
What’s Hot in Infectious Diseases
Robert E Geise MD
Section Chief – Infectious Disease
VMFH
Clnical Associate Professor of Medicine – University of Washington
Adobe Stock | #947508477

Disclosures / Goals

- No relevant disclosures
- Member VMMC CME committee, Chair of the PACWEST (WSMA) CME Accreditation Committee and President of IDSW

- Update on a few items that keep ID doctors up at night
- Demystify the news

Question 1

A 17-year-old high school senior presents to the emergency room with a 5 day history of cough, runny nose, watery red eye, and a blotchy rash.

Patient was all up-to-date on his childhood vaccines including his 11-year-old vaccines.

He did recently travel to Disneyworld in Orlando Florida for his younger sisters dance competition.

Who should call and why question?


STANTZ

Measles

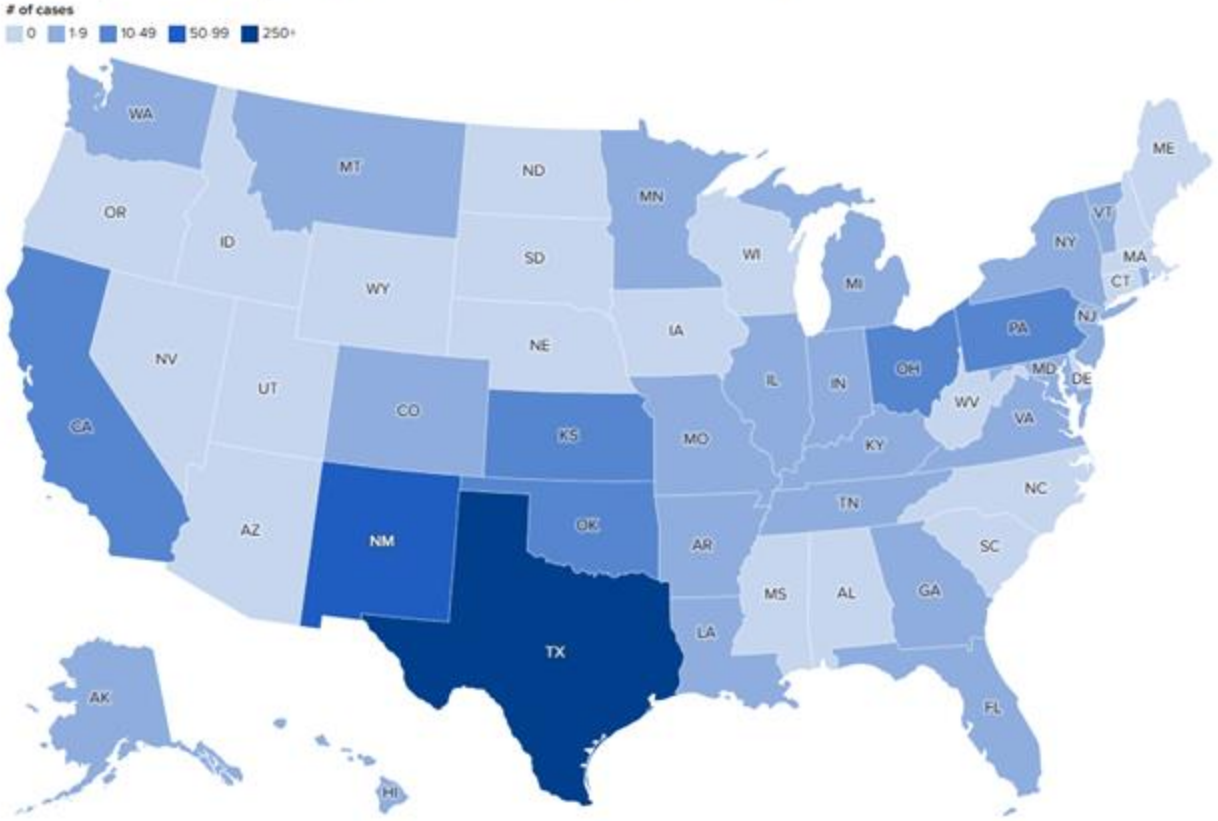

EAST CARE
Watch out for
MEASLES
Symptoms & Prevention
Symptoms
High temperature
Runny or blocked nose
Cough and sneezing
Red, watery eyes
White spots inside the mouth
Red rashes appearing 3-5 days after sympotoms begin
Potential measles contacts urged to call Healthline
Prevention
Wash your hands frequently with an alcohol-based rub
Cover your nose and mouth when coughing or sneezing
Avoid sharing food, water, utensils and other items contaminated by saliva
If you are infected, isolate at home for at least 4 days
Avoid contact with people who are vulnerable to the infection
Give infants the first dose of MMR (measles, mumps, rubella) vaccine between 12 and 15 months

Important Measles Facts

- Highly contagious (Ro = 12-18)
- Contagious 4 days prior to 4 days after rash
- Complications: Otitis media, pneumonia, encephalitis, subacute sclerosing panencephalitis, death
- Worse in pregnant women and immunocompromised

Measles cases by state

So far this year, the U.S. has reported **935** cases. Click or hover over a state for more details.



Last updated May 5, 2025 at 10 AM EDT.
Note: CDC updates data every Friday.

