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Center for Infectious Disease Research and Policy
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**CIDRAP Leadership Forum
Infectious Disease BRIEFING**

August 17, 2016

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1. Vectorborne diseases

- Zika
- Yellow Fever, Chikungunya, Dengue, Malaria
- Zika + Yellow Fever Vaccines

2. Polio

3. Influenza

4. Antibiotic resistance

- MCR-1, ASP landing page

5. Anthrax

6. Ebola + vaccine

7. CEPI - Coalition for Epidemic Preparedness and Innovation

8. MERS-CoV

9. Other

- Cyclospora infections, Guinea worm

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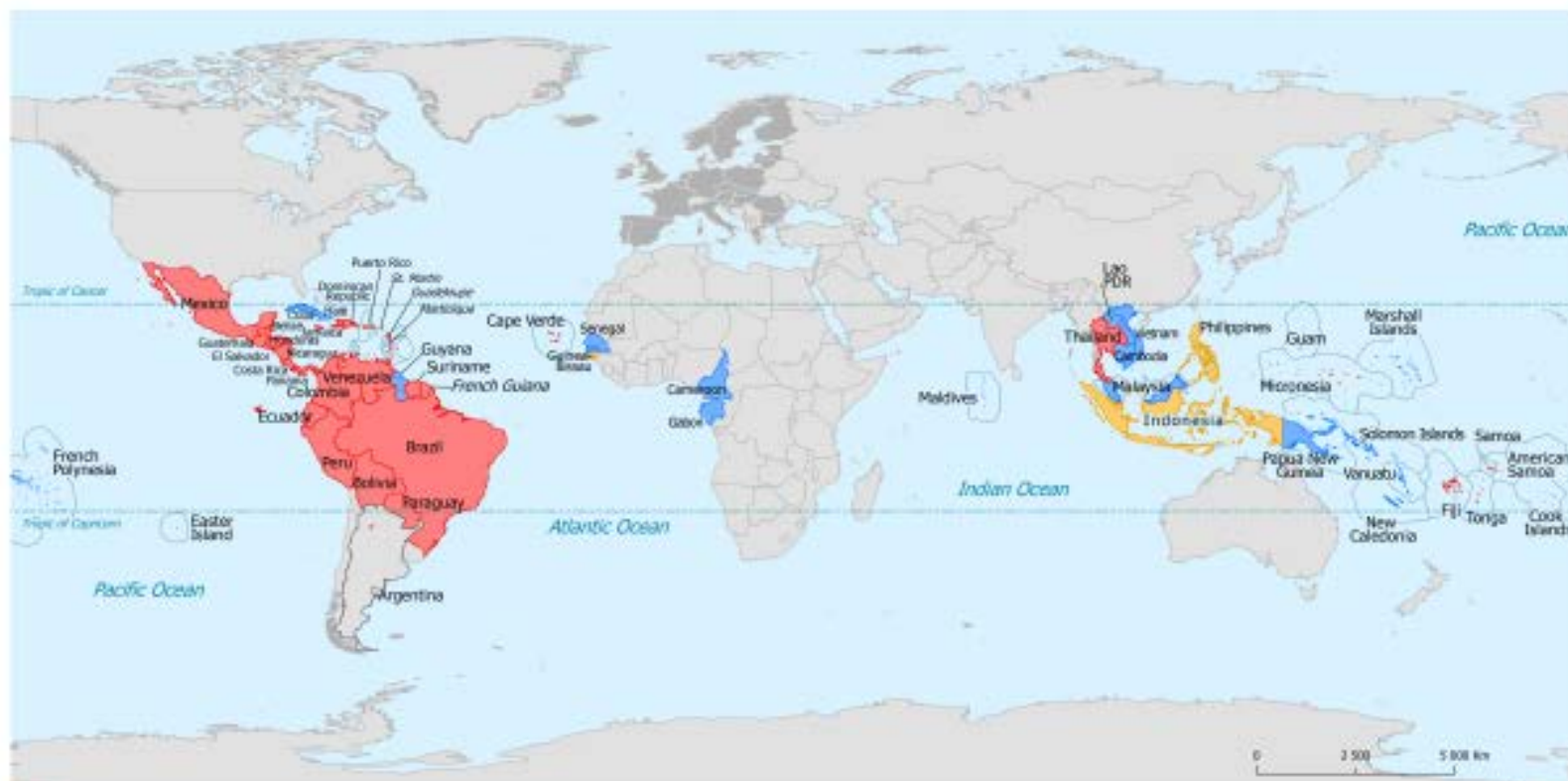
7. **CEPI - Coalition for Epidemic Preparedness and Innovation**

8. **MERS-CoV**

9. **Other**

- Cyclospora infections, Guinea worm

Countries or territories with reported confirmed autochthonous cases of Zika virus infection in the past three months, as of 21 July 2016



