1 669 254 5252, or, +1 646 828 7666

One-tap mobile:
+16692545252,,1606034857#,,,,*432103#

International numbers

Add To Calendar

Indiana Department of Health

https://emergency.cdc.gov/coca/calls/2024/callinfo_022924.asp

Total Solar Eclipse - April 8

- Planning is occurring across the state in preparation for the April 8, 2024, total eclipse
- 145,000 to 581,000 visitors are expected to come to Indiana
- The eclipse will begin at approximately 1:45 p.m. Eastern on April 8, and end at about 4:30 p.m. Eastern
- American Astronomical Society - provides information regarding eclipse glasses and handheld solar viewers along with information regarding eye safety and other resources: https://eclipse.aas.org/resources/solar-filters

Solar retinopathy-Recommendations for Clinicians

- **The best management is prevention.**
- Clinical features: Painless loss of central vision with a central or paracentral scotoma in one or both eyes, rapid onset (minutes to one-two days) following exposure. Fundoscopic examination may be normal or show subtle yellowish spots in the fovea.
- Standard radiographic and echographic modalities will be normal. HD OCT and/or fluorescein angiography can assist with the diagnosis.
- There is no specific treatment for solar retinopathy. Most cases spontaneously heal within 3-6 months after the inciting event, although permanent vision loss can occur1.
- Consider referral to a retinal specialist.
- There is not strong evidence to suggest routine use of systemic corticosteroids. If they are utilized, a Prednisone taper starting at 60mg and decreasing by 10mg weekly for a total of 4-6 weeks may be considered.

Prepare for Total Solar Eclipse - April 8

Medical Considerations

When planning for a medical surge, consider the following:

- Eye injuries/damage from viewing of the sun without proper eyewear; affects may occur 12-24 hrs after the event
- Overdoses, assess Narcan availability
- Excessive 911 calls
- Reschedule dialysis and other related non-emergency medical procedures to a different day, if appropriate
- Order medical supplies, blood, tissue, hospital cafeteria food, etc. early and delivered early to avoid issues
- Food safety inspections - increased temporary food vendors
- Emergency department and EMS staffing
- Increased number of health related issues due to the potential of large crowds
- Staffing/shift adjustments for a few days
- Staffing respite space especially for longer shifts
- Increased need for Medivac may be required due to ground transportation delays
- Identify a helipad location in each county in your planning efforts
- Heat related injuries such as heatstroke and dehydration

Indiana Department of Health

https://www.in.gov/health/emergency-preparedness/files/24-TSE-One-Pager.pdf

Recalls

- On Nov 6, 2023, FDA issued a recall not to use certain saline and sterile water medical products manufactured by Nurse Assist, LLC, and sold under various brands.
- On Feb 6, 2024, additional products were included in the list of products included in the recall. You can find the list of additional products recalled here Recall of Certain Saline and Sterile Water Medical Products Associated with Nurse Assist: FDA Safety Communication | FDA

Public Health Day: Feb. 22 at Statehouse

Indiana Department of Health

Health First Indiana

Indiana Department of Health

HFI Pledge to Act

Indiana Hospital Association and the Indiana Chamber of Commerce encourage their members and other healthcare providers to make a pledge to act in support of Health First Indiana

Pledge Commitment:

I pledge that my organization will help improve Hoosiers' public health outcomes within the counties we serve.

My organization will take action on the following goals intended to create community partnerships through collaboration and communication with our local health department(s).

- Establish ongoing dialogue with our local health department(s) and community leaders responsible for the development and execution of the county HFI Plan
- Appoint an organization lead for public health that will coordinate communication and provide updates to local and state leaders
- Partner and collaborate with local health department(s) to specifically address at least one of the following core public health services:
  - Maternal and Child Health
  - Chronic Disease Prevention (obesity)
  - Tobacco and Vaping Prevention and Cessation
- Discuss our hospital's Community Health Needs Assessment or other similar strategic plans with our local health department(s) and incorporate their feedback into future planning efforts, aligning where possible.

Indiana Department of Health

Make the Pledge

Take action

The HFI Pledge is open on an ongoing basis. Indiana healthcare systems and employers can signal their commitment to promoting public health by signing the pledge.

Indiana Hospital Association members can take the health system pledge **here**.