Map: Taylor Johnston / CBS News • Source: CDC

Treatment/Prevention

- Treatment: none but supportive - Vitamin A (under physician supervision) may help prevent complications in children
- Prevention : MMR
  - Immune generally if 1 dose of vaccine as adult, 2 doses for high risk groups (college, HCW, international travel) , born before 1957
  - Efficacy: 95%
  - Avoid: Pregnancy, Immunocompromised, Severe reactions to previous vaccine
  - Caution: Active TB, recent ab containing blood products, Hx TTP, concurrent mod/severe illness

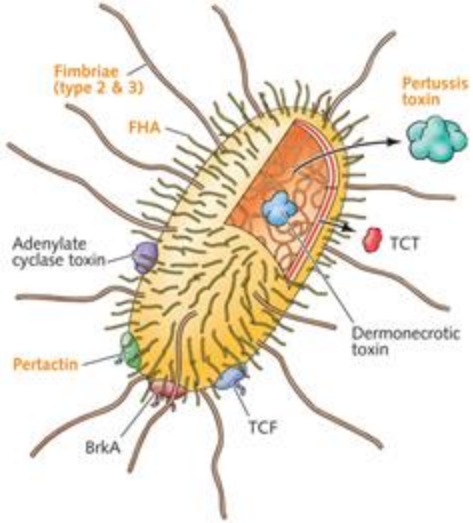
A 35-year-old woman is evaluated for a 3-week history of repeated paroxysms of sustained coughing accompanied by vomiting. She has tried over-the-counter cough suppressants with minimal benefit. One week before onset of her current symptoms, she experienced 3 to 4 days of mild upper airway congestion and malaise, which resolved without treatment. She reports no fever, headache, dyspnea, or rhinitis. She works in a daycare center. She does not use tobacco products. Medical history is otherwise unremarkable, and she takes no medications.

Physical examination findings, including vital signs, are normal.

Which of the following is the most appropriate management?

A. Chest CT
B. Chlorpheniramine and pseudoephedrine
C. Polymerase chain reaction testing for pertussis
D. Prednisone

Pertussis



Woodinville High School

Woodinville High School

Public Health Seattle & King County
Communicable Disease Epidemiology and Immunization Section
401 Fifth Avenue, Suite 900
Seattle, WA 98104-1818
206-296-4774 Fax 206-296-4803
TTY Relay: 711
www.kingcounty.gov/health

January 16, 2025

Dear Woodinville High School Parents and Guardians:

There are multiple students (6 confirmed, 1 pending) with **pertussis (whooping cough) that attended school while contagious**. This message is being sent to give you information about pertussis and instructions on what to do. Please see the pertussis fact sheet for detailed information on the illness.

People at highest risk for severe infection due to pertussis are:

- Infants younger than one year of age
- Children who are unimmunized or only partly immunized for whooping cough (pertussis)

People who should be protected from getting pertussis so they don't spread it to high risk contacts are:

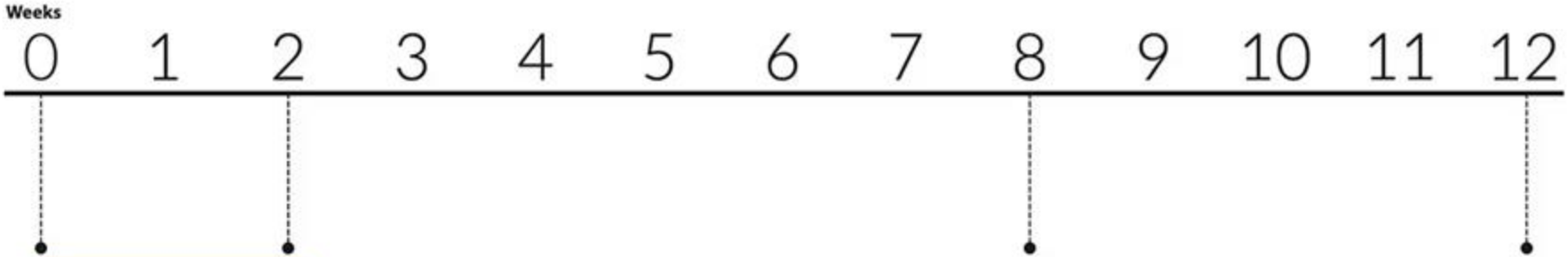
- Pregnant people near the time of delivery (they may spread it to their newborns),
- Health care workers (they may spread pertussis to their high risk patients and other staff who care for high risk patients).
- People who have close contact with pregnant people, infants, or health care workers

Pertussis (whooping Cough)

- Number of cases is surpassing pre-pandemic levels
- More than 10,000 cases /year
- Preliminary 2024 data - 6x 2023 and higher than 2019
- Symptoms
  - Common cold
  - High pitched whoop
  - Post tussive vomiting
  - Struggle to breath -especially infants and young children

https://www.youtube.com/watch?v=YbGOP0NJOQw

Whooping Cough Disease Progression



Early Symptoms: Stage 1
May last 1 to 2 weeks

- Highly contagious

Symptoms:

- Runny nose
- Low-grade fever
- Mild, occasional cough

Later Symptoms: Stage 2
Last from 1 to 6 weeks; may extend to 10 weeks

Symptoms:

- Fits of numerous, rapid coughs followed by "whoop" sound
- Vomiting and exhaustion after coughing fits (called paroxysms)

Recovery: Stage 3
Last about 2 to 3 weeks; susceptible to other respiratory infections for many months

Recovery is gradual. Coughing lessens but fits of coughing may return.