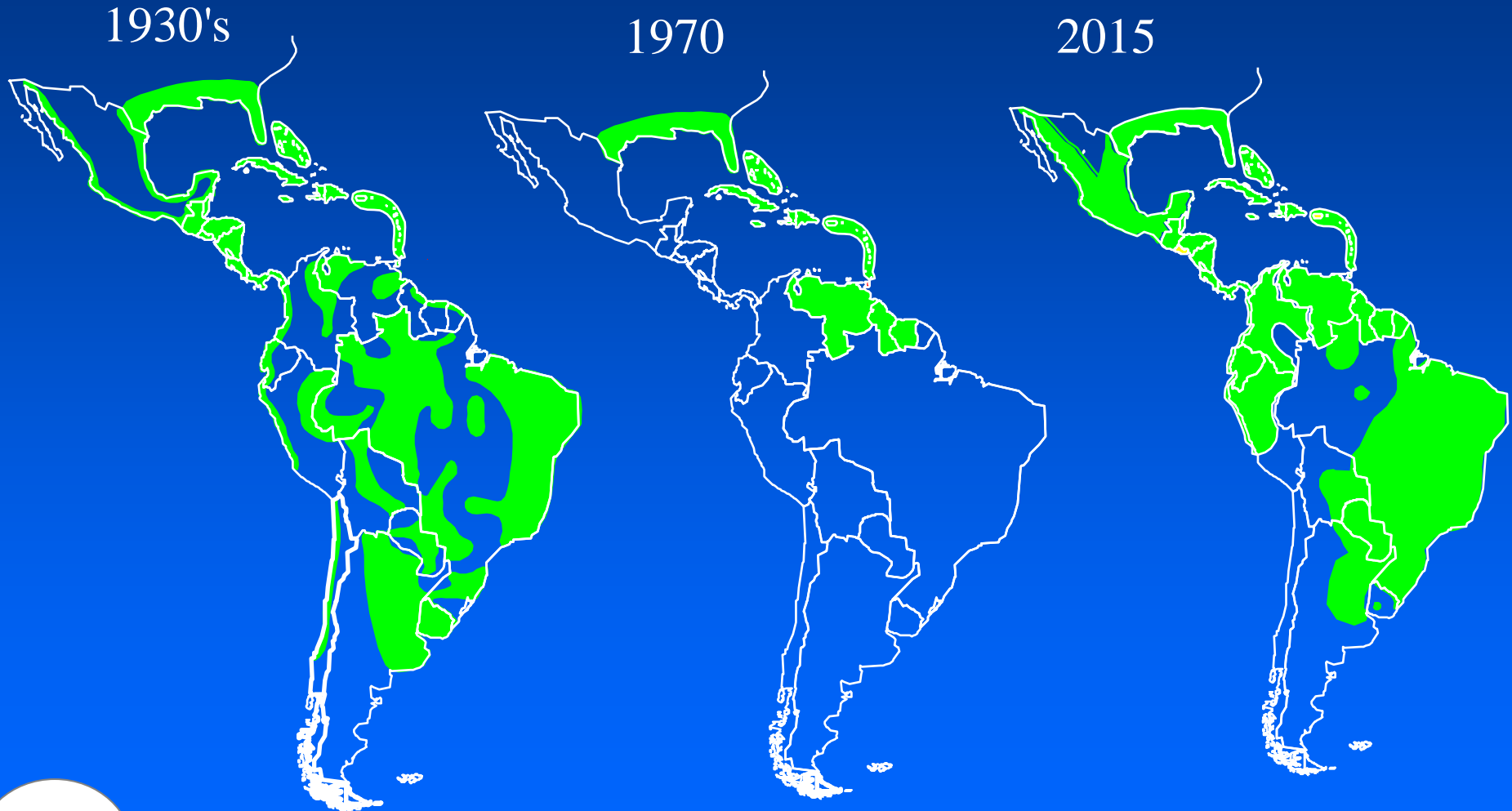
- Widespread transmission in the past three months
- Sporadic transmission in the past three months
- Past transmission (2007 – three months ago)

- EU/EEA Member States, including outermost regions
- Other countries and territories
- Maritime Exclusive Economic Zones for non-visible areas

Aedes aegypti



Aedes aegypti Distribution in the Americas



Adapted from Gubler, 1998



About ESTIMATED range of *Aedes aegypti* and *Aedes albopictus* in the United States, 2016 Maps