Submit pledge

Indiana Chamber of Commerce members can take the business pledge **here**.

Submit pledge

Other organizations can take the pledge **here**.

Submit pledge

Indiana Department of Health

https://www.in.gov/healthfirstindiana/pledge-to-act/

Ways to connect with us

- IDOH Clinician Update Feedback Survey – Please let us know what topics you'd like us to cover: Email svuppalanchi@health.in.gov or Gcrowder@health.in.gov
- Sign up for IHAN– Indiana Health Alert Network https://ihan-in.org
- Health: Long Term Care/Nursing Homes: Newsletters
- MARK YOUR CALENDARS - Clinician webinars for 2024: March 22, April 26, May 24, June 28, July 26, Aug. 23, Sept. 27, Oct. 25, Nov. 22, Dec. 27

For more information

The supplemental information section covers other topics to refer to on your own:

- Viral kinetics of clinical significance, diagnosis, and treatment guidelines: Influenza and SARS CoV2

Questions?

CONTACTS:

Guy Crowder, M.D., M.P.H.T.M.
Chief Medical Officer
GCrowder@health.in.gov

Shireesha Vuppalanchi, M.D.
Medical Director
svuppalanchi@health.in.gov

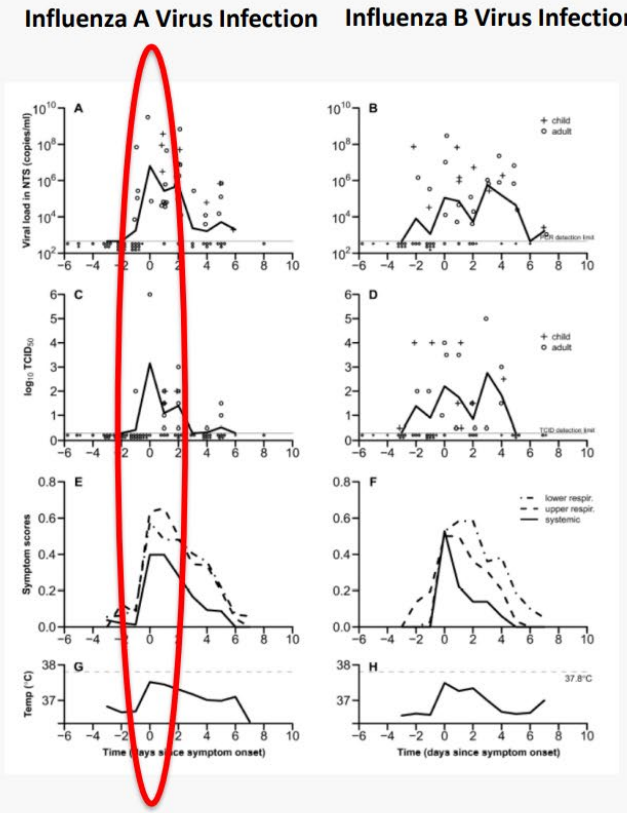
Next call: Noon, March 22

Supplemental information

Indiana Department of Health

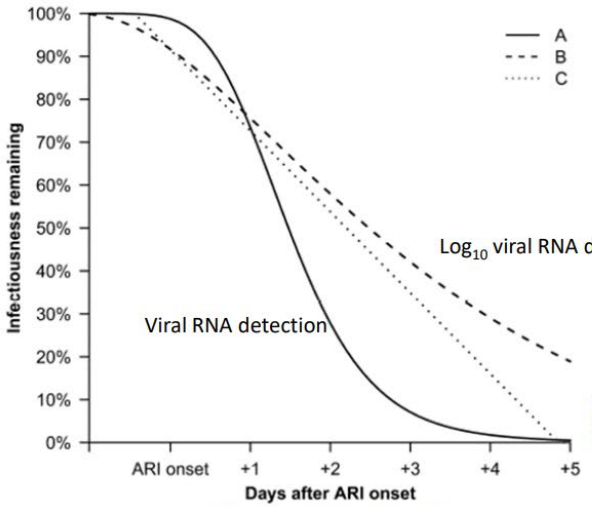
Viral Kinetics of Clinical Significance, Diagnosis, Treatment: Flu and COVID-19

