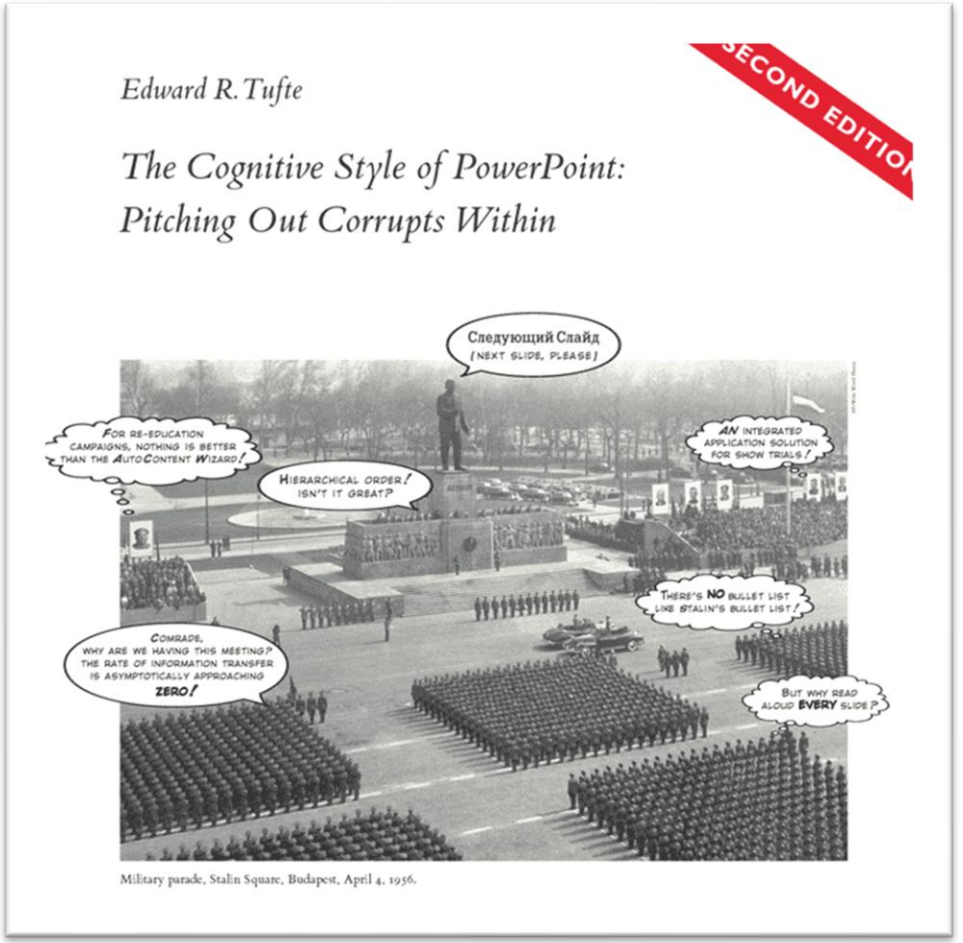


Hot Topics in Infectious Diseases

Nicholas Lehnertz, MD, MPH
Minnesota Department of Health
September 24, 2026

Disclosures

- I have no disclosures or conflicts of interest
- The opinions expressed (and judgments, including those implied…) are mine alone, and do not necessarily represent those of the Minnesota Department of Health
- I will undoubtably make gross generalizations and controversial statements
- This presentation has been constructed without the use of AI or ChatGPT or all that other stuff that I don't know how to use
- Noted limitations of PowerPoint



Before We Begin - UPDATES (from last year…)!!

Anyone remember what this is??

- *Cochliomyia hominivorax*, or New World screwworm (NWS) is a species of parasitic fly that feeds on live tissue
  - Causes myiasis, a parasitic infestation of fly larvae (maggots) in animal (including human) tissue, burrowing and tearing flesh as they go
- About the size of a common house fly
- NWS is endemic to South America, Cuba, Haiti, and the Dominican Republic (but recently moving north to northern border of Mexico)
- NWS is a devastating disease to animals, infesting livestock, pets and wildlife



New World Screwworm

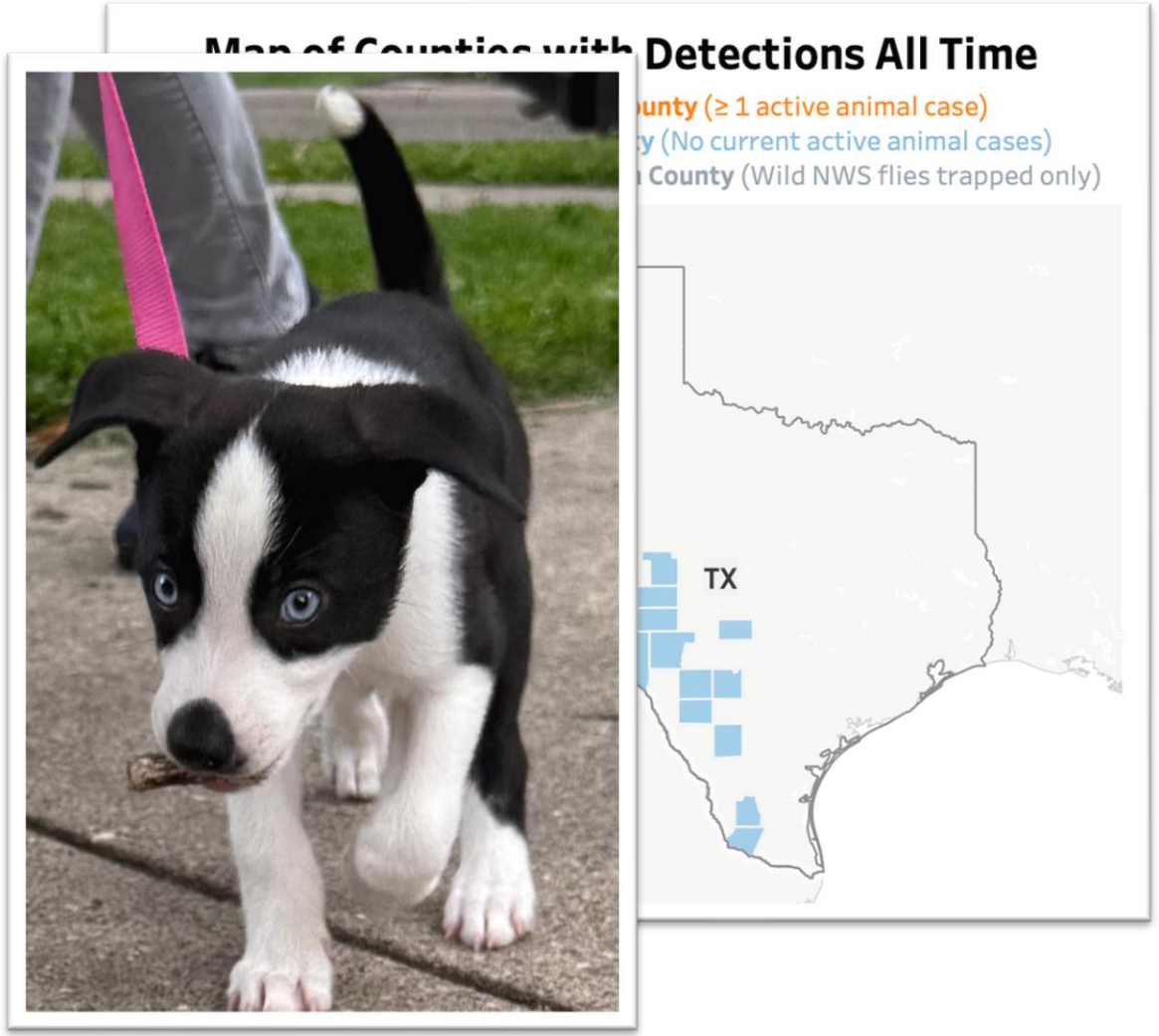
- As a reminder, in 2025, a 5-pronged plan to prevent entry of NWS into US was created, including:
  1. Coordinating with Mexico and International Partners
  2. Strengthening Surveillance and Detection
  3. Enhancing Public Awareness and Education
  4. 2 New SIT Fly Dispersal Centers, (est. $750 million!!!!)
  5. Innovations, Including 40 new cutting-edge products, (est. $105 million!!)
- Estimated $1 billion total outlay (2024-2026)
- Unprecedented inter-agency collaboration:
  - CDC, FDA, Department of the Interior, Department of Energy, Department of War, Department of Homeland Security, Department of State, EPA
- WOW!!
  - So what happened??



New World Screwworm

Well, the first reported animal case of NWS in the U.S. occurred on June 3, 2026

- Currently at 50 cases of NWS in U.S., all in domestic animals
  - Texas and New Mexico
- No wildlife detections
- No detections of NWS in fly traps
- No human infections as of yet
  - What can we do??
  - More to come??





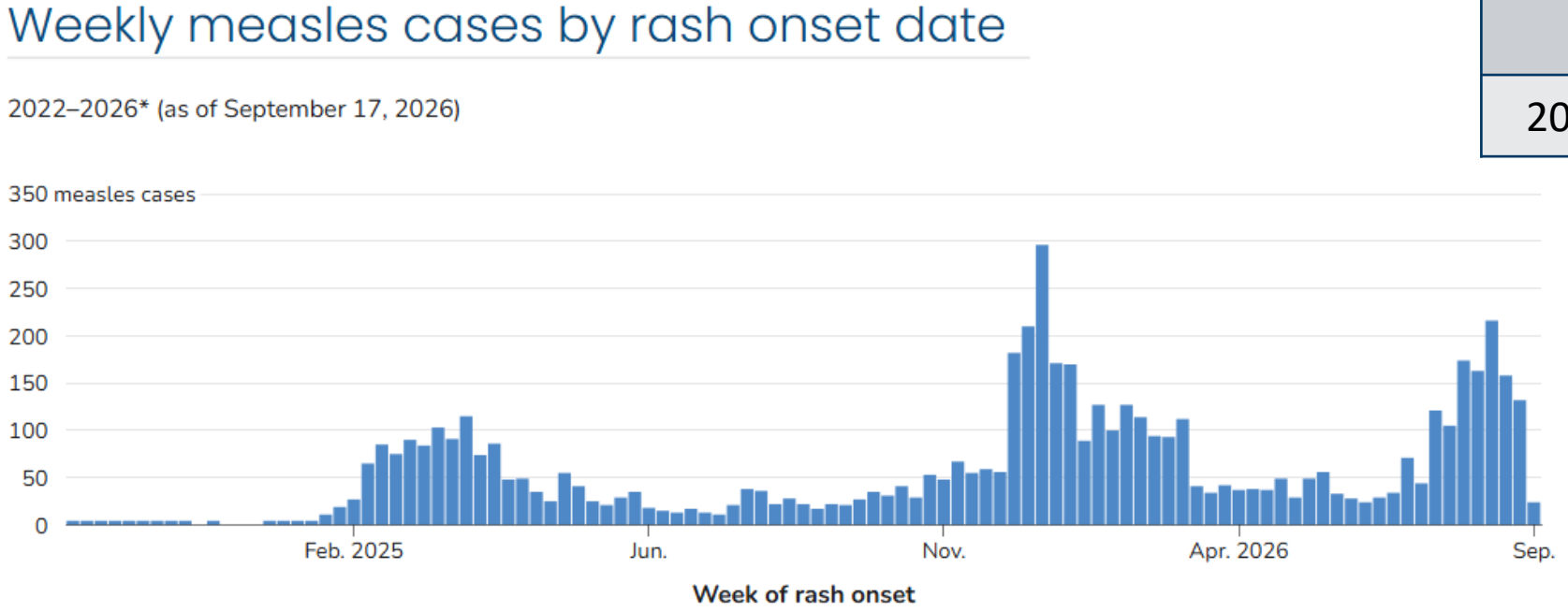
MORE UPDATES (from last couple of years…)!!