 *Aedes aegypti*




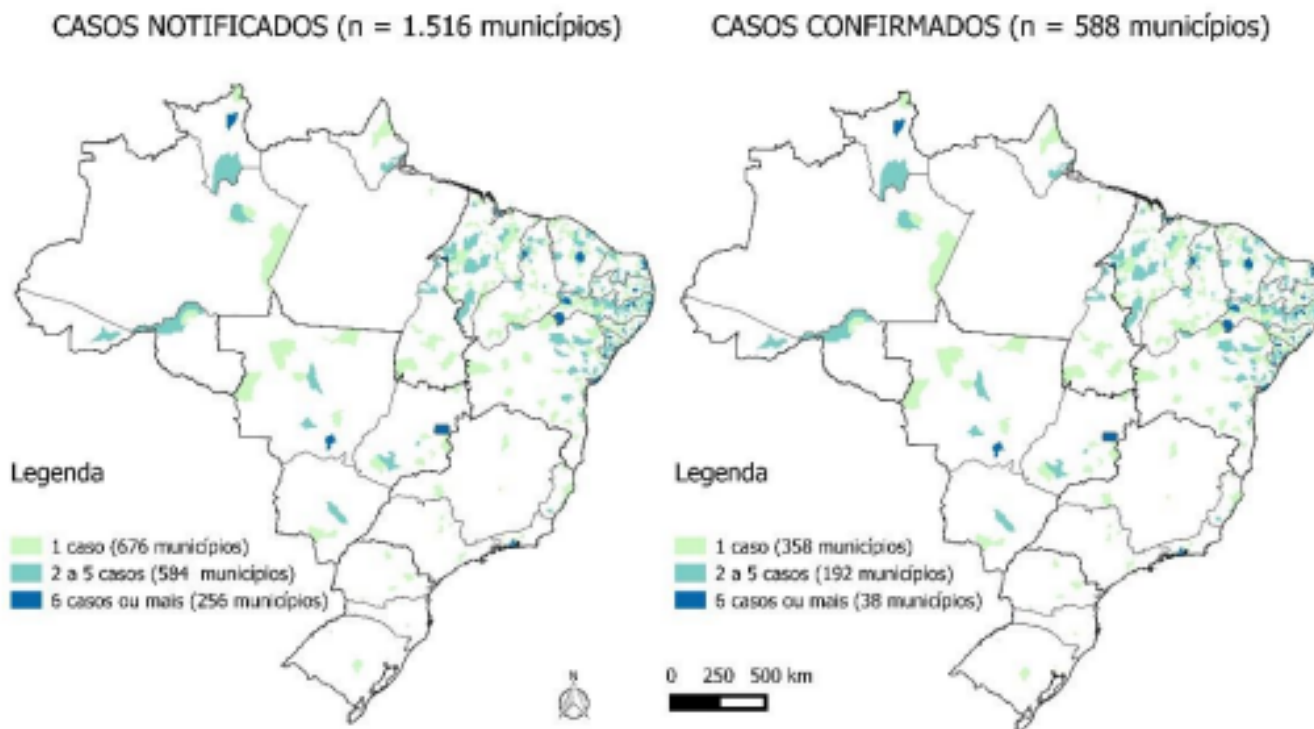
 *Aedes albopictus*

Figura 1 – Distribuição espacial com casos notificados e confirmados de microcefalia e/ou alteração do SNC, Brasil, até a SE 26/2016.



Fonte: Secretarias de Saúde dos Estados e Distrito Federal (dados atualizados até 02/07/2016).



Zika prompts FDA to curb blood collection in Florida

Filed Under: [Zika](#)

[Lisa Schnirring](#) | News Editor | [CIDRAP News](#) | Jul 28, 2016



Based on Florida's investigation into the first possible locally acquired Zika virus cases in the continental United States, the US Food and Drug Administration (FDA) yesterday asked blood establishments in the two affected neighboring counties to immediately stop collecting blood.

In other developments, Zika infection numbers in Puerto Rico continue to rise at a fast clip, along with further increases in US travelers, including several pregnant women.

Testing, pathogen inactivation in blood

The blood collection step, which affects Broward and Miami-Dade counties, is a temporary measure to protect the blood supply until the blood groups are able to screen each unit of blood for Zika RNA or implement approved or investigational pathogen inactivation technology, the FDA said in its statement yesterday.

The Florida Department of Health (Florida Health) is investigating four suspected locally acquired Zika cases, two in each of the counties. In an update today, Florida Health reported two more travel-linked cases, both of them in pregnant women. Overall, the state has recorded 328 travel-related Zika cases, plus 55 more in pregnant women.



vladm / iStock

The New York Times

HEALTH

Spraying Begins in Miami to Combat the Zika Virus

By LIZETTE ALVAREZ and PAM BELLUCK AUG. 4, 2016

MIAMI — Aerial spraying of [insecticide](#) began Thursday in the one-mile-square area of Miami where mosquitoes have infected people with the Zika virus, and officials reported some glimmers of progress.

“We are very encouraged by the initial results, which showed a large proportion of the mosquitoes killed,” Dr. Thomas R. Frieden, the director of the [Centers for Disease Control and Prevention](#), said at a news conference here. But Dr. Frieden added, “This is going to take an intense effort.”

On Monday, faced with 14 locally transmitted infections, the C.D.C. took the unprecedented step of advising people to stay away from a location in the continental United States, urging pregnant women not to travel to the one-square-mile area where 12 of the cases are linked.

That area is part of the Wynwood section of Miami, north of downtown. Since then, mosquito-control efforts have been accelerated and teams from the Florida Department of Health have been testing people in the neighborhood, a mix of industrial and residential buildings.



Experts warn spraying may not be very effective against Aedes

Filed Under: [Zika](#)

[Stephanie Soucheray](#) | News Reporter | [CIDRAP News](#) | Jul 12, 2016 [f](#) Share

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On the heels of a federal recommendation to begin aerial spraying in Puerto Rico as a way to beat back *Aedes* mosquitoes, the hosts of the Zika virus, several vector control experts are voicing their concern over the plan.

"I consulted the CDC [Centers for Disease Control and Prevention] on this topic, and I recommended against it," said infectious disease and mosquito control expert Duane Gubler, ScD, MS. "It's uncharted territory. It's expensive. And it's temporary."

Gubler explained that while spraying is often used successfully against floodwater mosquitoes, the *Aedes* mosquito, which can spread Zika, yellow fever, dengue, and chikungunya, doesn't live in easy-to-reach places.



US Air Force, Master Sgt. Brian Ferguson / Flickr cc

C-130 Hercules airplane used for spraying insecticide.

New case of non-travel related Zika in Palm Beach County

Filed Under: [Zika](#)
 Stephanie Soucheray | News Reporter | CIDRAP News | Aug 08, 2016

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Florida Governor Rick Scott announced today that the Florida Department of Public Health (Florida Health) is investigating a case of locally transmitted Zika in Palm Beach County. The case is the first non-travel related Zika transmission outside of Miami-Dade and Broward counties in Florida. As of today, the state has 17 cases of non-travel related Zika.



Florida Health is conducting door-to-door outreach, mosquito abatement, and sampling in Palm Beach County. According to a statement from the governor's office, the person had recently traveled to Miami-Dade County, and Florida Health officials are still saying that active transmission of Zika is limited to a 1-square mile area of the Wynwood neighborhood north of downtown Miami.

Another local Zika case reported in Miami

Filed Under: [Zika](#)
 Stephanie Soucheray | News Reporter | CIDRAP News | Aug 05, 2016

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Another case of locally transmitted Zika has been identified in Miami, the Florida Department of Public Health (Florida Health) announced today.

Florida Health said the case is within the 1 square mile of Miami-Dade county where 14 other locally transmitted Zika cases have been found. This brings the total of locally transmitted Zika cases in Miami to 16, with only 1 case identified outside the Wynwood neighborhood.



Wally Gobetz / Flickr cc

In its daily Zika update, Florida Health said, "This individual was tested as one of the 26 close contacts around the two original cases. This case is considered probable and has been sent to CDC [Centers for Disease Control and Prevention] for confirmatory testing, along with the three other probable cases."