Influenza Viral Shedding Typically Peaks Within 24 Hours of Illness Onset



- **Influenza viruses can be detected in the upper respiratory tract one day before illness onset; virus levels peak within 24 hours after onset**
- **Highest infectious period is within 3 days after onset**
  - **Young children can be infectious for longer periods**
  - **Critically ill patients might have longer influenza viral replication in the lower respiratory tract**

Influenza viral RNA detection



Viral RNA >900 copies/ml under fitted curve

Lau J Infect Dis 2010

Respiratory Specimens for Detecting Influenza Viruses

- **Upper respiratory tract**
  - **Influenza viruses are generally detectable for 3-4 days by antigen detection; and 5-6 days by nucleic acid detection in uncomplicated disease, longer in infants and immunosuppressed**
    - ***Highest yield: Nasopharyngeal (NP) swabs (ideally collected within 3-4 days of illness onset)***
      - Other acceptable specimens: nasal swabs, NP aspirates, nasal aspirates, combined nasal and throat swabs
  - **Slower clearance of influenza viruses in severe disease**
  - ***Influenza viral replication and viral RNA detection may be prolonged with corticosteroids, immunosuppression***
- **Lower respiratory tract**
  - **Higher, prolonged viral replication in severe lower respiratory tract (LRT) disease**
    - ***Influenza viruses may be detectable in LRT specimens when cleared from the upper respiratory tract***
      - **RT-PCR was negative in 10-19% of patients in upper respiratory tract specimens versus lower respiratory tract (BAL specimens) for influenza A(H1N1)pdm09 viral RNA**

Rello Crit Care 2009; Fleury Eurosurveillance 2009; Blyth NEJM 2009

Antiviral Treatment

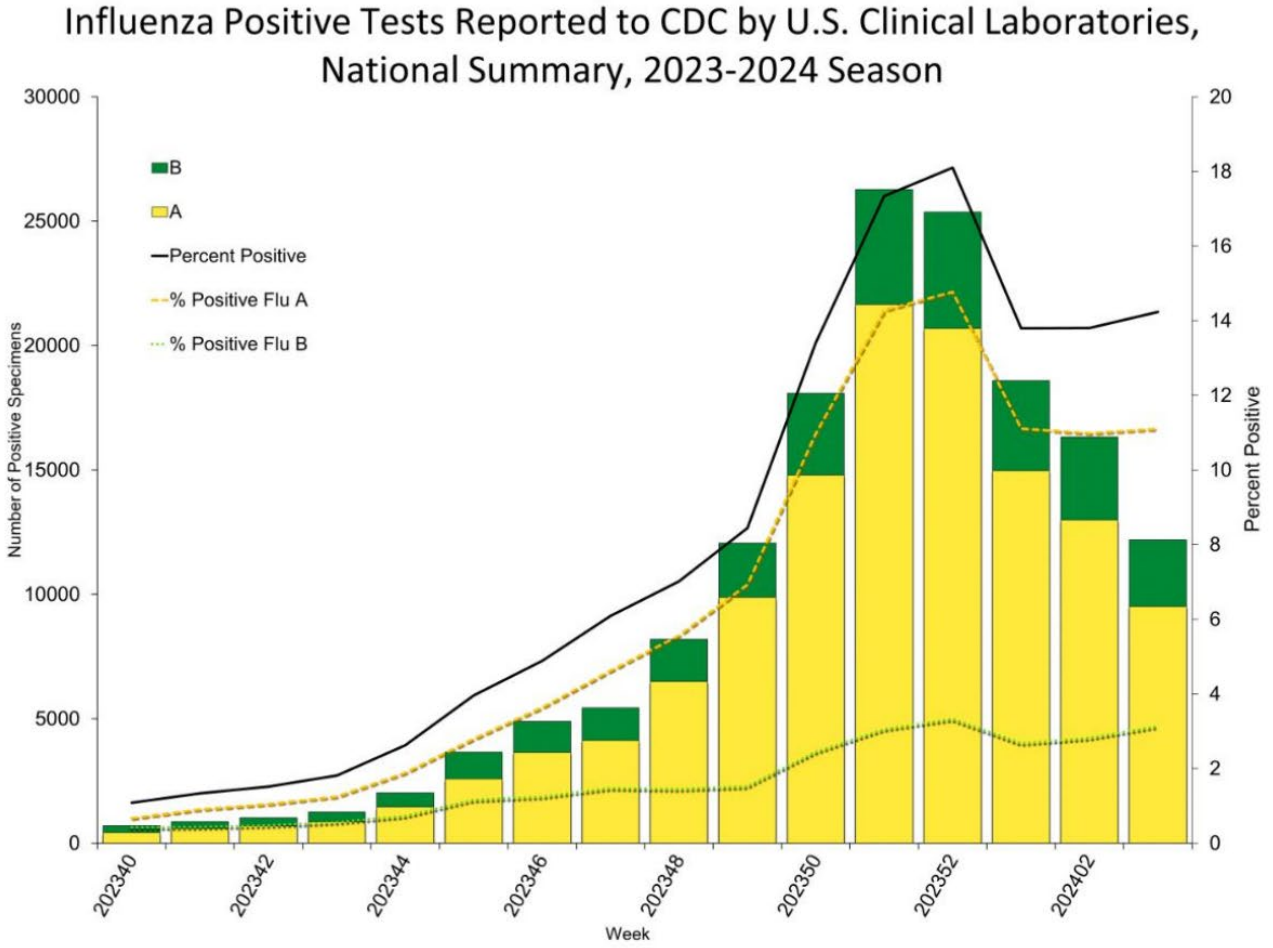
Focused on prompt treatment of persons with severe disease and those at increased risk of influenza complications