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

cdc.gov/whoopingcough

Diagnosis

- Culture remains gold standard - may take 7 days to get back
- PCR - very sensitive (may have higher false positives)
- Serology - may be helpful later in disease but should not be used in acute setting (inaccurate due to previous vaccine, previous infection and cross reactivity with other Bordetella species)

Complications

- One in three infants under 1 get whooping cough require hospitalization
- Complications of hospitalized patients
  - Apnea 68%
  - Pneumonia 22%
  - Seizures 2%
  - Encephalopathy 0.6%

Treatment

- High clinical suspicion - don't wait to treat
- Early treatment may prevent serious disease and decrease transmission
- Try to treat in first two weeks - can prevent the paroxysmal cough
- Has little effect later in disease
- CDC recommendations
  - Age > 1 - within 3 weeks of cough
  - Age < 1 or pregnant - within 6 weeks of cough
- Treatment - macrolides (caution in those <1 months), tmp-smx is alternative (> 2 months)
- Supportive: humidified air, small meals, antipyretics, fluids, rest, avoid irritants

Prevention: Efficacy TDap/DTap

- 5 shot DTap Series for Children
  - 2 months
  - 4 months
  - 6 months
  - 15- 18 months
  - 4 - 6 years
- Tdap shot
  - 11-12 years
  - Unvaccinated adults - one dose
  - Pregnant Women
  - Exposure to infants
  - >65 - only Boostrix is approved

Antibiotics

Long acting MRSA drugs (dalbavancin, oritavancin, telavancin)

CRE Drugs (ceftazidime-avibactam, meropenem-vaborbactam, imipenem-colistin-relobacta, cefiderocol, ceftolozane-tazobactam)

Avian Flu

Highly pathogenic avian influenza (HPAI) has infected which of the following species?

Humans

Skunks

Dolphins

All of the above

Influenza

The Lancet Respiratory Medicine

DOI: 10.1016/S2213-2600(18)30272-8

Flu Fun Facts

- First known outbreak thought to be in 1173 based on documentation of febrile, coughing illnesses that rapidly spread through the population
- Epidemics occur every 1-3 years
- Greatest pandemic in recorded history was the 1917 epidemic with 21 million deaths recorded worldwide, and 549,000 in the US (5% of the US population at the time).
- Annual US influenza cases range from 9.3-41 million
- During the 2023-2024 influenza season, CDC estimates that influenza was associated with 40 million illnesses, 18 million medical visits, 470,000 hospitalizations, and 28,000 deaths

Influenza Transmission

Epidemic vs Pandemic

- Epidemic is an outbreak confined to one location
- Pandemic
  - is associated with an antigenic variant to which the population has little to no prior immunity
  - high attack rate
  - greater impact on younger persons with relative sparing of the elderly (not clear why but possible antigenic recycling?)
  - occur outside normal seasonality
  - multiple waves

Antigenic Drift vs Shift

- Antigenic variation in influenza, primarily involving the hemagglutinin and neuraminidase genes
- Antigenic Drift: frequent minor changes leading to new strains of seasonal influenza
- Antigenic Shift: unpredictable major changes which lead to new pandemics

Major sources of Pandemic viruses include birds, and to a lesser extent pigs

Bird flu!

And you thought it was hard to swab your patients….

https://www.avma.org/resources-tools/animal-health-and-welfare/animal-health/avian-influenza

Avian influenza

- Causes widespread illness in birds; highly pathogenic in birds
- Current outbreak with cases worldwide
  - First identified human case of H5N1 was in Hong Kong in 1997
  - Over 900 human cases reported globally, with 50% mortality
- Has been detected in other mammals including dairy cows, cats, seals
- 67 US human cases identified last year (only 1 ever before that)
- Almost 20% of these cases were in Washington state
- Avian influenza human cases can be mild to life threatening
- In the current outbreak most human cases have been mild with conjunctivitis and viral respiratory symptoms
- 2 severe illnesses, 1 in British Columbia and 1 in Louisiana
- CDC recently asked hospitals to increase screening for avian influenza

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Highly Pathogenic Avian Influenza A(H5N1) Virus Infections in Humans

Authors: Shikha Garg, M.D., Katie Reinhart, Ph.D., Alexia Couture, M.P.H., Krista Kniss, M.P.H., C. Todd Davis, Ph.D., Marie K. Kirby, Ph.D., Erin L. Murray, Ph.D., +26, and Sonja J. Olsen, Ph.D. Author Info & Affiliations

Hospital Screening for Avian influenza

Clinical Guidance for Hospitalized Patients:

- **A negative influenza antigen test** does not rule out influenza infection in patients with compatible symptoms.
- **All hospitalized suspected influenza patients** without a positive influenza test should receive a **molecular test** for influenza, usually the 4plex influenza A, influenza B, COVID-19, and RSV test.

Risk Factors for Avian Influenza

Screening for Avian Influenza Risk Factors:

For **hospitalized patients who test positive for influenza A**, evaluate for the following risk factors:

- **Exposure to sick or dead animals**, including wild birds, livestock (especially poultry and cattle), and pets (especially cats).
- **Consumption or handling of raw animal products**, such as raw cow milk, raw milk products, or raw meat-based pet food.
- **Recent close contact with a symptomatic individual** with a probable or confirmed case of avian influenza A (H5).

Isolation and Additional Testing Protocols

- **Patients with influenza A who have avian influenza risk factors** (or are unable to provide a history) should be **placed on airborne contact precautions with eye protection (in a negative pressure room if available)**. This is stricter than the usual droplet precautions for seasonal influenza.

- For patients with **influenza A and risk factors, an unobtainable exposure history, or ICU admission**, order a **multiplex respiratory pathogens panel** to determine influenza A subtype:
    - Order Comprehensive Respiratory Viral Panel
    - **If a 4plex PCR has already been performed**, the multiplex panel can be added on via the lab. If only an influenza antigen test was done, a new swab must be collected for multiplex testing.