Florida Health said active transmission is still occurring only in 1 square mile area north of downtown. Yesterday authorities completed testing of a 10-block area within the transmission zone, and of the 142 people tested, no one tested positive for Zika virus. So the agency removed that smaller area in the northwest quadrant from the official transmission zone.

The New York Times

HEALTH

Patch of Miami Is Ground Zero for the Zika Virus

By PAM BELLUCK AUG. 8, 2016

Around July 4, a patient entered an emergency room in Miami-Dade County with a [fever](#), a rash and [joint pain](#) — three of the four classic symptoms of the Zika virus. By this point, there had already been about 1,600 other Zika cases in the continental United States, but it soon became clear that this one was different.

All the other patients had either traveled to Latin America or the Caribbean, where Zika had been raging for months — or they had sex or close contact with someone who had been there. Not this patient.

It was the case public health officials had been expecting and dreading: A person in the continental United States had been infected from the bite of a local mosquito.

It would turn out to be the first of a wave of cases health officials are now scrambling to identify and contain. They are investigating 17 suspected cases of locally transmitted Zika — including 13 linked to a an area with a radius of 500 feet that touches two neighboring businesses in the Wynwood section of Miami.

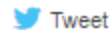




Florida reports 4 more local Zika cases; Texas cites fatal microcephaly

Filed Under: [Zika](#)

Lisa Schnirring | News Editor | CIDRAP News | Aug 09, 2016



Florida today reported four more locally acquired Zika cases, all from the same small area thought to be the source of nearly all of the infections, prompting a call from Gov. Rick Scott for Congress to return to Washington, DC, to pass a stalled Zika funding bill.

Meanwhile, Texas reported its first fatal Zika-linked microcephaly case, in a baby born to a mother infected outside the United States.

Local Florida cases climb to 21

In a statement, Scott said the newest cases are all from a small area of the Wynwood neighborhood, less than 1 square mile. The illnesses lift Florida's non-travel Zika cases to 21.

The Wynwood neighborhood is just north of downtown Miami and is a popular restaurant and entertainment district.



MCC_Indianapolis/ Flickr cc



New case of locally transmitted Zika in Miami as details about first patients emerge

Filed Under: [Zika](#)

[Stephanie Soucheray](#) | News Reporter | [CIDRAP News](#) | Aug 10, 2016



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Today the Florida Department of Health (Florida Health) said there was one new case of non-travel related Zika in Miami-Dade County. Officials said in a statement they believe this case originated in a pocket of the Wynwood neighborhood linked to other cases of locally transmitted Zika.

"The department still believes active transmissions are only taking place within the identified area that is less than one-square mile in Miami-Dade County," Florida health said in their daily Zika update. There are now 22 cases of locally transmitted Zika virus in Florida.

Florida Health also reported 14 new travel-related cases of Zika, raising those numbers to 382 cases. Fifty-seven of those cases are in pregnant women.



Damrongpan Thongwat/ iStock



Florida detects 3 more local Zika cases as feds shift funds

Filed Under: [Zika](#)

Lisa Schnirring | News Editor | CIDRAP News | Aug 11, 2016

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Florida today reported three more locally acquired Zika virus cases, all linked to the same affected part of Miami, as a top federal health official announced an \$81 million shift in funding to keep the battle against the virus going.

Florida total grows; affected area shrinks

The new cases announced by Florida today push the number of local Zika infections to 25. All patients were exposed in the same area of Miami-Dade County, according to a statement from the Florida Department of Health (Florida Health).

Florida Gov. Rick Scott also said in a statement today that Florida Health has cleared four more blocks in the Wynwood neighborhood that has been the hot spot for local illnesses. Last week, the state cleared 10 blocks of the neighborhood. "Cleared" means testing was done and no people tested positive.

With 14 blocks now cleared, Scott said, "This means the area where we believe active transmissions are occurring in the state is significantly reducing."



Google Earth

Wynwood neighborhood of north Miami.

HEALTH

Obama administration declares Zika public health emergency in Puerto Rico

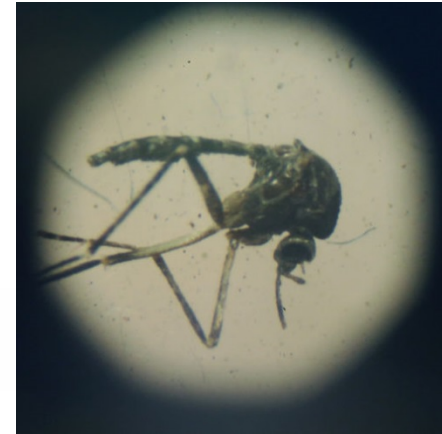
By DAVID NATHER [@DavidNather](#)

AUGUST 12, 2016

WASHINGTON — The Obama administration declared a public health emergency in Puerto Rico late Friday over the Zika virus, saying the outbreak on the island has become serious enough to require the extraordinary step.

The declaration by the US Department of Health and Human Services allows the Puerto Rican government to receive more federal funds and reassign local public health officials to step up the efforts to fight the virus.

“This emergency declaration allows us to provide additional support to the Puerto Rican government and reminds us of the importance of pregnant women, women of childbearing age, and their partners taking additional steps to protect themselves and their families from Zika,” Health and Human Services Secretary Sylvia Burwell said in a statement.





More local Zika cases in Florida as Puerto Rico numbers soar

Filed Under: [Zika](#)

Stephanie Soucheray | News Reporter | CIDRAP News | Aug 12, 2016



Florida's Department of Health (Florida Health) reported three new cases of non-travel-related Zika today, including one outside the 1-square-mile "hot zone" in the Wynwood neighborhood of Miami. There are now 28 locally transmitted Zika cases in Florida.

Florida Health officials said they believe active transmission is occurring only in a 10-block area of Miami-Dade County, just north of downtown Miami. All active investigations currently under way are being conducted in Miami-Dade County.

There were also 10 new travel-related Zika cases reported in the state. Florida has 413 travel-related cases, and 58 of those are in pregnant women.