- **Antiviral treatment is recommended and has the greatest clinical benefit when started *as soon as possible* for patients with confirmed or suspected influenza who are:**
  - **Hospitalized*** (without waiting for testing results) **(oral/enteric oseltamivir)**
  - **Outpatients with complicated or progressive illness of any duration (oral oseltamivir)**
  - **Outpatients at high risk for influenza complications (oral oseltamivir or oral baloxavir)**

- Antiviral treatment can be considered for any previously healthy, non-high-risk outpatient with confirmed or suspected influenza (e.g. with influenza-like illness) on the basis of clinical judgment, if treatment can be initiated within 48 hours of illness onset; including empiric treatment (e.g. in-person visit or via telemedicine) **(e.g. oral oseltamivir or oral baloxavir)**

**Based on Observational studies*

https://www.cdc.gov/flu/professionals/antivirals/summary-clinicians.htm



Public health laboratory testing

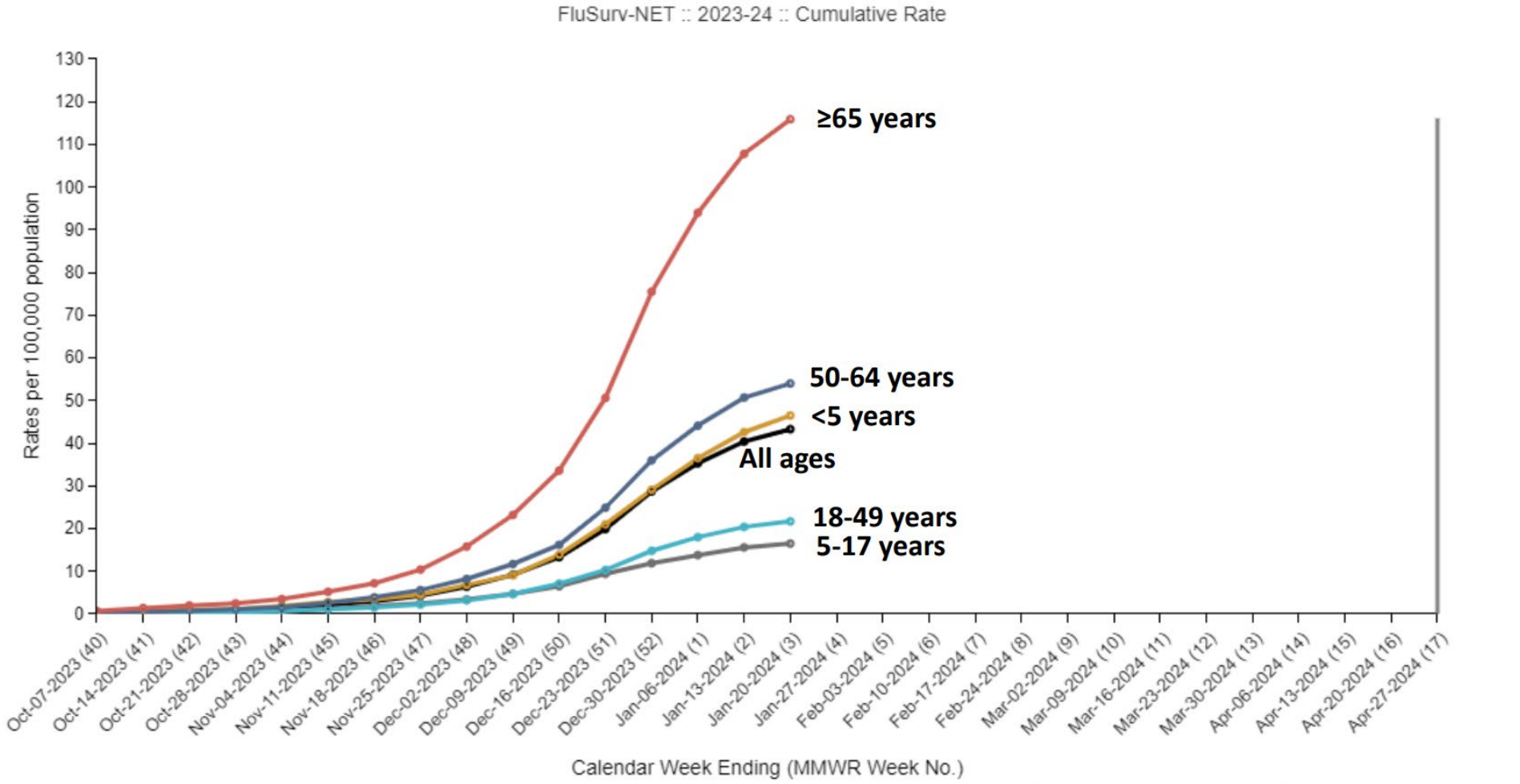
Influenza A: 82.%

- **A(H1N1)pdm09: 80.1%**
- A(H3N2): 19.9%

Influenza B: 17.4%

https://www.cdc.gov/flu/weekly/index.htm

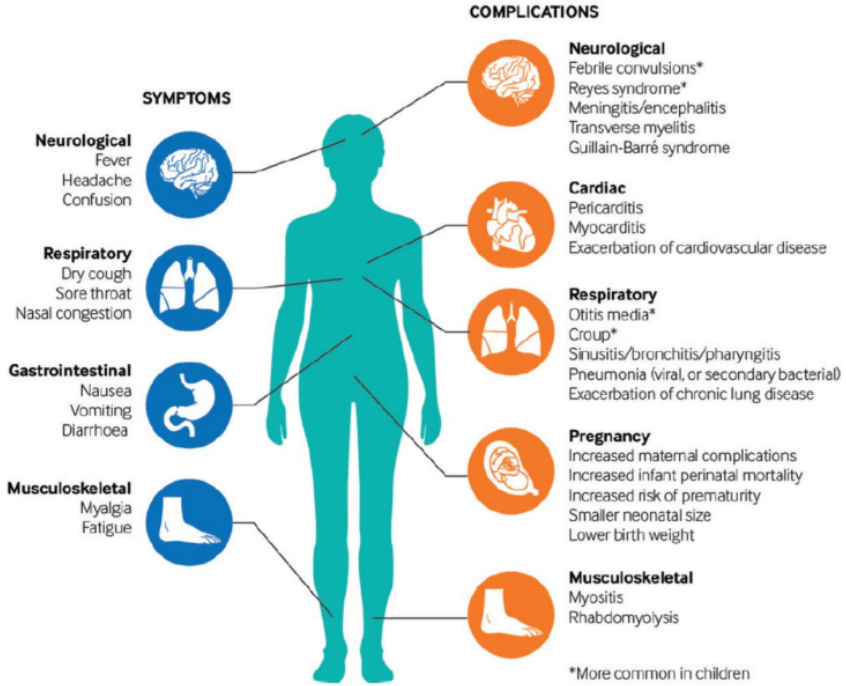
Lab-confirmed Influenza Hospitalization Rates by Age Group, 2023-2024