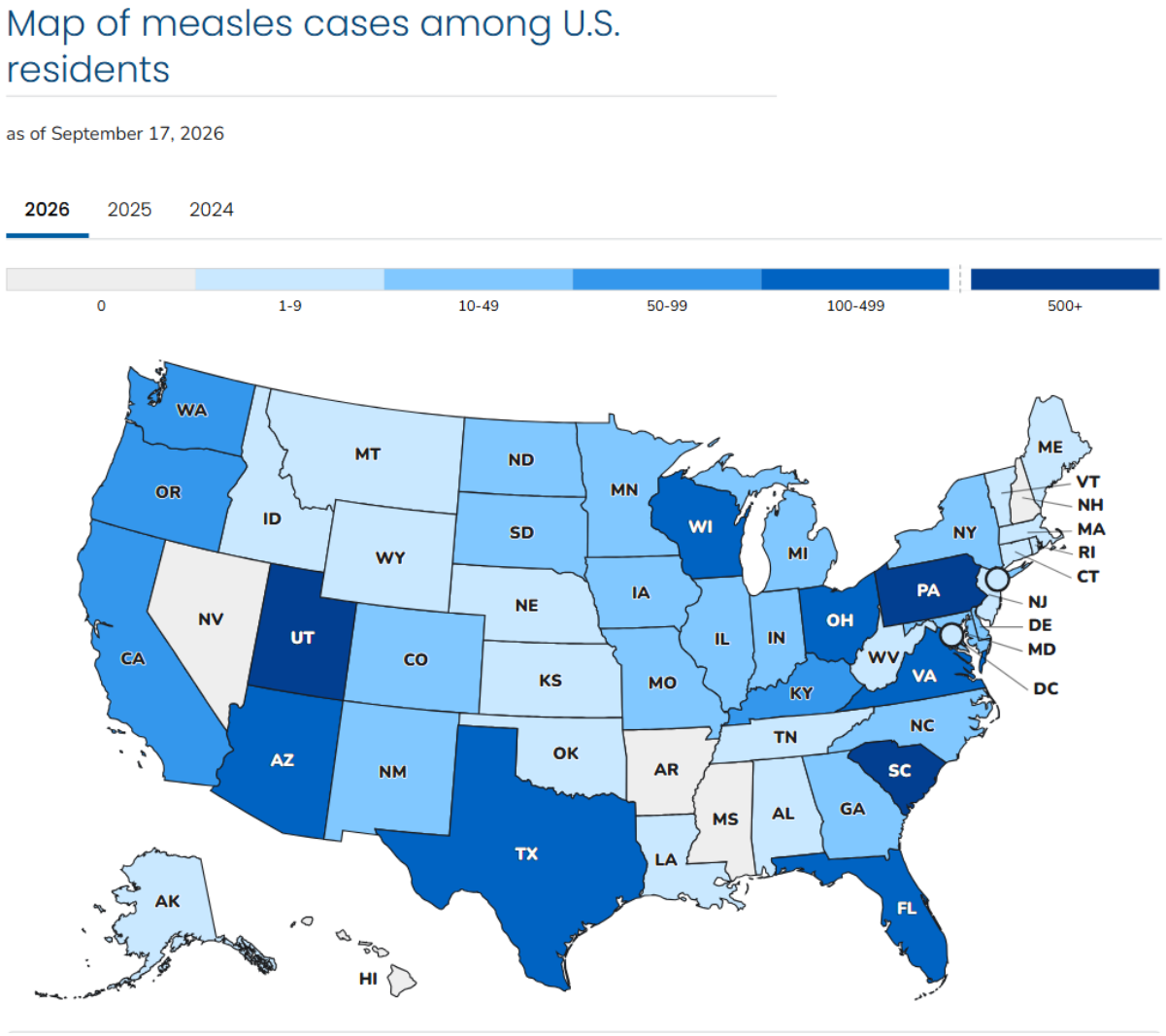
Measles Cases 2023-2026, United States

1,118% increase between 2024-2026

Year	Confirmed Measles Cases
2023	59
2024	285
2025	2289
2026-9/17	3471



Measles, United States January 1-September 17, 2026

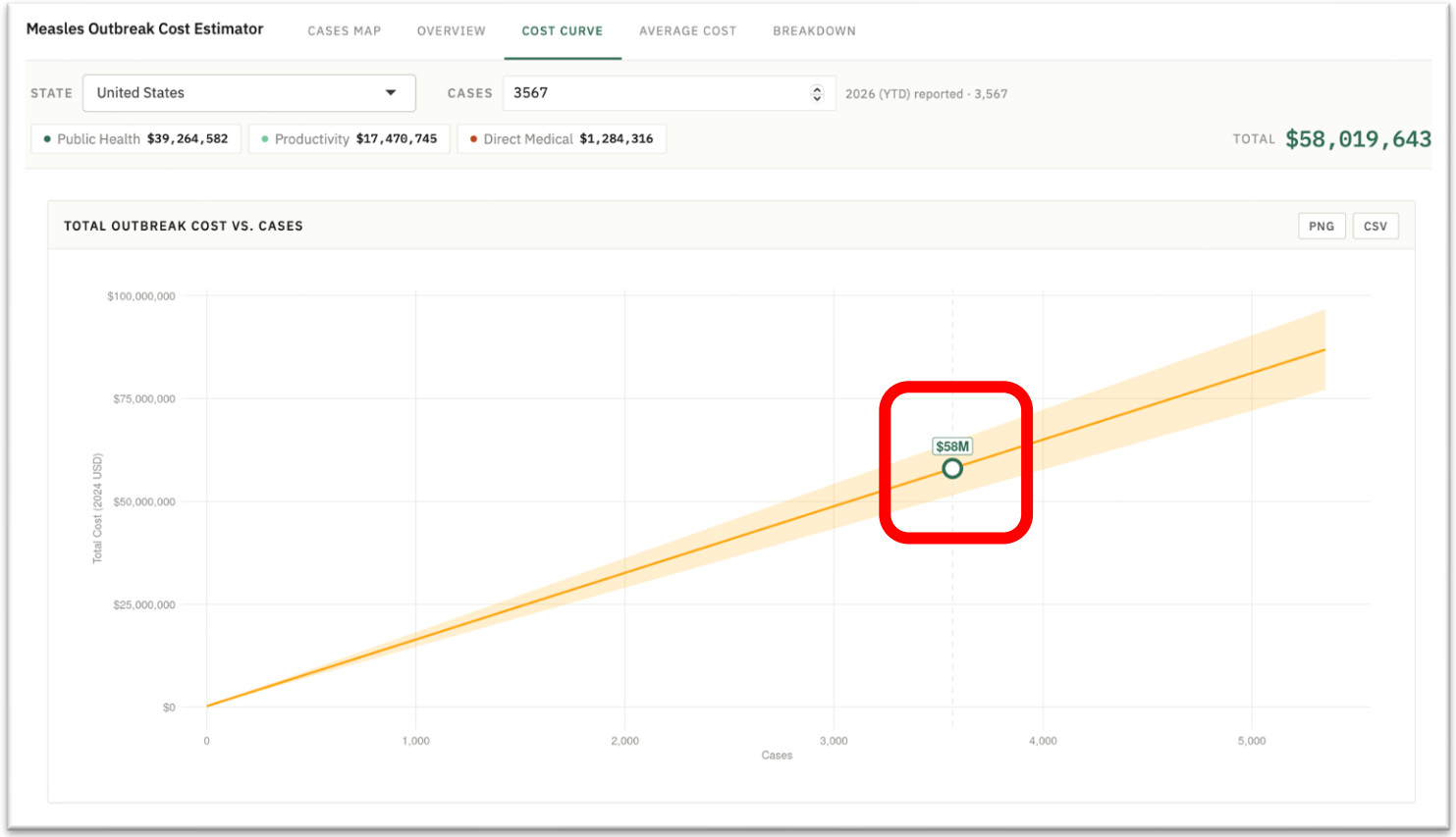


Current Outbreaks (as of Monday):

- Pennsylvania outbreak at 792 measles cases
  - 4 deaths
    - 2 infants
    - 18-year-old unvaccinated
    - 40-year-old unvaccinated
- Wisconsin outbreak currently at 166 cases
- MN currently at 18 cases

Cost of Measles

- Analysis of measles outbreaks across 18 states estimates that it costs $250,000 upfront to respond to a measles outbreak regardless of size
- $16,300 per each additional case
- 2026 (so far), 58 million dollars in costs



https://publichealth.jhu.edu/ivac/2026/new-cost-estimate-tool-to-aid-us-measles-outbreak-response

Response Comparison

New World Screwworm

- In 2025, a 5-pronged plan to prevent entry of NWS into the U.S. was created, including:
  1. Coordinating with Mexico and International Partners
  2. Strengthening Surveillance and Detection
  3. Enhancing Public Awareness and Education
  4. 2 New SIT Fly Dispersal Centers, (est. $750 million!!)
  5. Innovations, Including 40 new cutting-edge products, (est. $105 million!!)
- Estimated $1 billion total outlay (2024-2026)

Unprecedented inter-agency collaboration:

- CDC, FDA, Department of the Interior, Department of Energy, Department of War, Department of Homeland Security, Department of State, EPA

Measles

- Soft endorsement of vaccination, framed within ”personal choice”
- Treatment with cod-liver oil, vitamin A, steroids, and nutrition have all been advocated
- 2026 Executive Order
  - Recommends that MMR should be split into separate vaccines administered at separate health care encounters - along with continued investigations into safety and efficacy of timing of childhood vaccines

Measles Outbreak in Bangladesh: 2026

- From 2021 to 2025, 100 to 300 cases reported per year
- However, a measles outbreak began in March 2026, and as of September 10 there have been:
  - 188,000 cases (168,000 suspected, 20,000 confirmed)
  - >1000 deaths (909 suspected, 100 confirmed)
    - High severity rate thought to be impacted by widespread malnutrition
    - Complete MMR coverage dropped from >95% to 57% due to access challenges, procurement, canceled campaigns, vaccine shortages
    - “Recent declines in MR1 and MR2 coverage due to nationwide stockout of MR vaccine between 2024-2025, combined with routine immunization gaps and the absence of regular nationwide supplementary measles-rubella campaigns since 2020, have increased the number of susceptible children and contributed to the current outbreak” - WHO
    - Suggested that this outbreak reflects institutional disruption linked to health sector restructuring in 2025, rather than demand side failure or vaccine hesitancy
  - Thoughts on IPC and contact tracing in this setting?



Yasmin Jahan, Asma Binte Aziz, Measles outbreaks as signals of governance failure: Lessons from Bangladesh's 2026 immunisation collapse,Vaccine,Volume 88,2026, https://doi.org/10.1016/j.vaccine.2026.128924.

https://www.who.int/emergencies/disease-outbreak-news/item/2026-DON598

Driving Factors to Ongoing Outbreaks of Measles in the U.S.??





EVEN MORE UPDATES (from last year…)!!

- Anyone remember what this is??
- Last year, I said that:
  - "…there are at 3 confirmed cases in MN, and several more that are concerning for infection
  - More to come…"
- Anyone want to guess how many cases we are up to??
  - (I'll tell you at the end…)



Trichophyton Mentagrophytes genotype VII (TMVII)







- Recently emerged dermatophyte that is closely related to *T. indotineae*
- Can cause severe tinea involving the face, genitals, and buttocks
- Spreads between people usually through sexual contact
- TMVII infections have been circulating locally in Europe for at least five years
- First U.S. TMVII case reported in June 2024 in New York

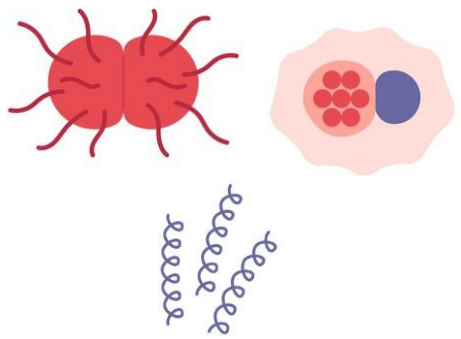
First, Let's Talk About "Ringworm"



- Dermatophytosis (tinea or "ringworm") refers to a group of contagious fungal infections that affect the skin of mammals
- Transmission can occur through direct contact with infected animals or humans, or indirect contact with contaminated surfaces
- 20% of humans and animals will experience this at least once during their lifetime
- Often mild and treatable with over-the-counter antifungal cream
- Lesions are typically located:
  - Trunk and extremities
  - Scalp
  - Feet
  - Groin

What Makes TMVII Different?