Earlier this week, the *Wall Street Journal* reported that the first case of locally transmitted Zika virus in Miami was in a pregnant woman. All pregnant women are still encouraged to avoid the Wynwood neighborhood, and Florida Gov. Rick Scott has said Zika testing will be available to women at each prenatal appointment.



Felix Mizioznikov / iStock

Miami park just outside the Wynwood 'hot zone.'



Texas reports Zika case imported from Miami, Florida reports 2 new local Zika infections

Filed Under: [Zika](#)

[Lisa Schnirring](#) | News Editor | CIDRAP News | Aug 15, 2016

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Texas health officials today reported a Zika illness in a resident who traveled to Miami, as Florida today reported two more locally acquired Zika infections in Miami-Dade County, signaling ongoing transmission in what officials think is still a small area.

The Texas Department of State Health Services (TDSHS) said the patient, who is from El Paso County, is the state's first Zika case linked to travel within the continental United States, according to an e-mail press release.

The two developments come just days after another major US Zika development: the federal declaration of a public health emergency in Puerto Rico due to surging case numbers there. With the summer mosquito season in full swing, Puerto Rico and a handful of counties in southern Florida—both with rising numbers of local cases—are the US hot spots of Zika activity.



Airman Magazine/ Flickr cc

'Nobody's looking': why US Zika outbreak could be bigger than we know

Zika tests are complicated, time-consuming and expensive, leading scientists to believe states at risk for the disease may already have undetected cases

If you were bitten by a mosquito, and within two weeks had a fever, bloodshot eyes, a rash and felt generally achy, you would have four classic symptoms of Zika. But if you or your sexual partner didn't travel to Latin America, you might also have a hard time getting tested.

That's because Zika tests are complicated, time-consuming, sometimes inaccurate and expensive. These obstacles have led some scientists to believe that several states at risk for spread of the disease may already have Zika outbreaks, without even knowing it.

"There is not active surveillance going on in the at-risk states in the United States," said Peter Hotez, dean of the National School of Tropical Medicine at Baylor College of Medicine in Texas. "I think there's not just Zika transmission going on in [Miami](#), it's going on all up and down the Gulf Coast and in Arizona, it's just that nobody's looking."



Jessica Glenza in New York

 @JessicaGlenza

Wednesday 17 August 2016 07:30 EDT

Flooding might increase mosquitoes and Zika risk in Louisiana

Ryan W. Miller, USA TODAY 2:10 p.m. EDT August 15, 2016



(Photo: AP Photo/Felipe Dana, File)

The massive flooding across southeastern Louisiana over the weekend could bring an increased risk for the Zika virus after the waters recede, an expert in tropical medicine said Sunday.

Strong floodwaters often wash away mosquito eggs, which would be good news.

But mosquito eggs already laid in containers, such as empty buckets or tires, could be protected from surging water and then be stimulated to hatch after the flooding recedes, said [Peter Hotez](#), dean of the National School of Tropical Medicine at [Baylor College of Medicine](#) in Houston.

"We could be seeing an increase number of *Aedes aegypti* now in the coming weeks," he said about the mosquito species that carries the Zika virus. "This is crunch time."

Genetically Engineered Mosquitoes Get A Green Light To Fight Zika In Florida

AUG 5, 2016 @ 07:21 PM 1,248 VIEWS



Eric Mack, CONTRIBUTOR

I cover science and innovation and products and policies they create. [FULL BIO](#) ✓

Opinions expressed by Forbes Contributors are their own.

The [U.S. Food and Drug Administration](#) says a plan to release lab-grown mosquitoes near Key West, Florida that could fight the spread of Zika and other dangerous viruses will not have significant impacts on the environment.

The final finding from the FDA's environmental review clears a proposed field trial to go forward of British biotech company Oxitec's genetically engineered mosquito at Key Haven, Florida. The mutant male mosquitoes carry an added gene that leads them to produce offspring that cannot survive to maturity when they mate with wild female *Aedes aegypti* mosquitoes in the wild.

Aedes aegypti mosquitoes carry Zika, dengue and yellow fever, among other viruses. Earlier this week, the Centers for Disease Control and Prevention took the unusual step of issuing a travel advisory within the continental U.S. following the [confirmation of more than a dozen new cases of Zika in south Florida](#).

Zika can be spread sexually, and while most healthy adults will recover fine, it causes microcephaly and other birth defects when pregnant women are infected with the virus.

The FDA's stamp of approval leaves just one final hurdle for Oxitec to clear before it can begin the field trial, and that is the approval of the Florida Keys Mosquito Control District.

August 16, 2016

Spread of Zika Virus Raises Legal Issues for Employers

By Gayle Cinquegrani

Aug. 15 — Zika has now spread to the U.S., so many lawyers are gearing up to help employers handle the practical and legal ramifications of the virus.

“I’m getting a lot of calls every day,” mainly from employers who have pregnant employees and employees who work outside, Lisa Berg, a shareholder in Stearns Weaver Miller Weissler Alhadeff & Sitterson P.A., told Bloomberg BNA Aug. 11. Berg’s law firm is in Miami, where the first domestic cases of Zika surfaced in the Wynwood neighborhood north of downtown in early August.

At least one law firm—Ogletree, Deakins, Nash, Smoak & Stewart—considers the legal issues sufficiently compelling that it formed a Zika rapid response team. The Ogletree team consists of lawyers from numerous practice groups in several cities who will counsel employers on their obligations under various statutes, including the Occupational Safety and Health Act, the Americans with Disabilities Act and the National Labor Relations Act.



Joint deformity reports expand scope of Zika birth defects

Filed Under: [Zika](#)

Lisa Schnirring | News Editor | CIDRAP News | Aug 10, 2016

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Brazilian researchers yesterday described for the first time another complication in babies born with Zika virus infection: a joint deformity known as arthrogryposis.