https://www.cdc.gov/flu/weekly/fluviewinteractive.htm

Influenza Complications

- **Moderate Illness**:
  - Otitis media in young children, sinusitis
  - Exacerbation of chronic disease
- **Severe to Critical Illness:**
  - **Exacerbation of chronic disease**
  - **Respiratory:** viral pneumonia, croup, status asthmaticus, bronchiolitis, tracheitis, ARDS
  - **Cardiac:** myocarditis, pericarditis, myocardial infarction
  - **Neurologic:** encephalopathy & encephalitis, cerebrovascular accident, Guillain-Barre syndrome (GBS), Acute Disseminated Encephalomyelitis (ADEM), Reye syndrome
  - **Bacterial co-infection:** invasive bacterial infection (e.g. community-acquired pneumonia)
    - *Staphylococcus aureus* (MSSA, MRSA), *Streptococcus pneumoniae*, Group A Streptococcus
  - **Musculoskeletal:** myositis, rhabdomyolysis
  - **Multi-organ failure** (respiratory, renal failure, septic shock)
  - **Healthcare-associated infections** (e.g. bacterial or fungal ventilator-associated pneumonia)



Ghebrehewet BMJ 2016

Indiana Department of Health

[Diagnostic Testing and Treatment Guidelines for COVID-19 and Influenza (cdc.gov)]

Recommended Antivirals for Treatment of Influenza, U.S. 2023-2024

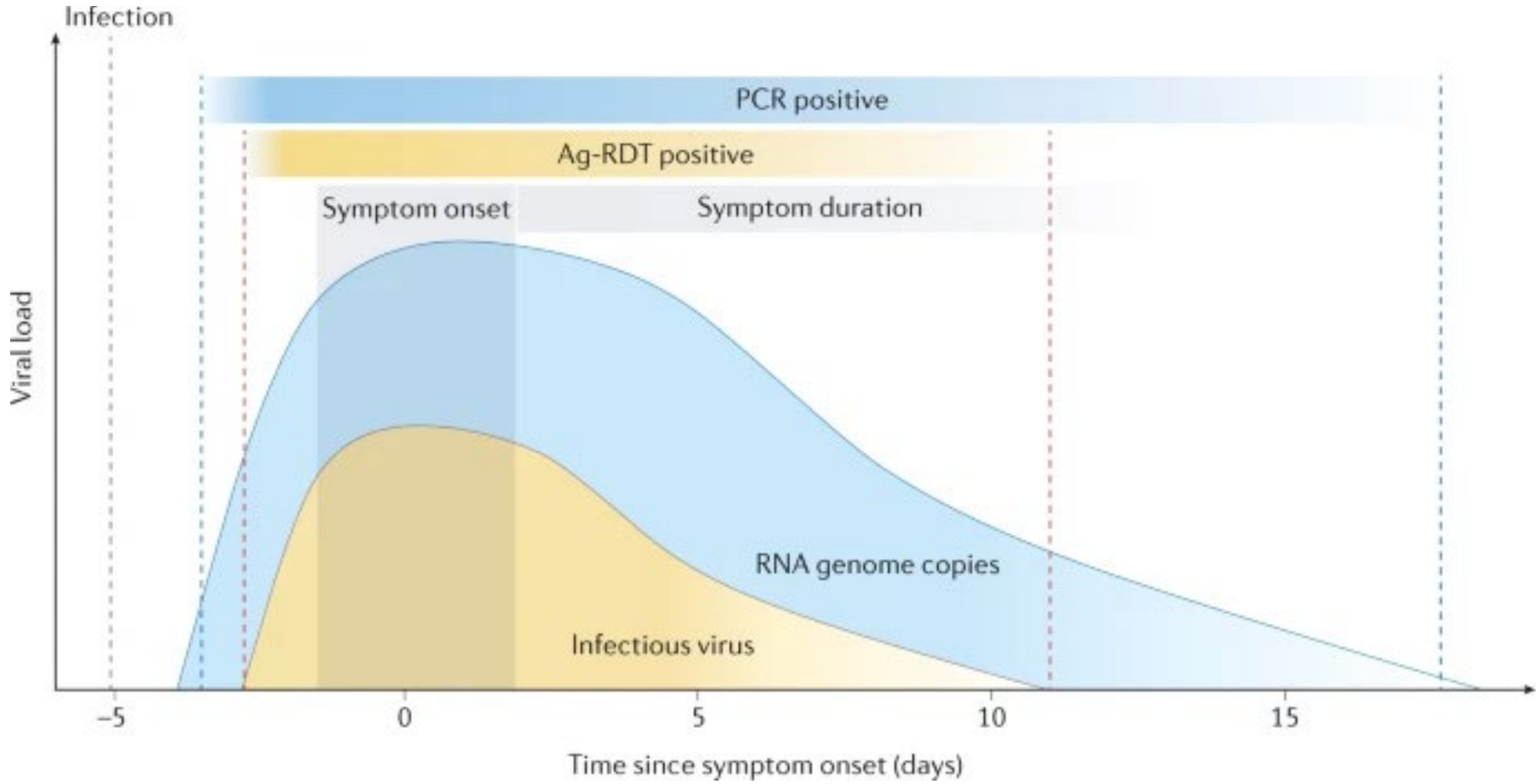
Four FDA-approved antivirals are recommended (no evidence of resistance among circulating seasonal influenza A and B viruses)