Often more severe and inflammatory disease on genital and perigenital skin



Frequently Mistaken for Bacterial STIs



Difficult to Diagnose



Prolonged Treatment

History of TMVII

2002

Otero *et al.,* hypothesized sexual transmission of dermatophytes in a case series of 7 female sex workers

2014

First report of sexually transmitted TMVII identified in Zurich

- 3 cases in patients returning from travel in Southeast Asia
- Sexual contact, including with sex workers

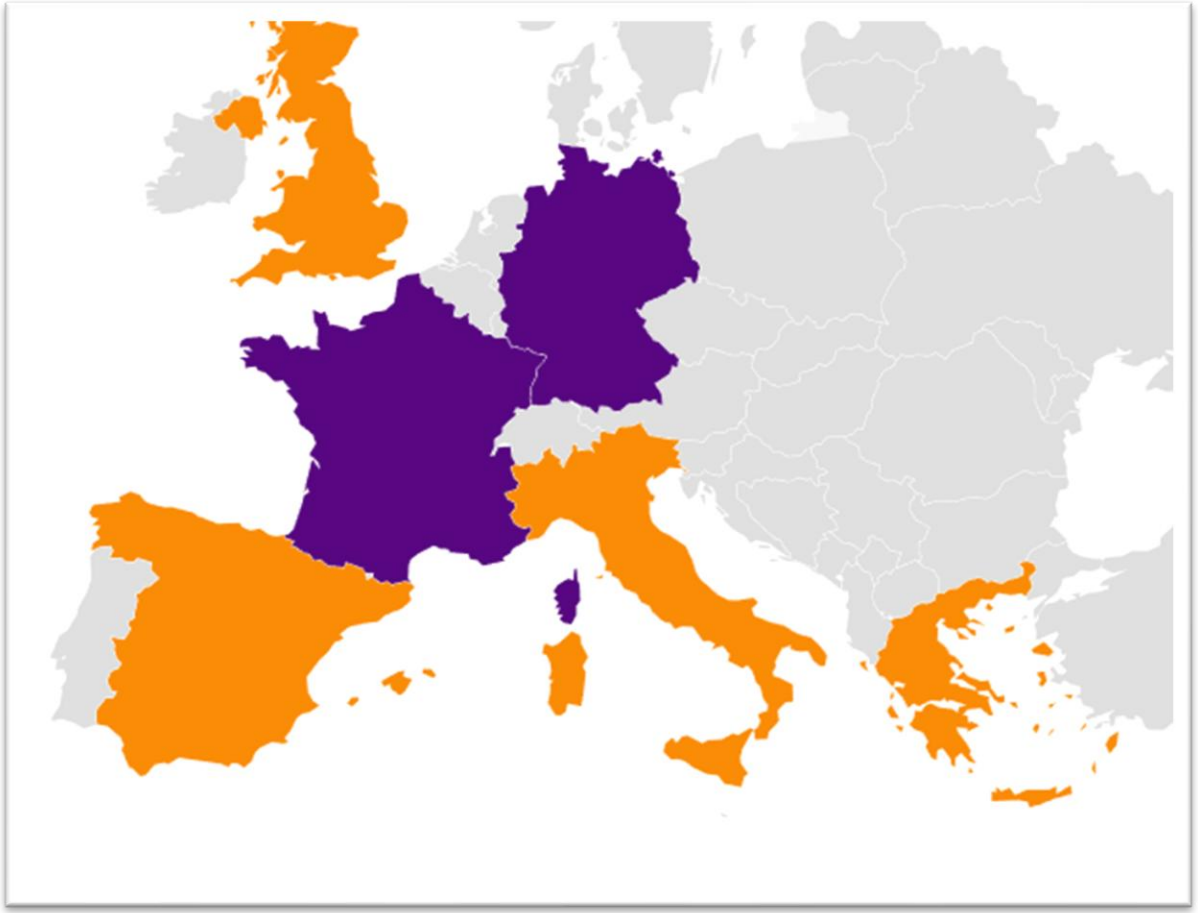
2016 - 2017

37 suspected sexually transmitted TMVII cases in Berlin, Germany

- Males and females
- Only 4 cases reported recent travel to Southeast Asia

Monsel G, Jabet A. Sexually transmitted dermatophytosis - what do we know about epidemiology, transmission, and treatment of this emerging class of STI? Curr Opin Infect Dis. 2026 Feb 1;39(1):51-60. doi: 10.1097/QCO.0000000000001171. Epub 2025 Nov 27. PMID: 41402963.

TMVII Globally



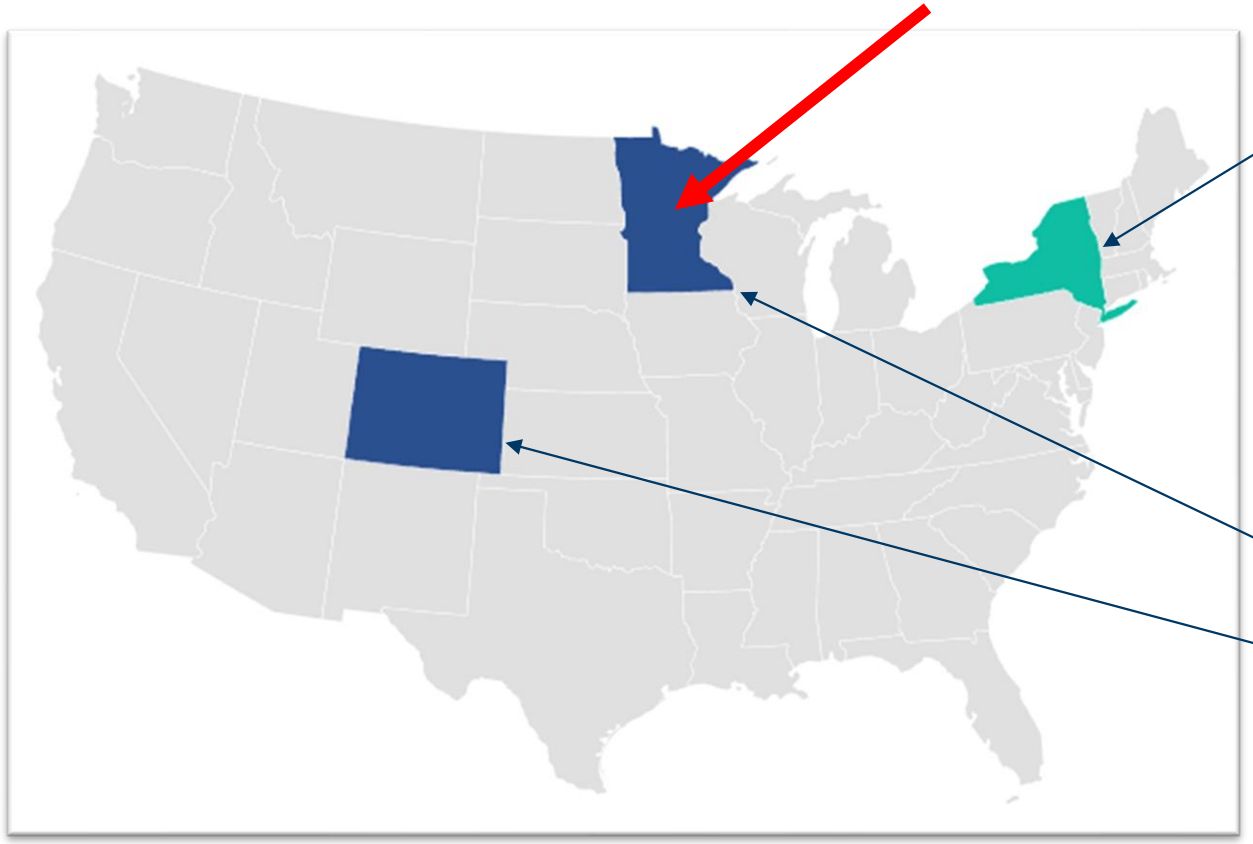
Since 2021:

- **France** and **Germany** reported **>20 cases** while **Spain, Italy, Greece,** and **United Kingdom** reported **<20 cases** of sexually transmitted TMVII
- Since 2021, 98% of cases report MSM activity
- The majority report no recent travel history - opening up possibility of local transmission in Europe and the US

Cofone L, Paglione L, Grassi F, Patania F, Pindinello I, Quarantiello A, Sabato M. Trichophyton mentagrophytes genotype VII, an emerging infection: a Systematic Review. Ann Ig. 2025 Sep-Oct;37(5):676-683. doi: 10.7416/ai.2025.2686. PMID: 40711428.

TMVII was first identified in the United States in **2024** in **NY** and new clusters were reported in **2025** in **MN** and **CO**

Okay, how many cases in Minnesota??



The first reported case in the United States reported recent **travel** to Europe and the United States with **multiple sex partners** while traveling

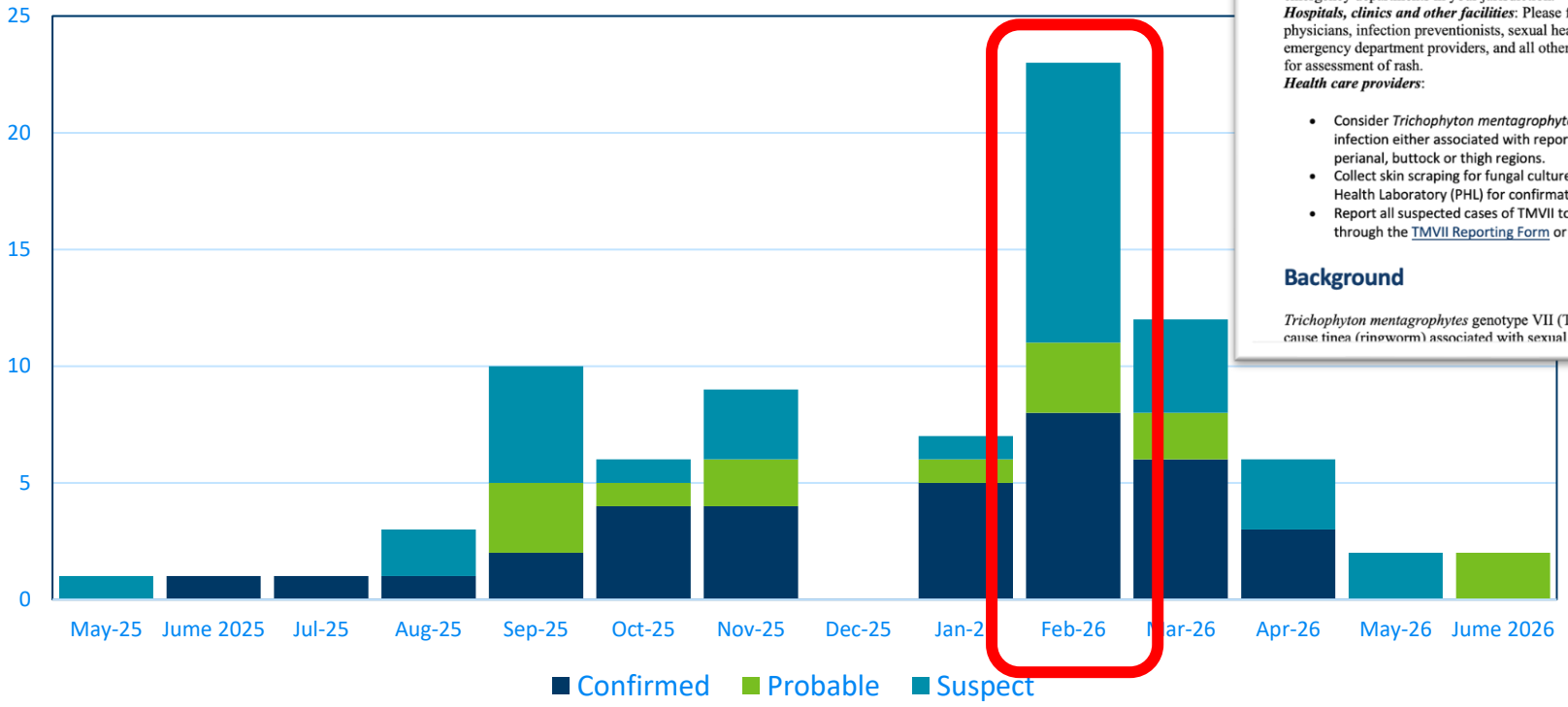
Other reported cases are among people with **multiple sex partners**, people who are living with **HIV**, concurrent **STIs**, **meth use**, or international **travel**

Trichophyton mentagrophytes genotype *VII*

84

(35 confirmed, 14 probable and another 35

Fig 1. Minnesota TMVII Cases By Date of Clinical Encounter



DEPARTMENT OF HEALTH

Health Advisory: Sexually Transmitted Dermatophyte Outbreak in Minnesota

Minnesota Department of Health, Wed., February 11, 9:00 CST 2026

Action Steps

Local and tribal health department: Please forward to hospitals, clinics, urgent care centers, and emergency departments in your jurisdiction.
Hospitals, clinics and other facilities: Please forward to primary care clinicians, infectious disease physicians, infection preventionists, sexual health clinics, dermatologists, urgent care providers, emergency department providers, and all other health care providers who might see patients presenting for assessment of rash.
Health care providers:

- Consider *Trichophyton mentagrophytes* genotype VII (TMVII) in patients with dermatophyte infection either associated with reported sexual contact, or primarily present in the genital, perianal, buttock or thigh regions.
- Collect skin scraping for fungal culture if TMVII is suspected; send fungal isolates to MDH Public Health Laboratory (PHL) for confirmatory testing.
- Report all suspected cases of TMVII to the Minnesota Department of Health (MDH) either online through the TMVII Reporting Form or by phone at 651-201-5414.