Comprehensive Respiratory Viral Panel

SARS-CoV-2 (COVID-19) Qual PCR Result	not detected
Microbiology Miscellaneous	
Adenovirus by PCR	not detected
Coronavirus (229E, HKU1, NL63, OC43)	* not detected
Human Metapneumovirus by PCR	not detected
Human Rhinovirus/Enterovirus by PCR	not detected
Influenza A by PCR	(A) DETECTED
Influenza A H1-2009 by PCR	(A) DETECTED
Influenza A H1 by PCR	* not detected
Influenza A H3 by PCR	* not detected
Influenza B by PCR	not detected
Respiratory Syncytial Virus A	* not detected
Respiratory Syncytial Virus B	* not detected
Parainfluenza virus 1 by PCR	not detected
Parainfluenza virus 2 by PCR	not detected
Parainfluenza virus 3 by PCR	not detected
Parainfluenza virus 4 by PCR	not detected
Respiratory Syncytial Virus by PCR	not detected
Mycoplasma pneumoniae by PCR	not detected
Chlamydophila pneumoniae by PCR	not detected

- If results show **influenza A (not H1 or H3), immediately notify:**
  - The local public health agency where the patient resides.
  - Hospital infection prevention team.
  - These patients should be **prioritized for negative pressure room placement**. Samples will be sent to the DOH for confirmatory avian influenza testing.

Treating Avian Influenza

- Outpatients:
  - begin oseltamivir as soon as possible
  - for immunocompromised patients consider dual therapy with oseltamivir and baloxavir
- Hospitalized patients:
  - begin oseltamivir as soon as possible
  - for severe illness duration should be 10 days
  - for severe illness consider combination therapy with oseltamivir and baloxavir

A 42-year-old man with HIV infection seeks advice regarding HIV transmission risk. He is in a committed, monogamous relationship, and his husband is HIV negative (confirmed by fourth generation HIV testing 2 days ago). His HIV infection has been well-controlled for 10 years. His only medication is a fixed, co-formulated regimen of tenofovir alafenamide, emtricitabine, and bictegravir once daily.

Laboratory studies 1 week ago showed an undetectable HIV-1 quantitative RNA, which remains the same from 6 months and 1 year ago. The last CD4 cell count was 650/μL.

Which of the following is the most appropriate management to prevent HIV transmission?

A Consistent condom use with each episode of sex
B Daily HIV pre-exposure prophylaxis for the partner
C On-demand HIV pre-exposure prophylaxis for the partner
D No additional preventive strategy necessary

A 31-year-old man seeks advice regarding pre-exposure prophylaxis for HIV infection. He was treated for rectal gonorrhea 3 weeks ago and syphilis 1 year ago. He has not been sexually active since his gonorrhea diagnosis. He has had receptive and insertive anal sex with multiple partners over the past year; condom use has been inconsistent. He takes no medications.

Creatinine - 0.7
Hep B surface ab positive / Hep B surface Ag negative
Fourth Generation HIV test negative

Repeat testing for gonorrhea, chlamydia, and syphilis is negative. He is counseled regarding consistent condom use and the need for periodic screening for sexually transmitted infections.

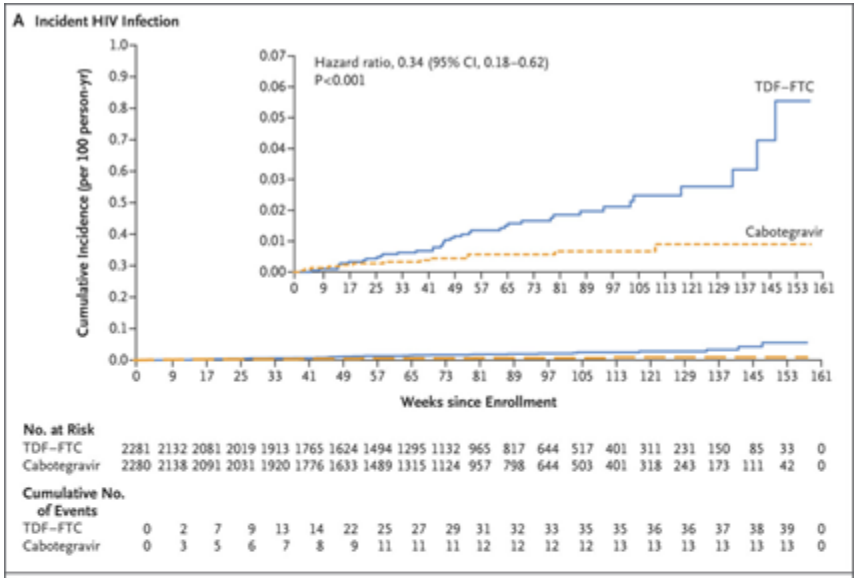
Daily treatment with which of the following is the most appropriate additional management?

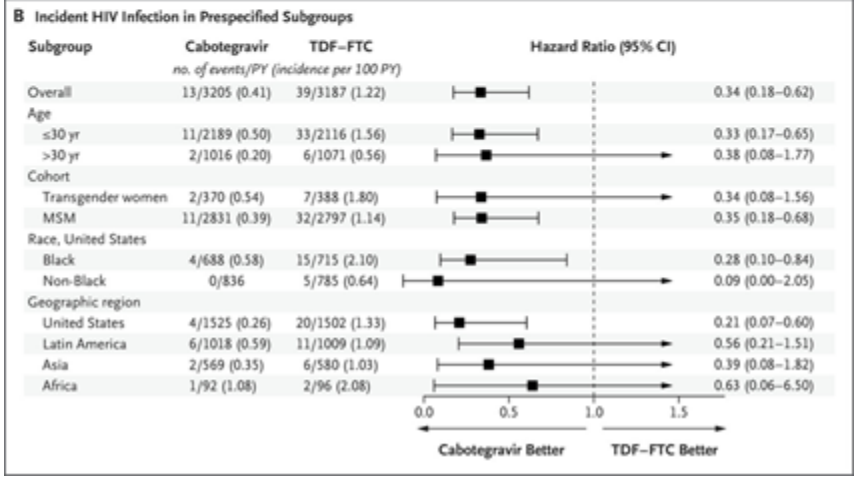
A. Tenofovir
B. Tenofovir-emtricitabine
C. Tenofovir-emtricitabine and raltegravir
D. No additional treatment