- **All have demonstrated efficacy and are FDA-approved for early treatment (<2 days of illness onset) in outpatients with uncomplicated influenza**
- **Neuraminidase inhibitors (NAIs): block release of influenza viruses from infected cells**
  - **Oseltamivir** (oral, twice daily x 5 days)
  - **Zanamivir** (inhaled, twice daily x 5 days) [investigational IV zanamivir is not available in the U.S.]
  - **Peramivir** (intravenous: single dose)
- **Cap-dependent endonuclease inhibitor: inhibit influenza viral replication**
  - **Baloxavir marboxil** (oral: single dose)

Antiviral Drug	Route of Administration	Recommended Ages for Treatment
Oseltamivir	Oral (twice daily x 5d)	All ages
Zanamivir	Inhaled (twice daily x 5d)	≥7 years
Peramivir	Intravenous (single infusion)	≥6 months
Baloxavir	Oral (single dose)	≥5 years (otherwise healthy) ≥12 years (high-risk)

https://www.cdc.gov/flu/professionals/antivirals/summary-clinicians.htm

Kinetics of RNA viral loads and infectious virus for ancestral SARS-CoV-2 in patients with mild-to-moderate disease.



Indiana Department of Health

SARS-CoV-2 viral load and shedding kinetics | Nature Reviews Microbiology

Diagnostic Testing and Treatment Guidelines for COVID-19 and Influenza (cdc.gov)

Diagnostic test timing

- If symptomatic, patients should test immediately
  - Limit exposure to others
  - Starting treatment as early as possible for high risk

- If asymptomatic and known exposure, test at least 5 days after exposure
  - Wear a high-quality mask when around others inside the home or in public for 10 days after exposure
  - The incubation period of SARS-CoV-2 is about 3-5 days, and it may take that long to test positive

https://www.cdc.gov/coronavirus/2019-ncov/your-health/if-you-were-exposed.html

If a patient tests negative by Rapid Antigen Test

- FDA recommends
  - If symptomatic, test at least twice 48 hours apart. A third test might be needed if the patient is concerned they have COVID-19.
  - If asymptomatic, but believe they have been exposed, test with RAT at least 3 times, each 48 hours apart to be considered truly negative

- Consider reflex testing to NAAT
  - If NAAT is negative, consider alternative diagnoses such as flu, RSV, or strep throat

NIH COVID-19 Treatment Guidelines

Does Not Require Hospitalization or Supplemental Oxygen

All patients should be offered symptomatic management **(AIII)**.

For patients who are at high risk of progressing to severe COVID-19,[a] use 1 of the following treatment options:

Preferred Therapies

Listed in order of preference:

- **Ritonavir-boosted nirmatrelvir (Paxlovid)[b,c] (AIIa)**
- **Remdesivir[c,d] (BIIa)**

Alternative Therapies

For use ONLY when neither of the preferred therapies are available, feasible to use, or clinically appropriate. Listed in alphabetical order:

- **Molnupiravir[c,f] (CIIa)**

The Panel **recommends against** the use of **dexamethasone[g]** or **other systemic corticosteroids** in the absence of another indication **(AIII)**.

https://www.covid19treatmentguidelines.nih.gov/management/clinical-management/clinical-management-summary/