The new findings underscore warnings from top health officials over the past several months that microcephaly and brain malformations could be the tip of the iceberg regarding birth defects linked to the virus. Though microcephaly was the first Zika-linked manifestation seen in newborns, clinicians who have observed a range of problems refer to the birth defects as congenital Zika syndrome.

In other Zika research developments today, a team led by the University of Kansas unveiled a new Zika risk map that accounts for more factors than earlier maps.



The BMJ 2016

Clinical pictures show children with arthrogryposis.



Zika



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Last updated Aug 12, 2016

Latest Cases & General Information

[Zika virus \(CDC landing page\)](#)

[Latest Zika situation reports \(WHO\)](#)

[Zika virus infections and complications called Public Health Emergency of International Concern \(WHO, Feb 1, 2016\)](#)

[Zika virus disease, frequently asked questions about Zika virus \(WHO Emergencies Preparedness, Response\)](#)

[Zika virus infection \(PAHO/WHO landing page\)](#)



Maps

[2016 Zika outbreak timeline map \(HealthMap\)](#)

[Pacific Disaster Center maps \(updated periodically\)](#)

[Zika in the United States, explained in 9 maps \(Vox, Aug 4, 2016\)](#)

[Zika cases in the United States \(*New York Times*, Jul 29, 2016\)](#)

[Maps predict possible Zika hot spots \(*USA Today*, Apr 28, 2016\)](#)

[Mapping global environmental suitability for Zika virus \(*eLife* study, Apr 19, 2016\)](#)

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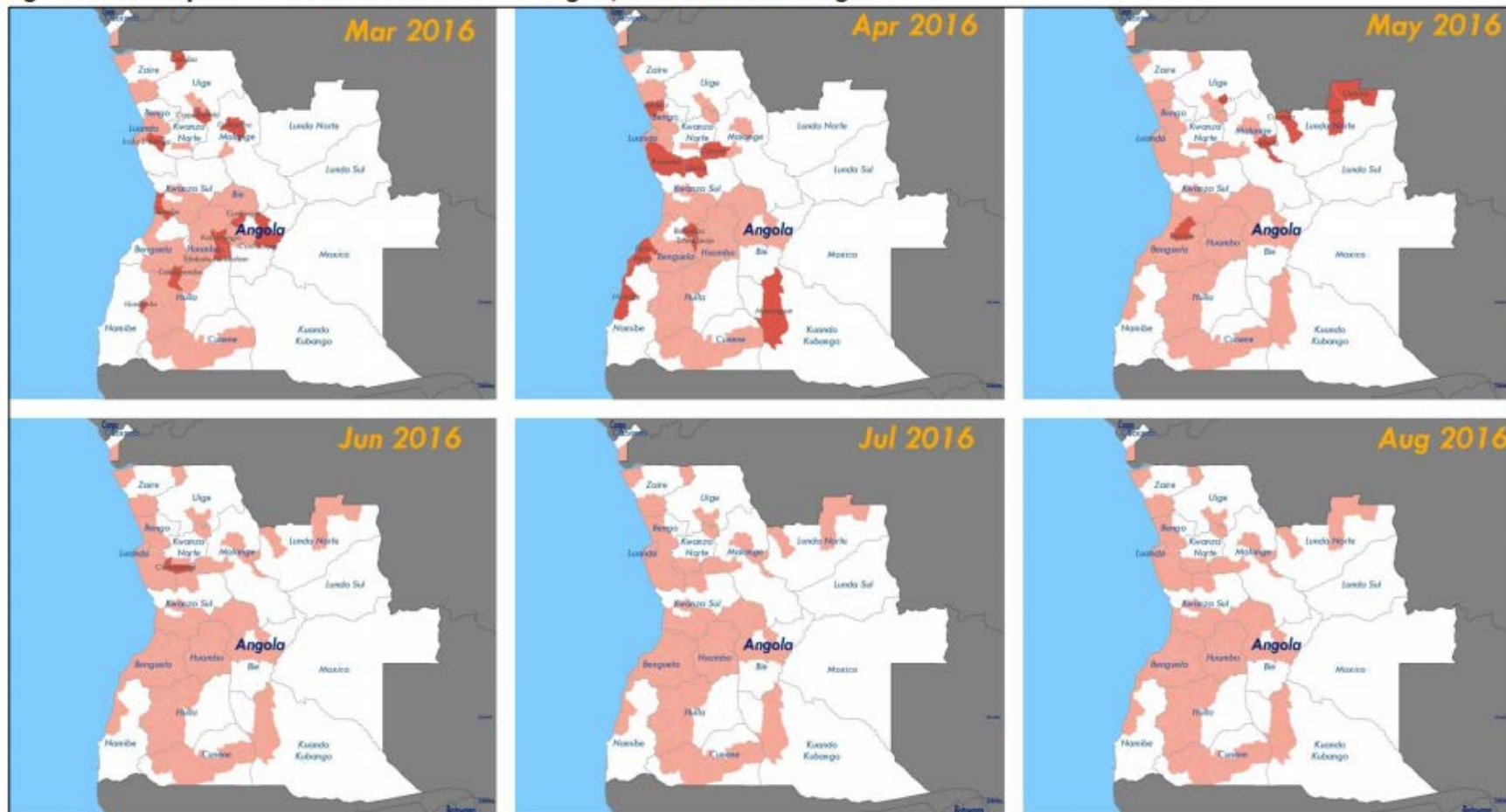
- Cyclospora infections, Guinea worm