HIV Prevention

Injectables

- Convenient
- Need to have compliance
- Failures - often results in pan INSTI resistance and NNRTI resistance
- Reasons
  - Missed doses
  - Improper injection techniques - z injection, needles too small
- Remember - need proper injection training and in those with BMI > 30 need 2 inch needles - need to assess SQ tissue (needs to be IM)





https://www.nejm.org/doi/full/10.1056/NEJMoa2101016

ORIGINAL ARTICLE

Cabotegravir for HIV Prevention in Cisgender Men and Transgender Women

Authors: Raphael J. Landovitz, M.D., Deborah Donnell, Ph.D., Meredith E. Clement, M.D., Brett Hanscom, Ph.D., Leslie Cottle, B.A., Lara Coelho, M.D., Robinson Cabello, M.D., +58, for the HPTN 083 Study Team* Author Info & Affiliations

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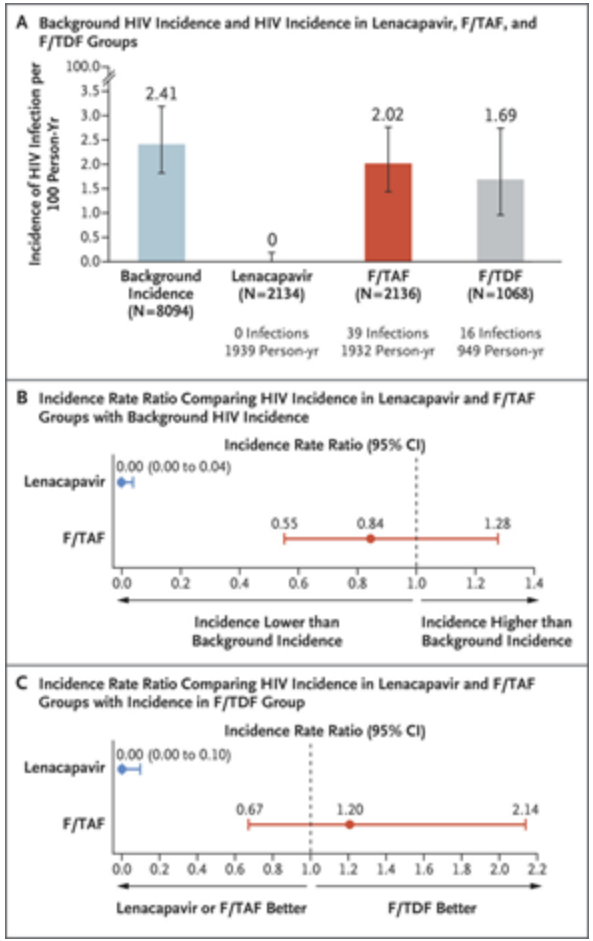

ORIGINAL ARTICLE

Twice-Yearly Lenacapavir or Daily F/TAF for HIV Prevention in Cisgender Women

Authors: Linda-Gail Bekker, M.B., Ch.B, Ph.D., Moupali Das, M.D., M.P.H., Quarraisha Abdool Karim, Ph.D., Khatija Ahmed, M.B., B.Ch., Joanne Batting, M.B., Ch.B., D.F.S.R.H., D.R.C.O.G., Dip. HIV Man., William Brumskine, M.B., Ch.B., Dip. HIV Man., Katherine Gill, M.B., Ch.B., M.P.H., +33, for the PURPOSE 1 Study Team* Author Info & Affiliations

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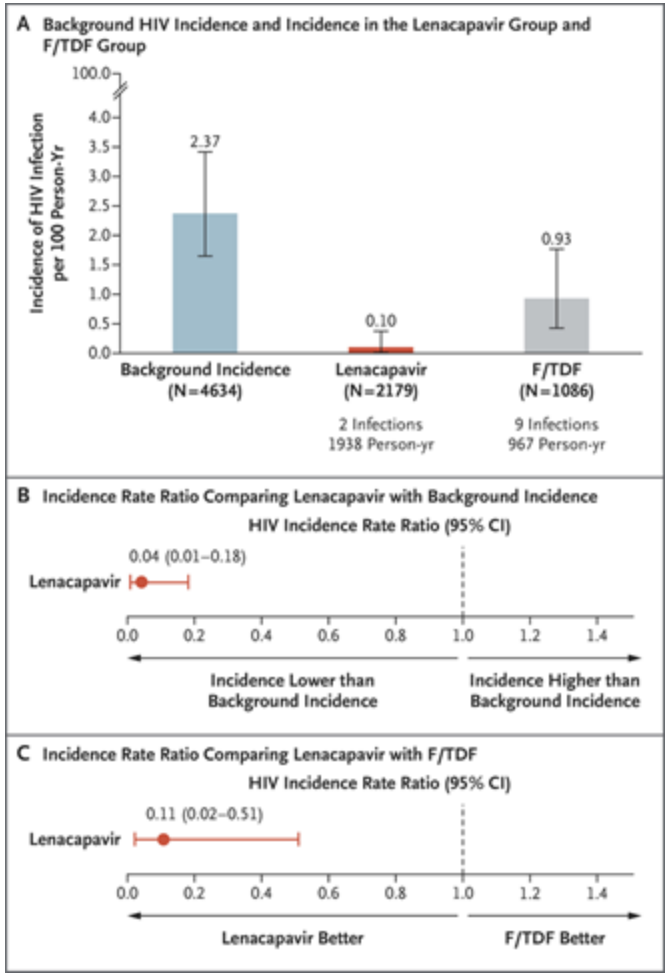