[a] CDC webpage for criteria of high risk; [b] Caution about drug-drug interactions; [c] If hospitalized, treatment course can be completed; [d] Remdesivir is 3 consecutive day infusion; [f] Molnupiravir has lower efficacy than preferred options; [g] There is currently a lack of safety and efficacy data using glucocorticoids in non-hospitalized patients

Antivirals – Advantages and Disadvantages

	Nirmatrelvir + Ritonavir	Remdesivir	Molnupiravir
Eligible population (non-hospitalized, unvaccinated)	>18 years + one risk factor	>12 years + one risk factor OR > 60 years	> 18 years + one risk factor
Relative risk reduction	**88% (EPIC-HR)**	**87% (PINETREE)**	**30% (MOVe-OUT)**
Absolute risk reduction	6.3%→0.8%	5.3%→0.7%	9.7%→6.8%
Number needed to treat (NNT)	`18	22	35
Advantages	• Highly efficacious • Oral regimen • Ritonavir studied (safe) in pregnancy	• Highly efficacious • Studied in pregnancy • Few/no drug interactions	• Oral regimen • Not anticipated to have drug interactions
Disadvantages	• Drug-drug interactions	Limited accessibility given need for an IV infusion	• Lower efficacy • Concern: mutagenicity • Not recommended in pregnancy/children

Indiana Department of Health

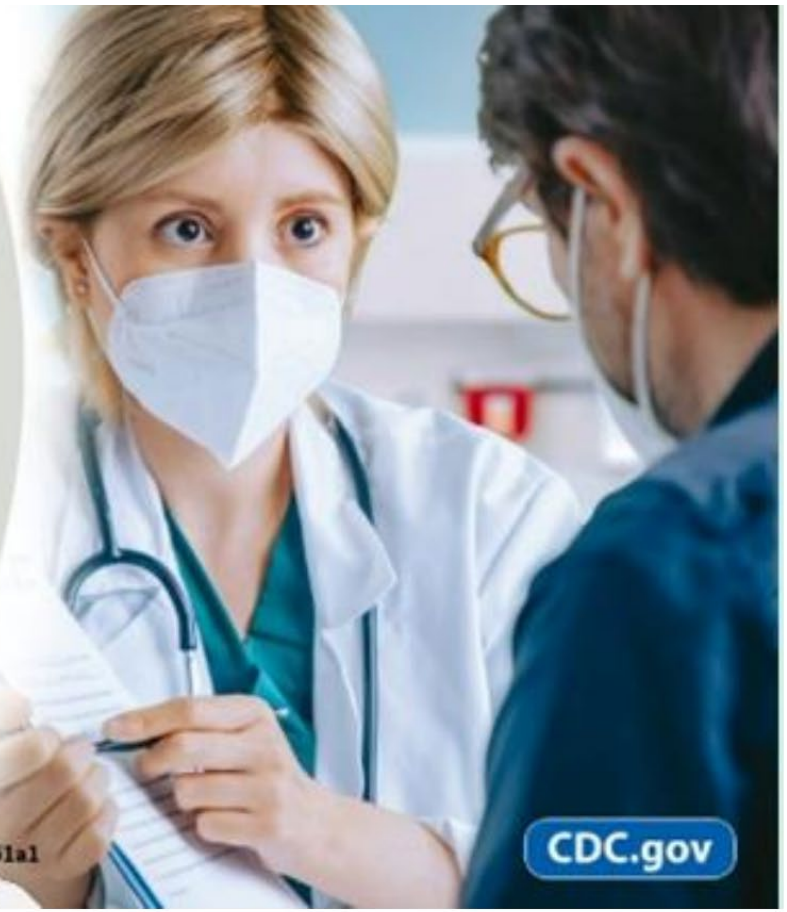
[Diagnostic Testing and Treatment Guidelines for COVID-19 and Influenza (cdc.gov)]

Antiviral treatment for COVID-19 is lifesaving

Current evidence suggests:

- Patients with COVID-19 rebound
  - experience return of mild symptoms 3-7 days after initial illness or positive test
  - might or might not have taken antiviral treatment
- No hospitalizations or deaths due to rebound were reported in the reviewed studies

Antivirals should be prescribed to all eligible COVID-19 patients



MMWR

bit.ly/mm7251a1

DECEMBER 22, 2023

SARS-CoV-2 Rebound With and Without Use of COVID-19 Oral Antivirals. *MMWR*.2023