SUMMARY

- In Angola, no confirmed cases have been reported in July or August. As of 4 August 2016, a total of 3867 suspected cases have been reported, of which 879 are laboratory confirmed. The total number of reported deaths is 369, of which 119 were reported among confirmed cases. Confirmed cases have been reported in 16 of 18 provinces.
- The priorities for the response in Angola are to complete the pre-emptive vaccination campaigns in bordering areas and at-risk districts, to maintain a strong surveillance and case-finding system, and to continue vector control activities.
- Mass reactive vaccination campaigns have covered most of the affected parts of Angola (Fig 6). The pre-emptive vaccination phase targeting three million people in 18 districts is expected to start on 15 August. Four additional districts which border Namibia will be vaccinated in early August.
- As of 8 August, the Democratic Republic of The Congo (DRC) has reported a total of 2269 suspected cases.
- As of 8 August, out of 1943 samples analysed in DRC 74¹ cases have been confirmed including 16 deaths (CFR: 21.6%) (Table 1). Confirmed cases have been reported in seven of 26 provinces. Of the 74 confirmed cases, 56 are reported as imported from Angola, three are sylvatic² (not related to the outbreak), 12 are autochthonous³ and three are under final investigation.
- Preventive vaccination campaigns are scheduled to begin on 17 August in 32 Health Zones in Kinshasa province and 16 Health Zones in border areas with Angola. Fractional dosing, also known as emergency vaccines, will be implemented in the vaccination campaigns in Kinshasa.

Figure 2. Monthly timeline of infected districts in Angola, March 2016 to 4 August 2016



Map Scale (A3) 1:15,000,000
1 cm = 150 km
Coordinate System: GCS WGS 1984
Datum: WGS 1984
Units: Degree

Source: Epidemiological report of cases of Yellow fever, Ministry of Health, Angola.

 Newly Infected Districts
 Infected Districts

The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its boundaries, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.



News Scan for Aug 05, 2016

Yellow fever slows in Angola but not in DRC as WHO response criticized

The pace of yellow fever cases in Angola has slowed further but shows no sign of relenting in the Democratic Republic of the Congo (DRC), the World Health Organization (WHO) said in an update today. Meanwhile, an Associated Press (AP) report highlighted the organization's response failings, including a million lost doses of vaccine.

Angola has reported 3,818 cases since its outbreak began, 70 more than reported last week. Of those, 879 are lab-confirmed. The country has had 369 deaths (119 lab-confirmed), up by 5 from last week.

None of the Angolan yellow fever cases, however, were reported in July, a promising sign, the WHO said. But it added, "However, a high level of vigilance needs to be maintained throughout the country, and the pre-emptive mass vaccination campaign will be implemented as planned."

The DRC has reported 2,051 yellow fever cases, including 76 confirmed cases and 95 deaths, the agency said. That number is up by 144 cases, compared with a 109-case increase the week before. The fatality count did not increase from the previous week.

The WHO said, however, "Further cases are expected to be confirmed in the next days or weeks due to the backlog at the national laboratory which stemmed from technical issues that are now resolved."



News Scan for Aug 12, 2016

Yellow fever declines in Angola, but is still spreading in DRC

Yellow fever has declined in Angola, with no confirmed cases reported since June, but the disease in the Democratic Republic of the Congo (DRC) is spreading to new provinces and new parts of already affected provinces, the World Health Organization (WHO) said today in a weekly update.

Despite the drop-off in cases in Angola, the source of the DRC's outbreak, the WHO recommends maintaining a high-level of vigilance, and a mass vaccination campaign targeting 3 million people in 18 districts is expected to launch on Aug 15. Yellow fever vaccination is also scheduled to take place this month in four districts that border Namibia.

In the DRC, preventive vaccination campaigns are scheduled to start on Aug 17 in Kinshasa province using fractional dosing, a strategy the WHO recently approved for stretching limited vaccine supplies on an emergency basis. Vaccination will also target health zones that border Angola.

Since December 2015, Angola has reported 3,867 yellow fever cases, 879 of them confirmed. As of Aug 8 the DRC had reported 2,269 cases, 74 of them confirmed. Of that country's confirmed cases, 56 were imported from Angola, 12 were locally acquired, 3 were sylvatic (from wild animals), and 3 are under investigation, the WHO said.

Aug 12 WHO yellow fever update



Mass vaccination campaign to protect millions against yellow fever in Angola and Democratic Republic of the Congo

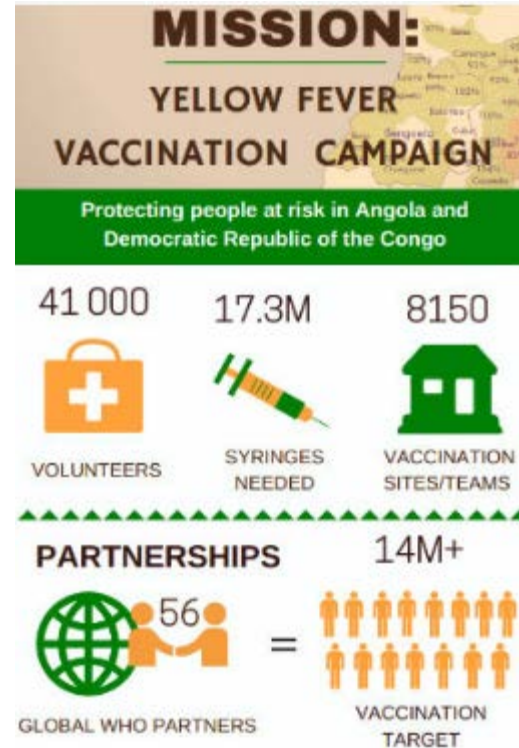
August 2016

One of the largest emergency vaccination campaigns ever attempted in Africa will start in Angola and the Democratic Republic of Congo this week as WHO and partners work to curb a yellow fever outbreak that has killed more than 400 people and sickened thousands more.

Working with Ministries of Health in the 2 countries, WHO is coordinating 56 global partners to vaccinate more than 14 million people against yellow fever in more than 8000 locations. The yellow fever outbreak has found its way to dense, urban areas and hard-to-reach border regions, making planning for the vaccination campaign especially complex.