ORIGINAL ARTICLE

Twice-Yearly Lenacapavir for HIV Prevention in Men and Gender-Diverse Persons

Authors: Colleen F. Kelley, M.D., M.P.H., Maribel Acevedo-Quiñones, M.D., Allison L. Agwu, M.D., Anchalee Avihingsanon, M.D., Ph.D., Paul Benson, D.O., Jill Blumenthal, M.D., Cynthia Brinson, M.D., +48, for the PURPOSE 2 Study Team* Author Info & Affiliations

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https://www.nejm.org/doi/full/10.1056/NEJMoa2411858

A 21-year-old man is concerned about a sexually transmitted infection. Six weeks ago, he had unprotected sexual encounters (oral and vaginal sex) with a new fe
partner. He reports no symptoms. He takes no medications.On physical examination, vital signs are normal. No lymphadenopathy or pharyngeal erythema or exu
is noted. No genital lesions or other rashes are present.

Nucleic acid amplification testing (NAAT) of a pharyngeal swab is positive for *Neisseria gonorrhoeae* and negative for *Chlamydia trachomatis*. NAAT of a urine sa
is negative for chlamydia and gonorrhea. HIV testing and syphilis serology are negative.

Which of the following is the most appropriate treatment?

A Cefixime
B Ceftriaxone
C Ceftriaxone and azithromycin
D Ceftriaxone and doxycycline
E Cefuroxime