Background

Trichophyton mentagrophytes genotype VII (TMVII) is a recently emerged dermatophyte fungus that can cause tinea (ringworm) associated with sexual contact. The first United States case of genital ringworm

Treatment

- Suspected TMVII infection treated empirically with oral terbinafine (250mg daily). **Do not delay treatment because of lack of KOH microscopy or fungal culture results**
  - Treatment generally 6–8 weeks but some up to 12 weeks
- Topical antifungals are not recommended as monotherapy because they do not effectively penetrate the hair follicle
- Topical corticosteroids are to be avoided as they will worsen TMVII infection
- Screen patients for other sexually transmitted infections and discuss partner notification and screening

Patient Counseling

- Avoid sexual contact and skin-to-skin contact while experiencing symptoms
  - Cover rashes with bandages or clothing to minimize risk of unintentional spread
  - Wash hands with soap after touching an area with TMVII infection
- Avoid sharing personal items such as clothing, towels, bedding, razors, etc.
  - Wash and dry linens on high heat to kill fungal spores
- Pets can develop tinea and should be evaluated by a veterinarian if rashes are present

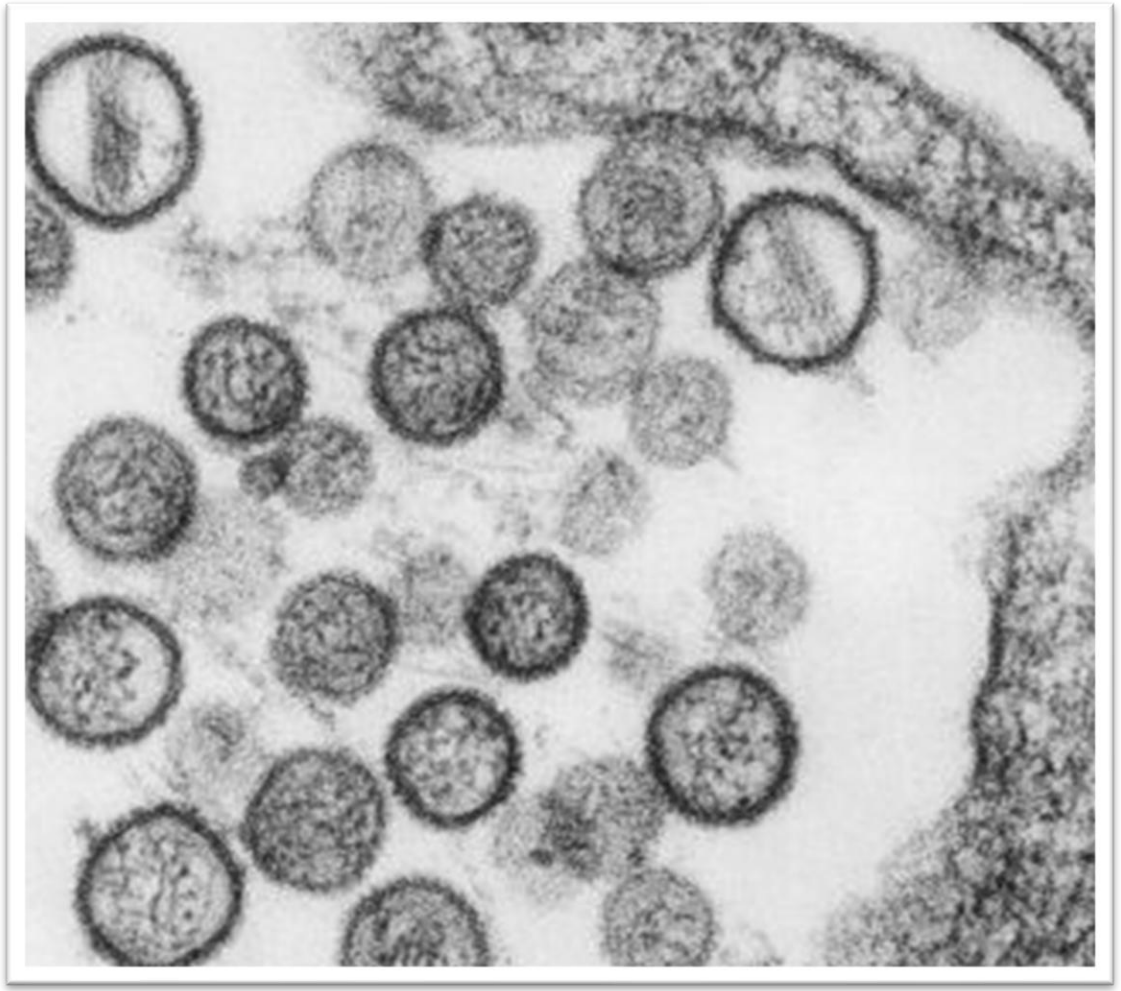


Case 1

- Man in his 60s has a several day history of fever, fatigue, and shortness of breath
- CXR obtained, pulmonary edema and pleural effusions identified, no focal consolidations, no cardiac enlargement noted
- Looks acutely ill and is in respiratory distress
- Thoughts??
- Want a hint (or two??)



Hints

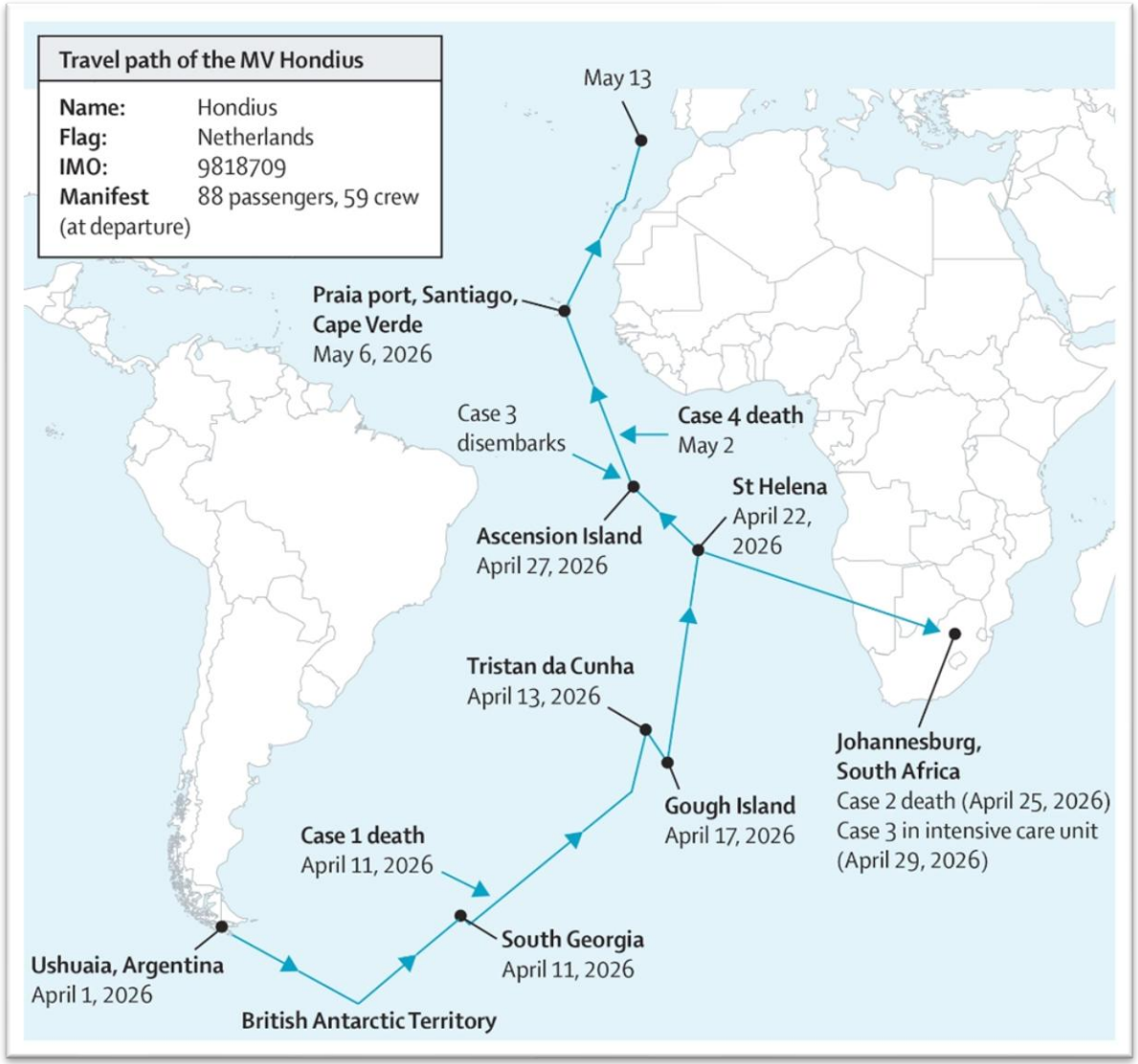




MV Hondius

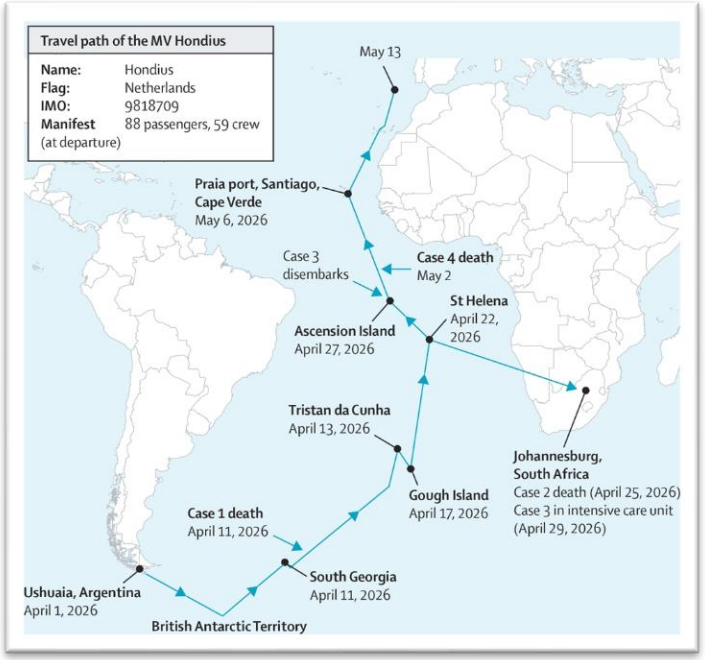
- On April 1, the Dutch cruise vessel MV Hondius departed from Ushuaia, Argentina on April 1 with 114 passengers and 61 crew, following an itinerary across the South Atlantic, including multiple stops in remote and ecologically diverse regions
  - Several passengers disembarked and embarked the ship at different stops, resulting in a total of 187 persons who were on the ship at some point during the journey
- On May 2, UK notified WHO of a cluster of severe acute respiratory illness cases aboard the Hondius
  - This cluster included 2 deaths and one critically ill passenger
- On May 3, MV Hondius moored off the coast of Cabo Verde where local health authorities visited the vessel to assess condition of two symptomatic individuals. These individuals and a high-risk contact were evacuated from the ship on May 6, and ship continued on to the Canary Islands, Spain

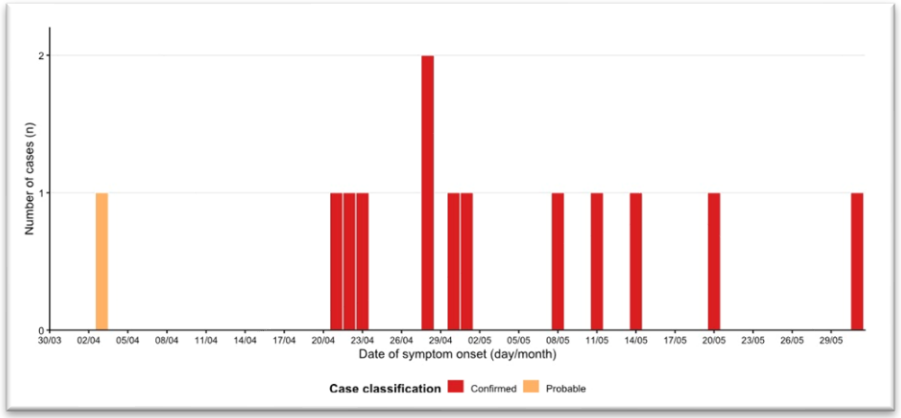
Hondius Route



Andes Hantavirus, continued…

- Vessel arrived at Canary Islands, on May 10 carrying 150 individuals, including 86 passengers, 60 crew members, and 4 health professionals from WHO, ECDC and the Netherlands
- Passengers and most of the crew disembarked on May 10-11 and were repatriated to respective countries of residence or transit points via specially arranged non-commercial flights
- 13 total cases (12 confirmed, 1 probable), and 3 deaths (CFR 23%)
    - All 13 cases traveled aboard the MV Hondius
- No secondary transmission among contacts identified (42 day monitoring period)





Hantaviruses

- Hantaviruses are a group of viruses carried by rodents that can cause severe disease in humans
- People usually get infected through contact with infected rodents or their urine, droppings or saliva
- Infection with hantaviruses can cause a range of illnesses, including severe disease and death
- In the Americas, hantaviruses can cause hantavirus pulmonary syndrome (HPS), a severe respiratory illness, with a case fatality rate up to 50%.
    - In U.S., it's the Sin Nombre virus (vector western deer mouse; 20-40 cases reported to CDC annually in US)
- *Andes* hantavirus, found in South America, is a currently known hantavirus for which limited human-to-human transmission among contacts has been documented
    - No evidence of human-to-human transmission by Sin Nombre virus

Hantavirus Pulmonary Syndrome (HPS)

- Symptoms of HPS usually start to show 1 to 8 weeks after contact with an infected rodent.
- Early symptoms include: fatigue, fever, muscle aches, headaches, dizziness, chills, nausea, vomiting, diarrhea, abdominal pain
- **Four to 10 days after the initial phase** of illness, the late symptoms of HPS appear, including coughing and shortness of breath
  - Pulmonary edema, hypoxia
  - 40-50% of people who develop respiratory symptoms may die from the disease
  - Early ECMO is helpful (80% survival rate)

Hantavirus (cont.)

- In summary, people can contract hantavirus if they have contact with urine, feces or saliva of a rodent carrying the virus
  - Breathing in hantavirus-contaminated air when cleaning up after rodents
  - Touching contaminated objects and then touch their nose or mouth
  - Are bitten or scratched by an infected rodent
  - Eat food contaminated with hantavirus
- It is rare that we see people in Minnesota infected with hantavirus
  - Since 1999, there have been 2 hantavirus cases who were exposed in Minnesota, and 1 case in a Minnesota resident who was exposed in the Western U.S.



Case 2

- Man in his 30s presents with a 2-day history of nausea, diarrhea, fever, and chills
- Stools were watery, non-bloody, and non-mucoid
- Thoughts??
- Hint??





Shigella

- Gram-negative bacterium related to *E. coli*
- Named after Japanese physician Kiyoshi Shiga, who discovered it in 1897
- 4 species*: Shigella sonnei* (the most common species in the United States), S*higella flexneri, Shigella boydii, Shigella dysenteriae*
- Symptoms usually start 1–2 days after infection and last 7 days; most experience:
  - Diarrhea that can be bloody or prolonged (lasting more than 3 days)
  - Fever
  - Stomach pain
  - Tenesmus

Shigella (cont.)

- Populations at risk:
  - Children
  - MSM
  - People with unstable housing
  - International travelers
  - Immunocompromised persons
  - People living with HIV
- Most patients DON'T require antibiotic therapy (supportive care, fluid replacement is recommended treatment)
  - However, antibiotics have been shown to shorten duration of illness by about 2 days; so it can be useful in outbreak settings, institutional settings, food handlers, immunocompromised/PLWH
- However…(you know there is more to this story)

Extensively Drug-Resistant (XDR) Shigellosis

Morbidity and Mortality Weekly Report (*MMWR*)

Search

Emergence of Extensively Drug-Resistant Shigellosis — United States, 2011–2023

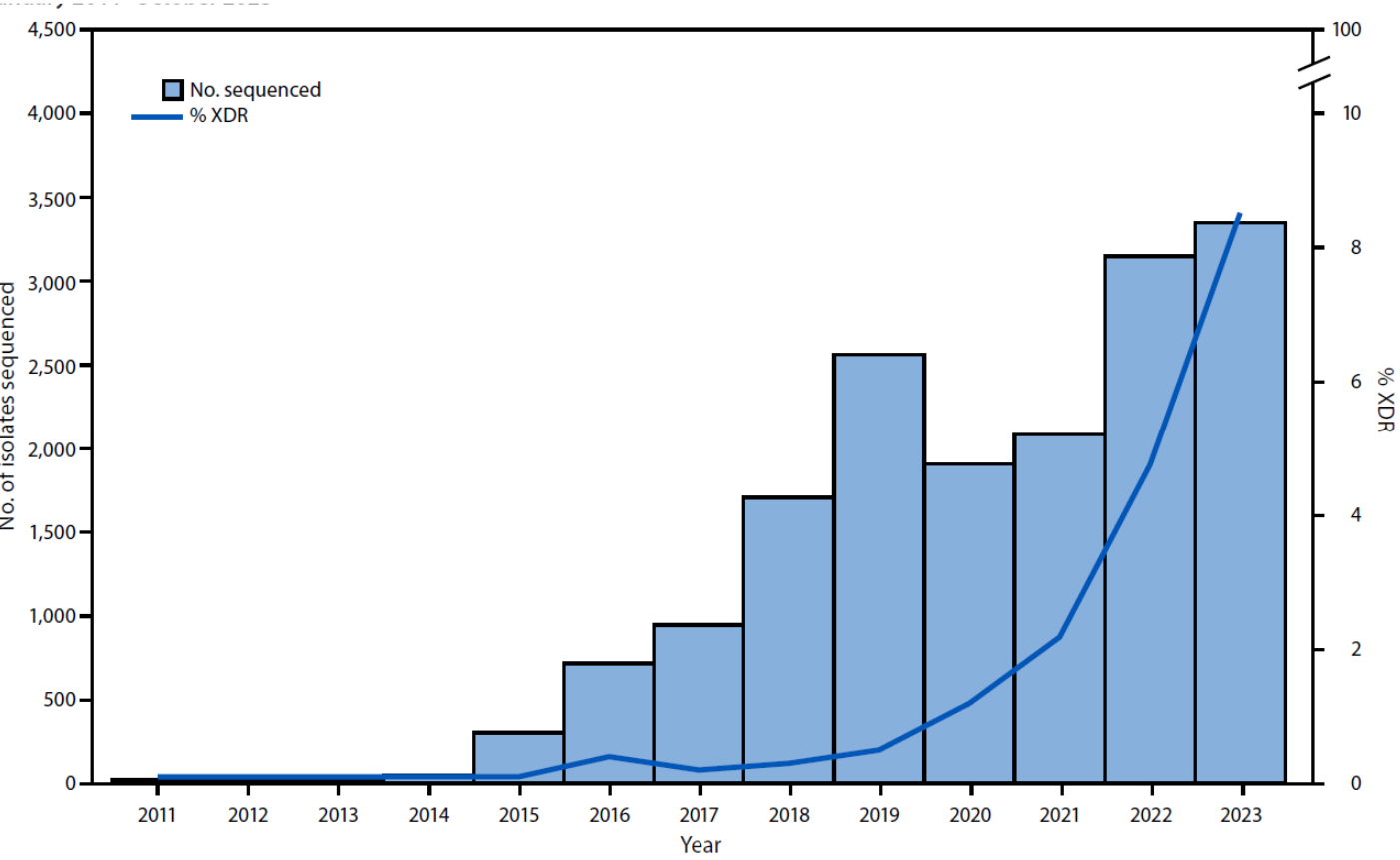
Weekly / April 9, 2026 / 75(13);173–178

Print

Naeemah Logan, MD[1]; Meseret G. Birhane, MPH[1]; Sharla L. McDonald, MPH[1]; Jemma Alarcón, MD[2]; Salette Amador[2]; Madhu Anand, DrPH[3]; Laura H. Bachmann, MD[4]; Kevin Bernard, MS[5]; Lindsay S. Black, MPH[3]; Angela N. Chen, MPH[6]; Laura A. Cooley, MD[1]; Esther D. Fortes[7]; Marisa Gerard, MPH[5]; Rachel H. Jervis, MPH[8]; Akiko C. Kimura, MD[9]; Katherine Lamba, MPH[9]; Julia Latash, MPH[5]; Linlin Li, PhD[9]; Grace Pederson, MPH[1,10]; Carley Perez Kauffman, MPH[7]; Jared L. Reynolds, MPH[1]; Richard Santiago Jr, MPH[6]; Ulrike Siemetzki-Kapoor, PhD[5]; Sandra C. Smole, PhD[7]; Kaitlin A. Tagg, PhD[1]; Johanna Vostok, MPH[7]; Hattie E. Webb, PhD[1]; Louise K. Francois Watkins, MD[1]; XDR Shigella Working Group (VIEW AUTHOR AFFILIATIONS)

View suggested citation

XDR *Shigella* in U.S., 2011-2023



XDR: Resistant to ampicillin, azithromycin, ceftriaxone, ciprofloxacin, and tmp/smx

- State and local public health laboratories submit *Shigella* isolates to PulseNet at CDC
- 16,788 *Shigella* isolates had AST, WGS or both
- 510 (3.0%) XDR **(XDR increased from 0% during 2011–2015 to 8.5% in 2023**).
- Among 510 patients with XDR shigellosis
  - Median patient age 41 years (IQR 31–54)
  - 86.2% male
  - Among 116 persons with available HIV status, 54 (46.6%) reported HIV co-infection
  - Among 388 with race data, 75% white
  - ***Shigella* bacteria are easily transmissible and resistance genes can spread to other enteric bacteria, making XDR *Shigella* a public health threat**

XDR *Shigella* (cont.)

- 510 patients with XDR *Shigella*
  - Among 258 patients for whom hospitalization data were available, 97 (37.6%) were hospitalized; no deaths
  - Information on domestic travel history was available for 227 persons, 54 (23.8%) of whom reported domestic travel
  - Among 205 persons for whom information on international travel history was available, 36 (17.6%) reported international travel
- No FDA approved oral therapy for XDR shigellosis
  - Some limited experience with carbapenems, fosfomycin
  - ID consult recommended for individuals with XDR shigellosis

Diagnostics

Testing for possible infection with *Shigella*

- Stool culture with susceptibility testing (AST) is recommended for patients who may need antibiotic treatment
- If a culture-independent diagnostic test (CIDT, e.g. gastrointestinal panel) is performed, request that the clinical laboratory perform reflex culture if CIDT is positive for *Shigella*
- If concern for sexually transmitted infection should test for other STIs, including HIV, mpox, syphilis, gonorrhea, and chlamydia at exposed sites
- Report to MDH, please 

Counseling Patients

- Encourage persons with shigellosis to notify household contacts and sex partners and urge them to monitor for symptoms of shigellosis and seek medical evaluation and treatment if symptomatic
- Patients should stay home from school or from healthcare, food service, or childcare jobs while sick or until the health department says safe to return



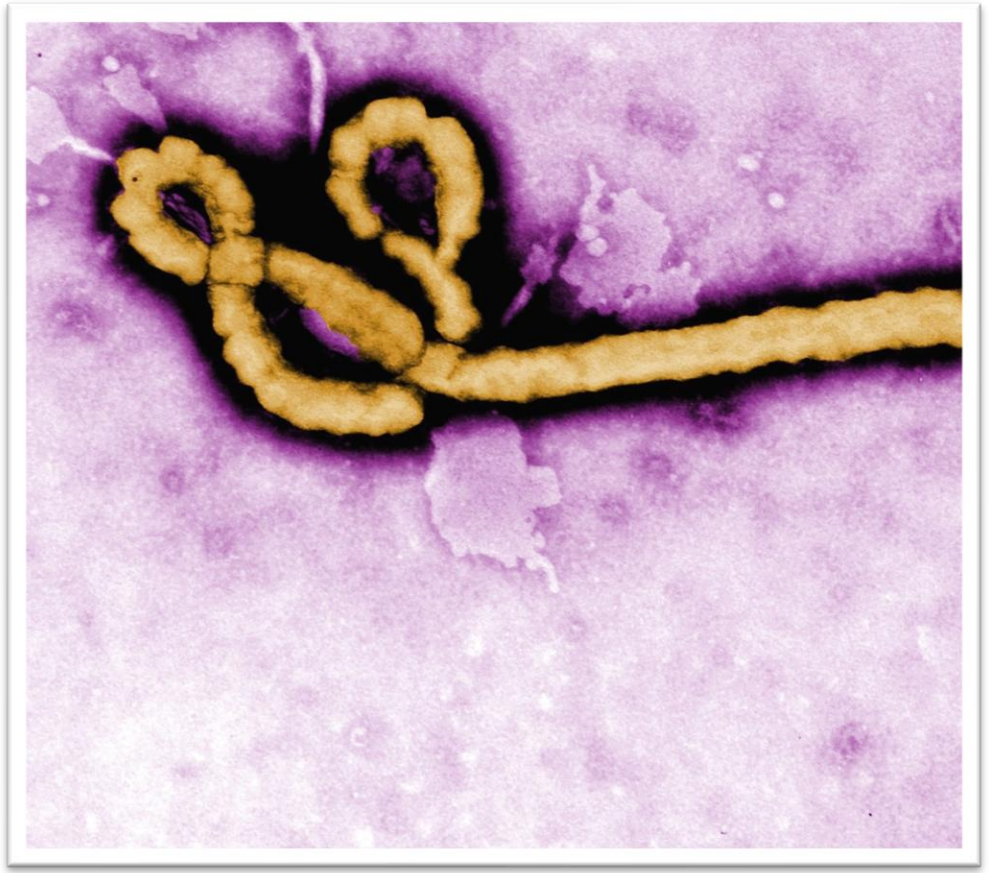
Counseling Patients (cont.)

- During diarrhea and for 2 weeks after it ends:
  - Abstain from sex
  - Wash hands often with soap and water for at least 20 seconds, including at key times such as after using the toilet, before and after changing diapers, cleaning up after someone who is sick, and before preparing or eating food
  - Do not prepare food for others, if possible
  - Avoid swimming pools, hot tubs, water playgrounds, oceans, lakes, and rivers
- Closely follow safer sex practices for at least 2 weeks after resuming sex to prevent the spread of *Shigella*
- Wash sex toys with soap and water after each use



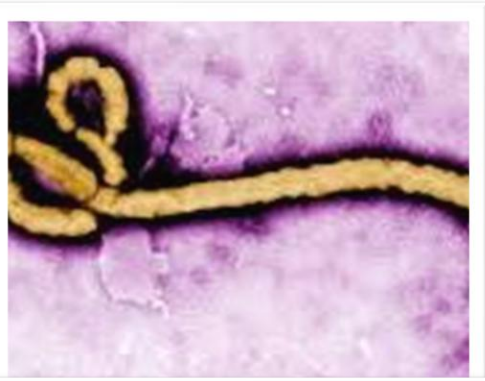
Case 3

- 39-year-old male develops fever, chills, myalgias and nausea
- This individual recently operated on a 33-year-old patient with severe abdominal pain who subsequently died the next day after surgery
- Thoughts??
- Hint??