Drug Resistant STIs

Drug Resistant STIs

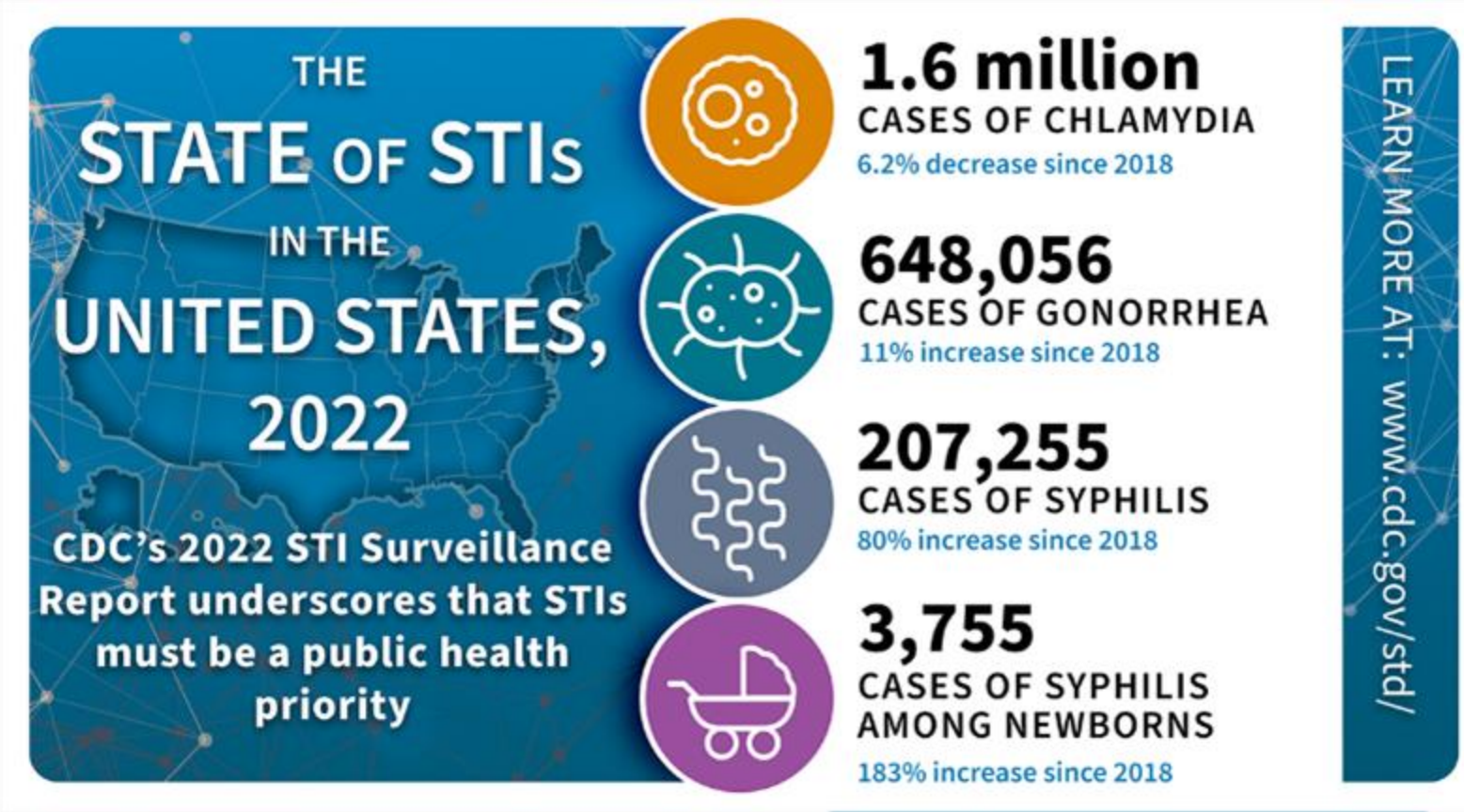
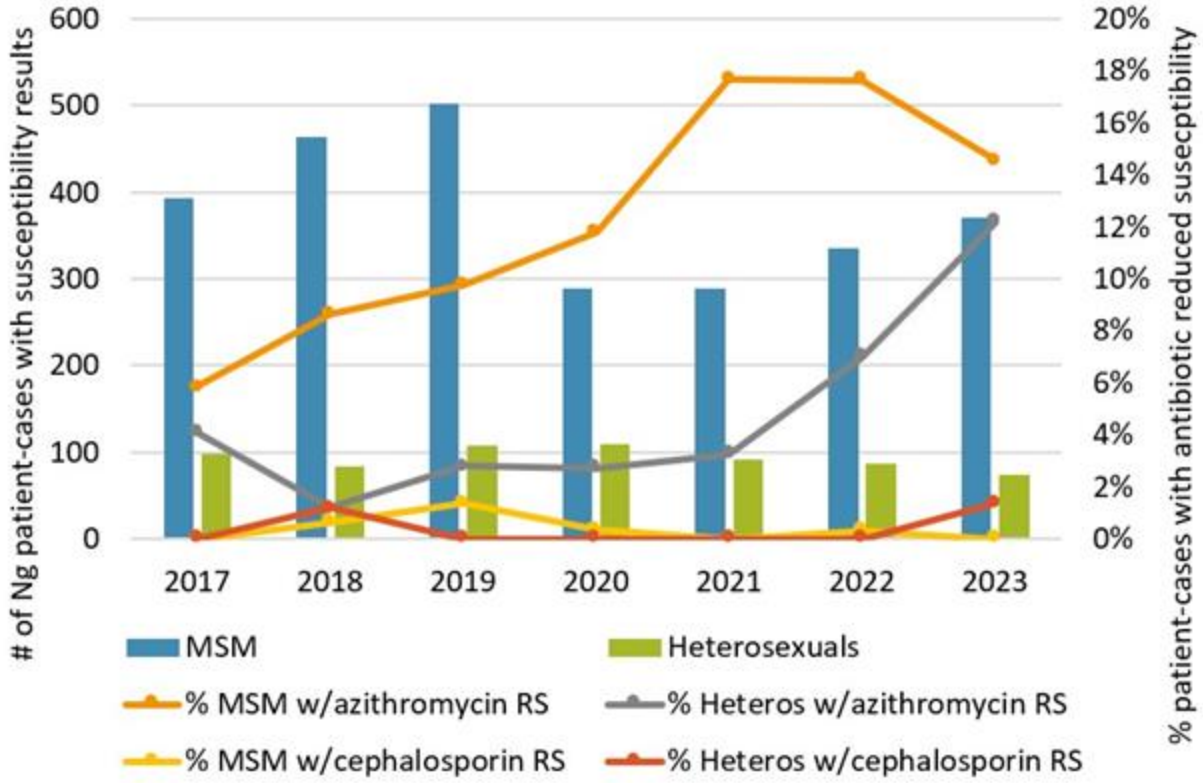
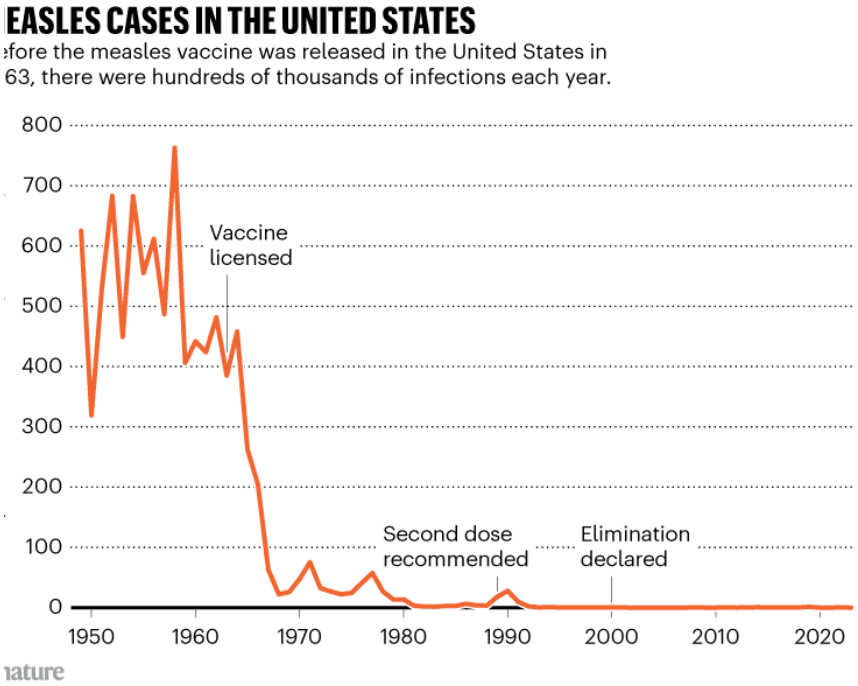
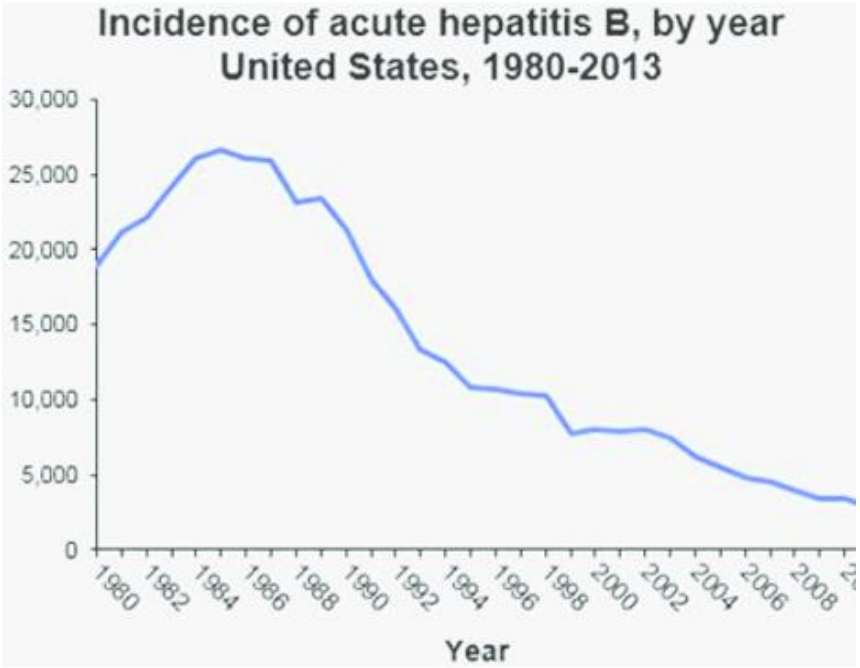