Ebola Disease (EBOD)

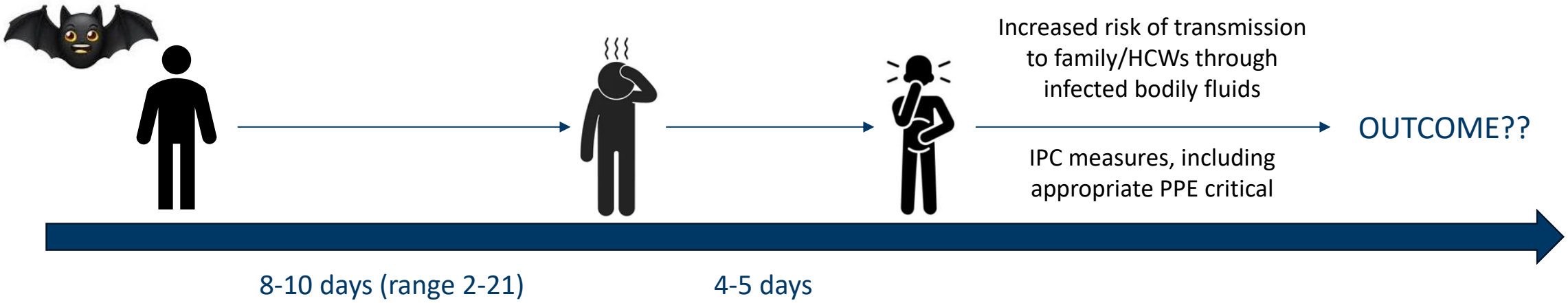
- Ebola disease is caused by filamentous, enveloped, single-stranded, negative-sense RNA viruses that belong to the *Orthoebolavirus* genus, Filoviridae family
- Six species identified, three of which cause most major outbreaks
  - Ebola virus (EBOV, *Orthoebolavirus zairense*) - cause of Ebola Virus disease (EVD)
  - Sudan virus (SUDV, *Orthoebolavirus sudanense*) - cause of Sudan virus disease (SVD)
  - ***Bundibugyo virus (BDBV, Orthoebolavirus bundibugyoense) - cause of Bundibugyo virus disease (BVD)***
- Believed that fruit bats in the family Pteropodidae are the natural host





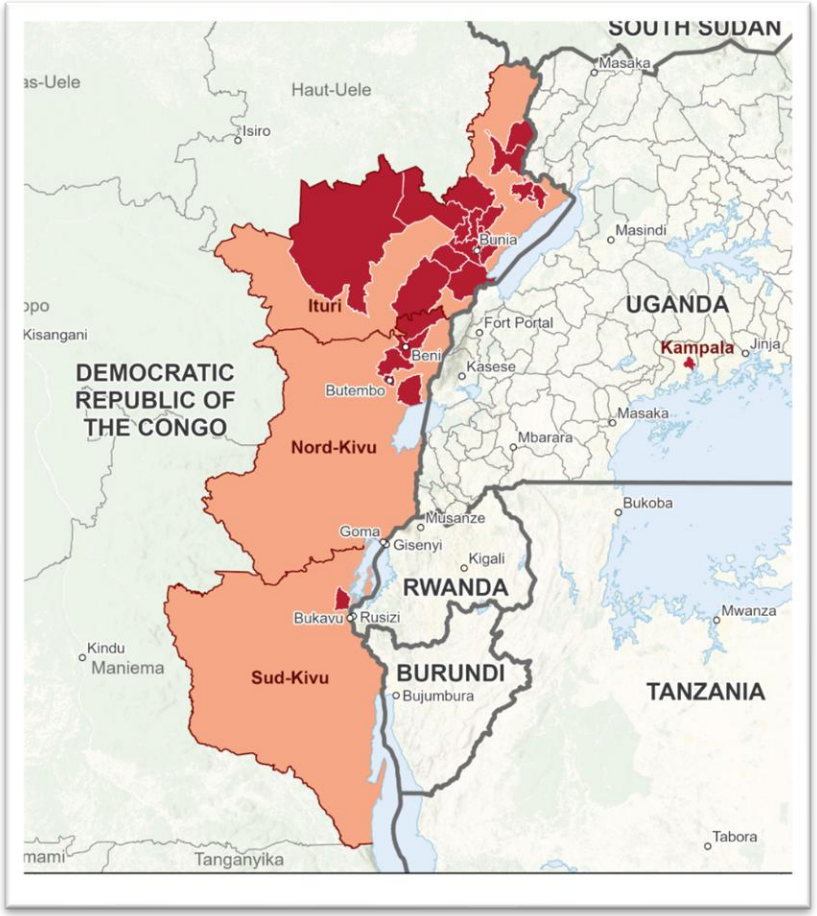
Clinical Presentation of Bundibugyo Virus Disease (BVD)

- Symptoms similar to other orthoebolaviruses
- Incubation period 2-21 days
- Early symptoms: intense headache, sore throat, high fever, body aches and fatigue
- After 4-5 days develop intense vomiting and diarrhea, unexplained bleeding
- Prior BVD outbreaks: Uganda 2007, DRC 2012
- 30-50% case fatality rate
- **Spread through direct contact to body fluids of sick or dead infected person** (or animal), or contact with something contaminated with the virus; no airborne transmission



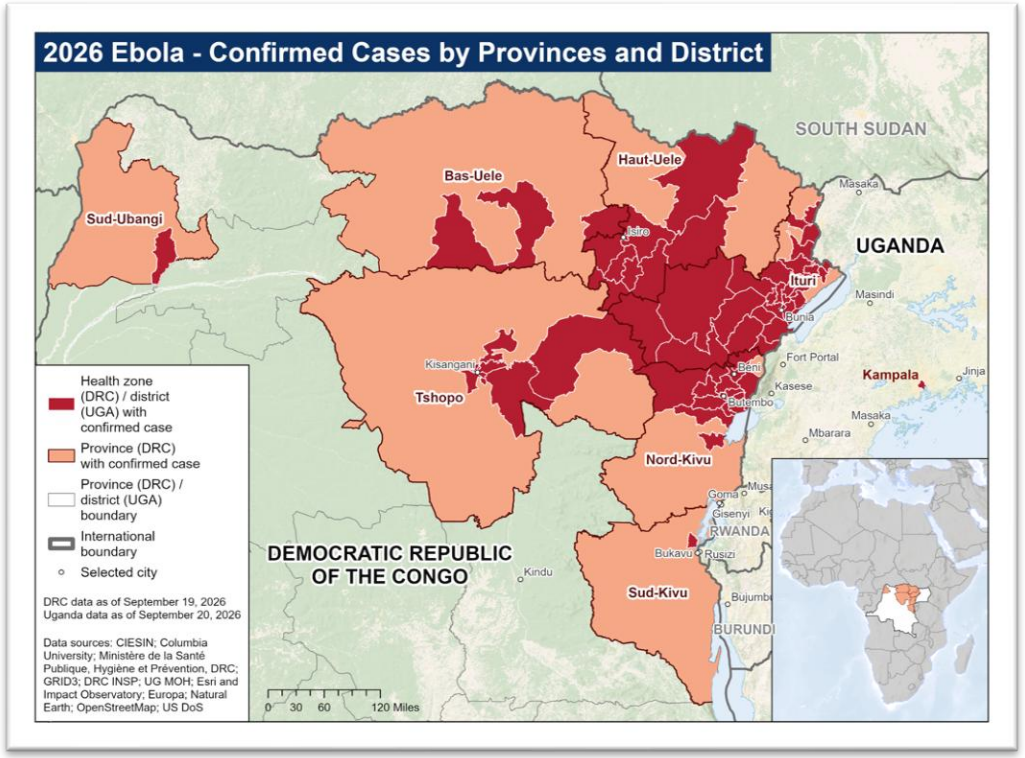
2026 Outbreak of Bundibugyo Virus Disease in DRC

- On May 15, 2026, the Ministry of Health of the Democratic Republic of the Congo (DRC) confirmed an outbreak of Ebola Bundibugyo virus disease (BVD) in Ituri Province in northeastern DRC
  - On May 16 there were 246 suspected cases, 80 deaths in DRC, and 1 fatal case in Uganda
  - First known case traced to a nurse in Ituri Province on April 24
  - Infections likely had been occurring for months prior
- WHO declared a public health emergency of international concern on May 16, 2026
- **Outbreak occurring in an area affected by insecurity, historical violence, population displacement, food insecurity and frequent cross-border travel, all of which increase the risk of further transmission**
  - More than 26 million people face acute food insecurity in DRC, and an estimated one million internally displaced people live in Ituri Province alone



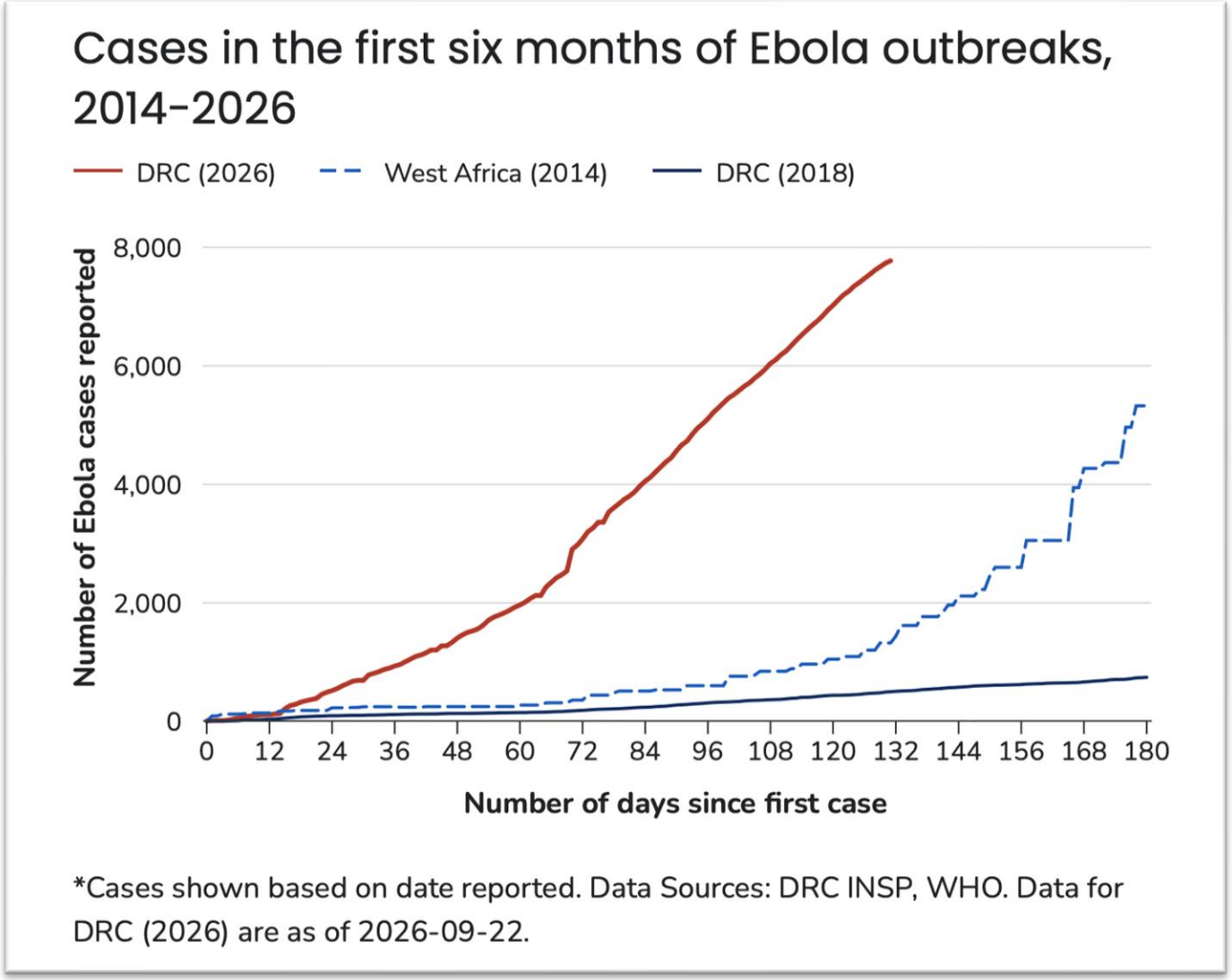
2026 BVD Outbreak in DRC - Current Situation

Reported	Count
DRC (as of Sep 21, 2026)	
Confirmed cases	7773
Confirmed deaths	3759
Probable cases	0
Probable deaths	0
Uganda (as of Sep 22, 2026)	
Confirmed cases	20
Confirmed deaths	2
Probable cases	1
Probable deaths	1
France (as of Sep 22, 2026)	
Confirmed cases	1
Confirmed deaths	0
Probable cases	0
Probable deaths	0
Totals	
Confirmed cases	7794
Confirmed deaths	3761
Probable cases	1
Probable deaths	1