Figure 3: Proportion of MSM and heterosexual *Neisseria gonorrhoeae* patient-cases with reduced susceptibility (RS) to azithromycin or cephalosporins, SURRG, King County, WA, 2017-2023



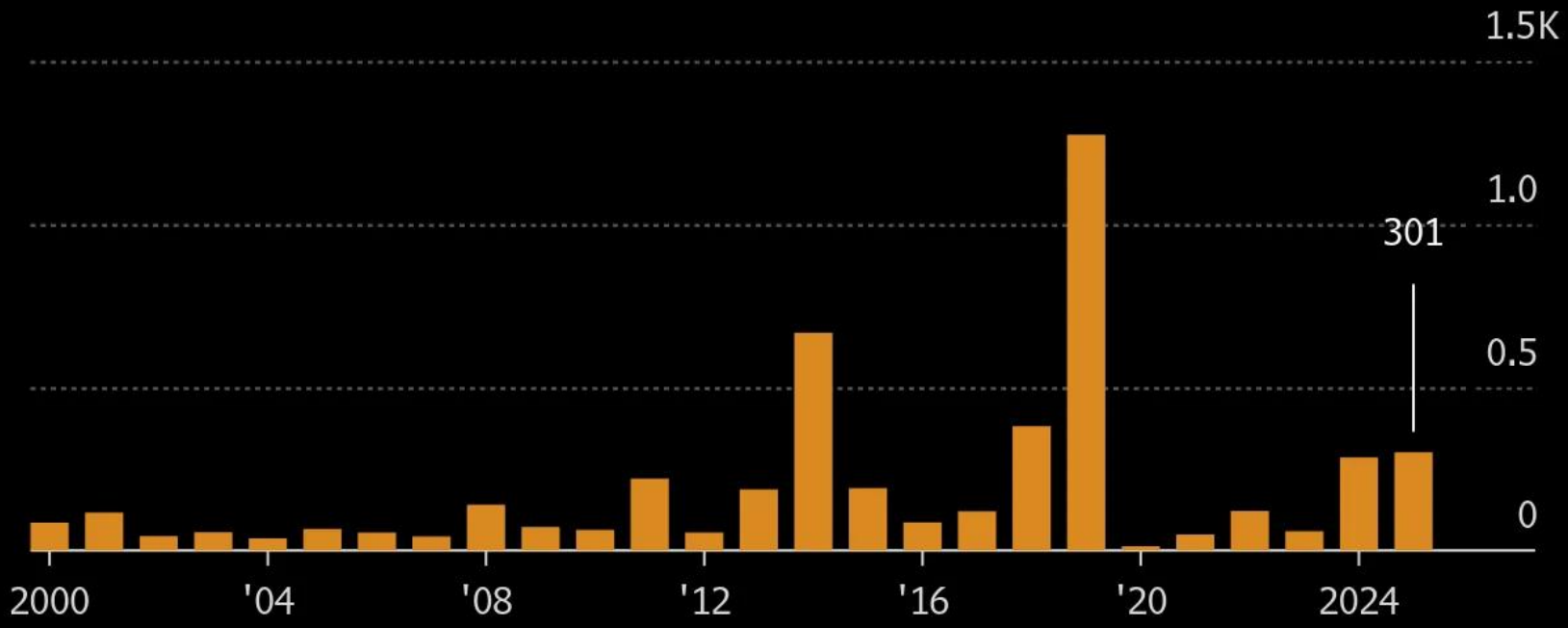
Vaccines


EASLES CASES IN THE UNITED STATES
efore the measles vaccine was released in the United States in
63, there were hundreds of thousands of infections each year.
800
700
600
500
400
300
200
100
0
Vaccine licensed
Second dose recommended
Elimination declared
1950
1960
1970
1980
1990
2000
2010
2020
nature


Incidence of acute hepatitis B, by year
United States, 1980-2013
30,000
25,000
20,000
15,000
10,000
5,000
0
1980
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
Year

Total Measles Cases in 2025 Have Surpassed 2024

Reported cases of measles in the US, 2000-2025



Source: Centers for Disease Control and Prevention
Note: 2025 data as of March 13

Bloomberg