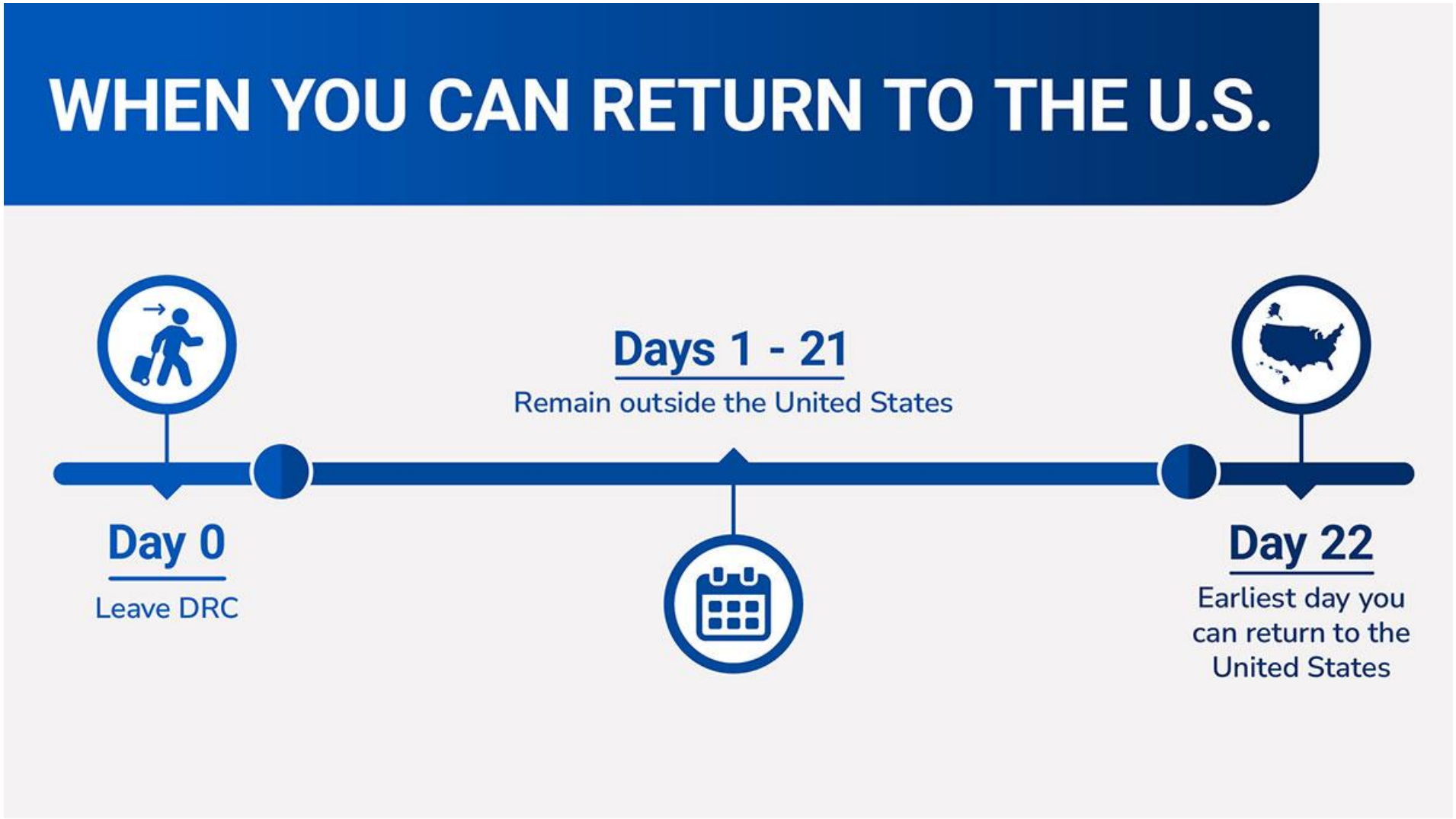


2014 Outbreak in Western Africa was 28,610 cases, 11,308 deaths (39% CFR)

2026 BVD Outbreak in DRC - Current Situation



Travel Restrictions - From DRC



Traveler Restrictions/Monitoring for Arrivals Within 21 Days of Visiting Uganda or South Sudan

- Currently, travelers returning from Uganda or South Sudan undergo exit screening and will arrive at Dulles, Atlanta or JFK where they undergo assessment by CDC staff, including a no-contact temperature check and questionnaire about potential exposures
- Travelers get information about symptoms to look for and on-call phone number for destination's state health department
- CDC provides information about travelers to the state where they will be returning for monitoring
- Currently areas of concern: DRC entire country, Uganda entire country; Countries of concern DRC, Uganda, South Sudan

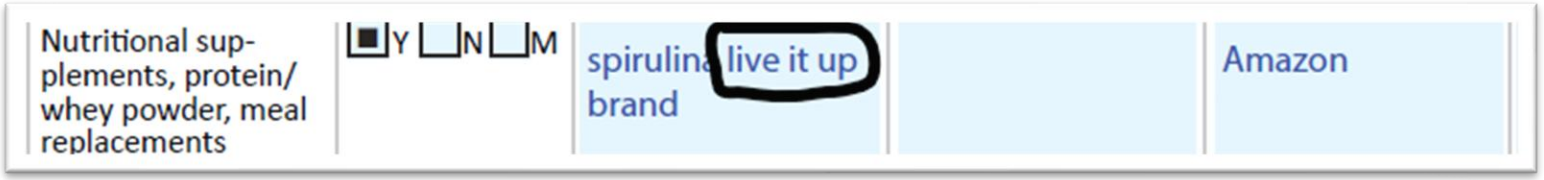
Monitoring Recent Returning Travelers in MN

- We have had 330 individuals referred to us for monitoring from CDC
  - Vast majority are from Uganda, but 10 from South Sudan and 19 from DRC prior to the 21 day exclusion order
- Of the 330:
  - 8 currently pending initial interviews, 322 completed interviews
  - All continue to be low or no known risk exposure
  - 36 currently in monitoring
  - 14 transferred out of MN
  - 249 have completed monitoring



Salmonella Typhimurium

- December 12, 2025 – local cluster of two cases of *S.* Typhimurium identified
  - 15 related cases from other states subsequently identified in SEDRIC
    - SEDRIC = System for Enteric Disease Response, Investigation, and Coordination
    - SEDRIC ingests surveillance data from PulseNet, NARMS, NORS, Epi Info as well as investigation data from epidemiologists, environmental health, regulatory agencies from state, federal partners. SEDRIC then compiles this information for data exploration, secure sharing, and visualization
- December 17 – CDC opened a multi-state investigation
- MN cases reinterviewed with full food history, but leads are slim - however, one interesting potential exposure…



Salmonella Typhimurium

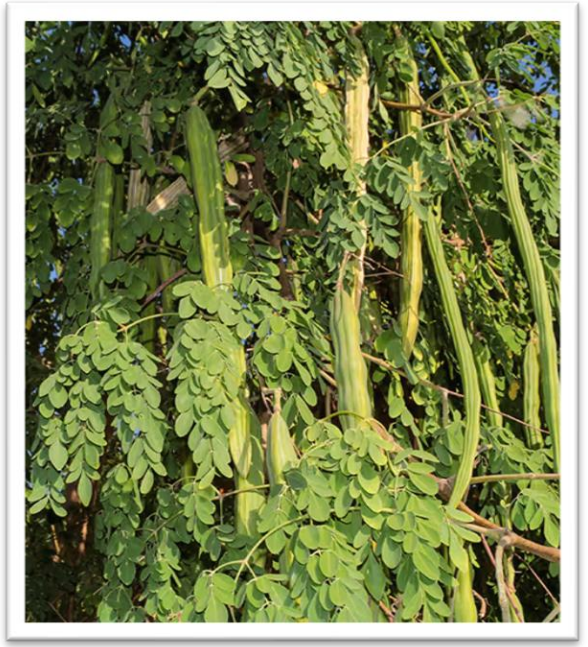
- MDH was not the only ones reinterviewing folks:
  - On January 7 – New York case reports consuming Live it Up brand Super Greens
  - MN cases re-interviewed: another also reports consuming Live it Up brand Super Greens
  - In addition, another MN case also reports consuming Why Not Natural brand moringa capsules
    - Moringa is one of the ingredients in Live it Up brand Super Greens
    - Q: what is moringa??



Nutritional sup-plements, protein/ whey powder, meal replacements	■Y □N □M	spirulina live it up brand		Amazon

Moringa

- *Moringa oleifera*
- Aka “Tree of Life” or “Miracle Tree”, found primarily in South Asia
  - Including India, Nepal and Pakistan
- Reports of potent antioxidant, anticancer, antihypertensive, hepatoprotective, cardioprotective, anti-oxidant and nutritional benefits
- Purported treatment for ulcers, toothache, hypertension, helminthiasis, paralysis, enlarged spleen, and treating malnutrition in infants and lactating mothers
- Wow!



Salmonella Typhimurium

- Multi-state call took place on January 12
  - During call, it was determined that 11 of 14 cases that were re-interviewed reported consuming Live it Up brand Super Greens

ME___M01240631
exposuresofnote: tuna fish, scrambled eggs, chocolate cookies, peanuts (Planter's), banana, lettuce, Live It Up super greens, Pinch Magic fiber powder

NE___NPHL250847
exposuresofnote: Case reports consuming "Live it Up" green powder daily. She mixes the green powder with water and adds coconut oil to it. She purchases directly from their website. No longer has that lot information.

NC___N260060813ERET01
exposuresofnote: reports eating ground beef, steak, chicken, cod, mixed romaine, broccoli, green beans
reports Live it up (Super Greens) - online, Lot number A25I032
Purchased in December but not sure of date. No one else in home took supplement

WI___25MP021872
exposuresofnote: Yes to Live it Up Super Greens (reports these as capsules?) (Amazon) and Why Not Natural Moringa 60 ct capsules (Amazon). Denies gatherings and restaurant meals. Yes to: Milk, cream cheese, ice cream, yogurt, ground beef, other beef, chicken, italian meatballs, eggs (scrambled). Partial food history.



Recall on January 14

- On January 14, FDA has recommended that Superfoods, Inc. (dba Live it Up) recall Live it Up-brand Super Greens dietary supplement powder (original and ***wild berry flavor***) products from the market
- On January 14, 2026, the firm agreed to initiate a voluntary recall
- 45 cases from 21 states
  - 12 hospitalizations, 0 deaths
- Over, right??



Well…

- On January 29, FDA and CDC announce another 20 cases identified as part of the outbreak, including cases of *Salmonella* Newport epidemiologically linked
  - 88% of those individuals interviewed reported eating a product containing moringa leaf powder, including:
    - 31 who reported Live it Up Super Greens supplement powders only (okay, yup, makes sense)
    - ***3 who reported Why Not Natural moringa powder capsules only,*** and
    - 1 person who reported consuming both products
  - Traceback investigation revealed a <u>common manufacturer</u> between Live it Up-brand Super Greens and Why Not Natural Pure Organic Moringa Green Superfood capsules
    - Moringa powder was the only ingredient used in both products
    - Implicated moringa powder was not used in any other products

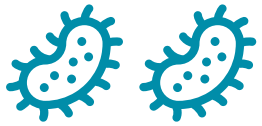


COMPANY ANNOUNCEMENT

Why Not Natural, Houston, Texas, is Recalling its Why Not Natural Organic Moringa – Green Superfood because of Possible Health Risk

Investigation Timeline

12-Dec — **Local cluster identified**



17-Dec — **Multi-state cluster opened**

7-Jan — **Two MN cases report Live it Up-brand Super Greens**



One reports Why Not Natural Moringa

7-Jan — **New York case reports Live it Up Super Greens**



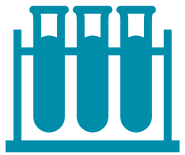
14-Jan — **Web Posting**



14-Jan — **Recall of Live it Up Super Greens**



22-Jan — ***Salmonella*** **detected in Live it up Super Greens**



26-Jan — **Second case reports Why Not Natural**



28-Jan — **Recall of Why Not Natural Moringa**



Verification Through Product Testing

FDA and state partners collected product and ingredient samples for analysis, which ***detected the outbreak strains*** of Salmonella Typhimurium or Newport in six samples

- FDA detected the outbreak strain of *Salmonella* Newport in two moringa leaf powder ingredient samples
- FDA detected the outbreak strain of *Salmonella* Typhimurium in one opened product sample of Why Not Natural Pure Organic Moringa Green Superfood capsules
- The Illinois Department of Public Health and the Wisconsin Department of Health Services each detected the outbreak strain of *Salmonella* Typhimurium in opened Live it Up-brand Super Greens product samples
- The Minnesota Departments of Agriculture and Health detected the outbreak strain of *Salmonella* Typhimurium in an unopened Live it Up-brand Super Greens product sample

There, done, right??

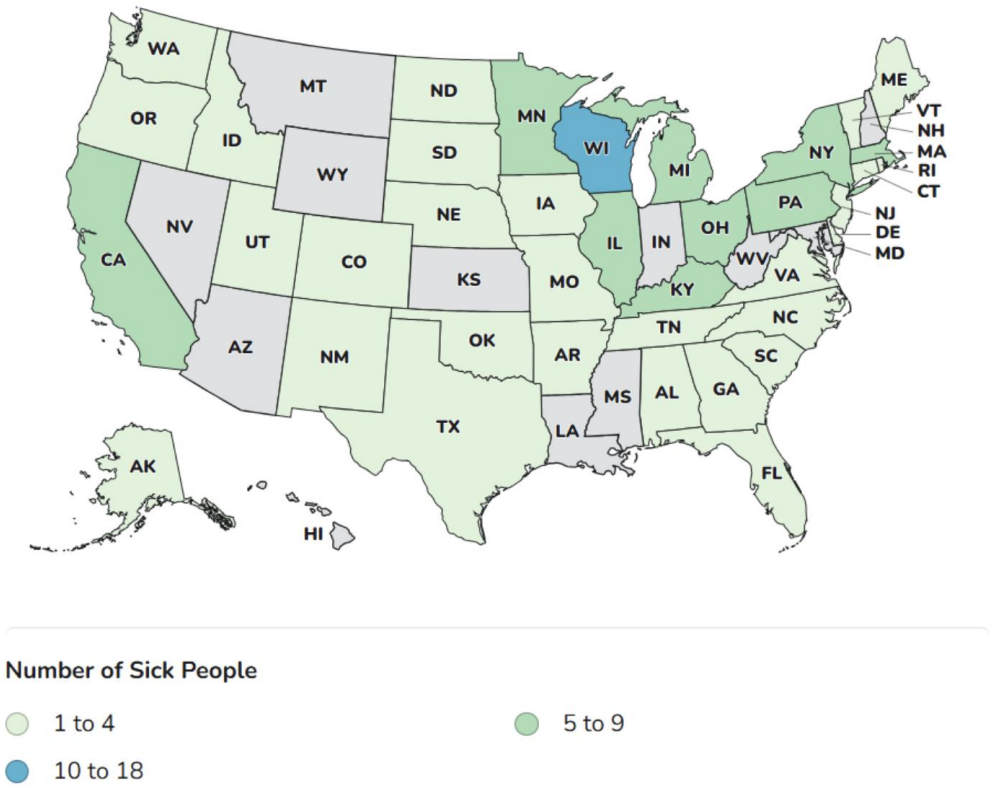
Outbreak Reopened

- May 20 – multistate investigation reopened after new cases added
  - TNVitamins moringa powder identified as the source of new cases
- May 26 – Total Nutrition recalled two brand of TNVitamins Moringa powder
- *Salmonella* Richmond added to the outbreak
- As of July 22, CDC has declared outbreak over, and FDA has ended their investigation



Final Epidemiology

- 131 cases from 38 states
- 30% hospitalized, no deaths
- 74/84 (88%) cases interviewed reported products containing moringa
  - 63 reported Live it Up Super Greens
  - 5 reported Why Not Natural moringa powder
  - 1 reported both Live it Up Super Greens and Why Not Natural moringa
  - 5 reported TNVitamins moringa powder capsules



Minnesota Cases

10 cases

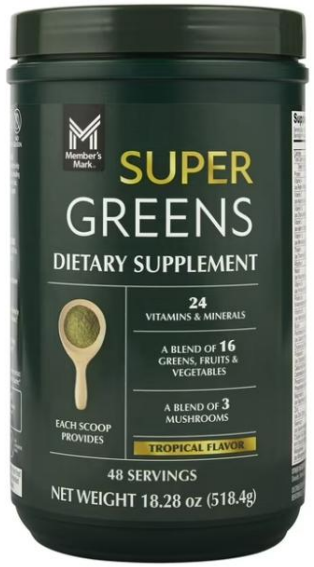
- 5 (50%) hospitalized, no deaths
- 5 reported consuming Live it Up Super Greens
- 2 reported consuming Why Not Natural moringa
- 2 reported consuming TNVitamins moringa
- 1 did not consume a moringa product but may have been secondary to a household member who was a part of the outbreak and consumed Live it Up Super Greens

But Wait, There is MORE!!











Salmonella Kentucky - Rosabella-brand Moringa Powder

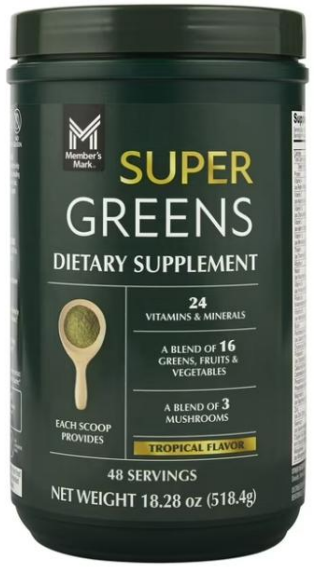
- An outbreak of extensively drug-resistant *Salmonella* Kentucky was linked to:
  - Rosabella-brand moringa powder capsules
- 10 cases from 8 states
- Illness onset dates from 9/26/2025 to 1/8/2026
- Product recalled on 2/13/2026



Salmonella Richmond – Various Products

- An outbreak of Salmonella Richmond was linked to:
  - Food To Live and Member's Mark products made using the same moringa leaf powder
- 11 cases from 7 states
- Onset dates from 5/12/2025 to 9/4/2025





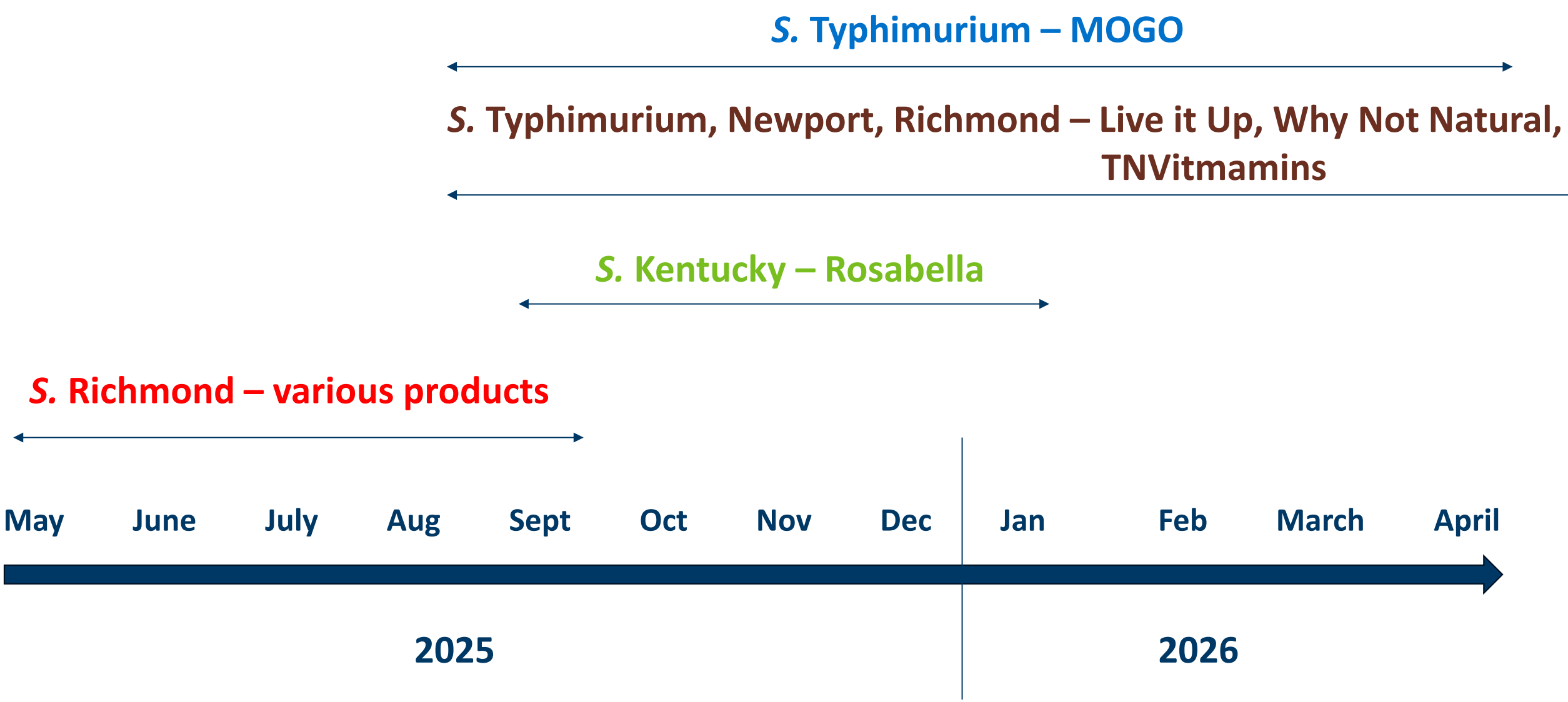


Salmonella Typhimurium – MOGO Moringa

- A 2nd outbreak of *Salmonella* Typhimurium (not closely related to the other Typhimurium outbreak by WGS) linked to:
  - Mogo brand moringa capsules
- 34 cases from 22 states
- Onset dates from 8/27/2025 to 4/30/2026



4 Outbreaks in 1 Year Linked to Moringa Leaf Powder



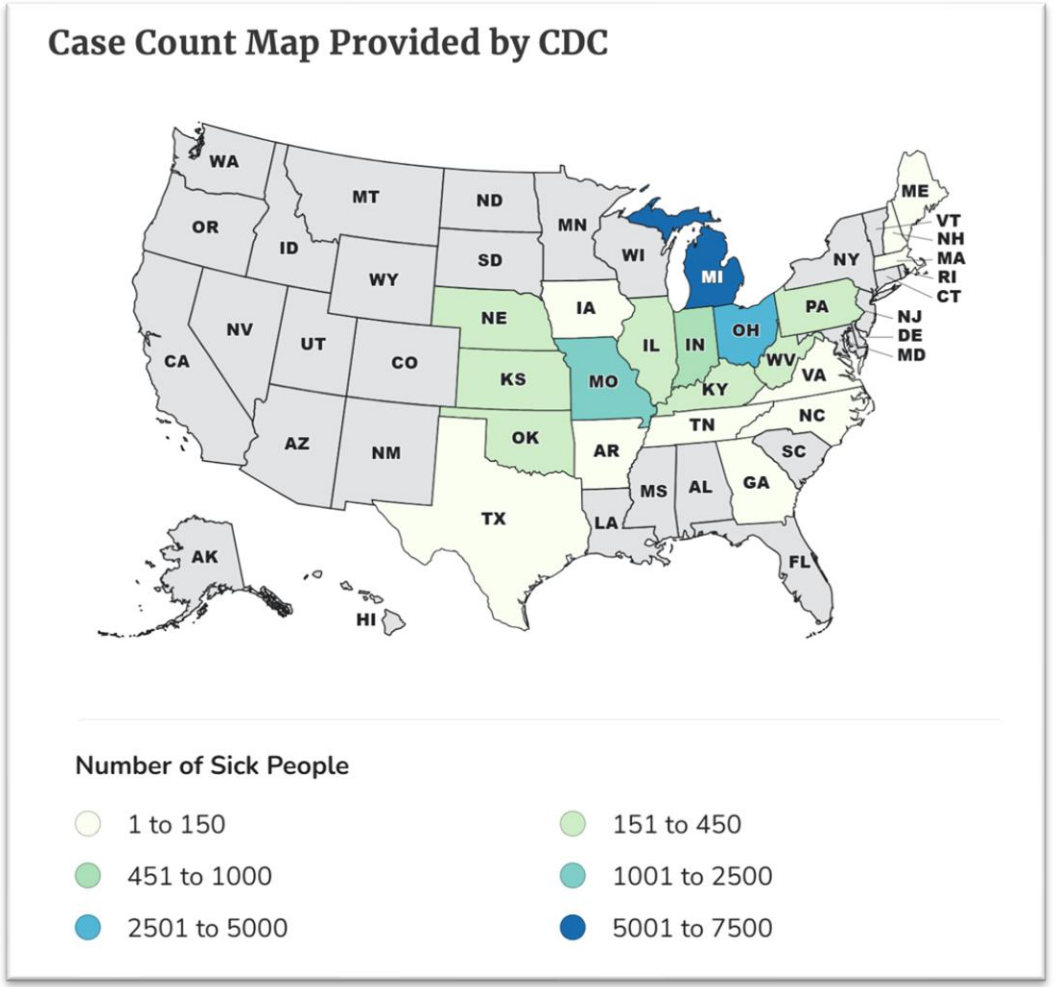
One More?? What Am I Missing??

- Want a hint??



Cyclospora cayetanensis

- Cyclosporiasis (caused by infection with *Cyclospora cayetanensis,* a unicellular parasite) linked to Taco Bell and Taylor Farms lettuce
  - 12,883 illnesses, 21 states
  - 50 hospitalizations (0.38% of all identified cases), 2 deaths (CFR 0.015%)
- No cases identified in MN linked to this particular outbreak



Acknowledgements

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Ruth Lynfield, Sarah Lim, Elizabeth Dufort, Stacy Holzbauer, Maria Bye, Carlota Medus, Kirk Smith, Luke Magnuson, Brooke Wiedinmyer, Kathryn Como-Sabetti, Jennifer Zipprich, Rachel Husmann, Beth Gyllstrom, Jayne Griffith, and all the staff at MDH!!





Thank You!