Emergency yellow fever vaccination campaigns have already reached more than 13 million people in Angola and more than 3 million in Democratic Republic of the Congo. These campaigns have been crucial to stopping the spread of the outbreak. Some areas are still considered at high risk and so preventive vaccination campaigns are planned for the capital city of Kinshasa in Democratic Republic of the Congo and along the country's border with Angola, which spans 2646 km. The preventive vaccination campaign aims to build protection in the population perceived to be at high risk of getting infected and prevent potential spread and expansion of the current outbreak.

Kinshasa has more than 10 million people, with only 2 million already vaccinated against yellow fever. With local transmission of the virus and low immunity in the population, there is a potential risk that the deadly outbreak could spread to other urban areas.



Yellow fever emergency forces officials to combat virus with tiny dose of vaccine

By Kai Kupferschmidt | Aug. 10, 2016 , 4:00 PM

It's an unprecedented emergency measure, but one that could become the norm: In a bid to stop an outbreak of yellow fever, more than 8 million people in Kinshasa, the capital of the Democratic Republic of the Congo (DRC), will be vaccinated using just one-fifth the normal dose. The campaign, scheduled to start next week, comes as yellow fever continues to spread in the DRC and vaccine demand outstrips supply.

Scientists feel confident that the lower doses will offer protection, at least for the short term, but they are urging studies accompanying the campaign to assess whether routine use of the lower dose is an option.

The current outbreak started in neighboring Angola in December of last year and later spread to the DRC. According to the World Health Organization (WHO), more than 16 million people in the two countries have already been vaccinated, and Angola has reported no new cases for more than 6 weeks. But new cases are still emerging in the DRC, which has reported more than 2000 suspected cases so far and 95 deaths.

Fears of global yellow fever epidemic grow as vaccine stocks dwindle

One of the largest emergency vaccination campaigns ever attempted aims to stop virus taking hold in central Africa



A last-ditch effort to prevent yellow fever spreading through Kinshasa in the [Democratic Republic of the Congo](#) and potentially developing into a global epidemic is to be launched using vaccines containing a fifth of the normal dose because the global stockpile is so low.

[Yellow fever](#) is frequently lethal, killing half of those who develop severe symptoms. It is transmitted by the bite of the *Aedes aegypti* mosquito, which is also responsible for the spread of Zika virus. There is a vaccine which protects people for life, but few adults had been immunised in Angola when yellow fever broke out there in December last year, and in the DRC, to where it has spread.

If it takes hold in Kinshasa, a densely packed city of more than 10 million people, it is feared that infected mosquitoes could travel beyond the central African region, which has been experiencing so severe an outbreak that vaccine stocks are almost exhausted.

How the U.N. bungled its response to the yellow fever outbreak

As yellow fever exploded, U.N. vaccines vanished and supplies were waylaid

By MARIA CHENG and KRISTA LARSON Photos by | AUGUST 13, 2016 — 12:37AM



KINSHASA, CONGO

As a yellow fever outbreak in central Africa exploded, 1 million vaccines disappeared in Angola. Thousands more vaccinations were delayed when accompanying syringes got waylaid. Ice packs to keep the shots potent went missing. And while the epidemic of the hemorrhagic fever spilled across international borders, a senior outbreak expert at the World Health Organization acknowledged their response had “lagged” for months.

This lack of oversight and mismanagement has undermined control of the outbreak in Central Africa, the worst yellow fever epidemic in decades, an Associated Press investigation has found. There is now a shortage of vaccines so severe that WHO has recommended doses be diluted by 80 percent to stretch the supply, even though there is limited evidence they will be effective in African populations.

“WE HAVE A MAJOR PROBLEM ON OUR HANDS,” UNICEF’s Robert Kezaala wrote in June to his colleagues at WHO, Doctors Without Borders and other partners.

Could Yellow Fever Become the Next Pandemic?

Health experts struggle to contain a massive outbreak of the deadly mosquito-borne infection

By Emily Baumgaertner on August 15, 2016

KINSHASA, Democratic Republic of the Congo—In the doorway of a one-room yellow fever ward in downtown Kinshasa, a toddler named Julia is slung over her mother's shoulder. Moments later a nurse directs mother and child to the last vacant bed and inserts an intravenous line into the girl's wrist. Her lemon-yellow eyes staring vacantly ahead, Julia does not flinch as the needle punctures her skin. She could be awaiting a hand massage or a manicure.

In the bed adjacent to her, 12-year-old Elohim has one knee propped up like a tent stake. His palms and the skin under his fingernails are yellow with jaundice. His gaze trails up a fluid line that coils around the bed net up to his IV bag as he watches it drain.



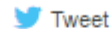
WHO to reconvene emergency committee on yellow fever

Filed Under: [Yellow Fever](#)

Stephanie Soucheray | News Reporter | CIDRAP News | Aug 16, 2016



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Due to concerns that the current yellow fever epidemic in Angola is spreading to the Republic of Congo and the Democratic Republic of the Congo (DRC), the World Health Organization (WHO) is planning to reconvene the emergency committee on yellow fever in the coming weeks to reassess recommendations for at-risk countries.

On May 19, the WHO held an initial meeting of the emergency committee on yellow . At that time, the organization decided the outbreak in Angola, which began in January, did not constitute a public health emergency of international concern (PHEIC) as defined by International Health Regulations. Instead, it called the outbreak a "serious public health event that warrants intensified national action and enhanced international support."

Now, amidst reports that yellow fever is now suspected in Brazzaville, Congo, the WHO is reconsidering their initial judgment.



IFRC/ Flickr cc



News Scan for Aug 02, 2016

PAHO: 1,708 new cases of chikungunya

The Pan American Health Organization (PAHO) late last week reported 1,708 new suspected or confirmed chikungunya cases, bringing the total in the Americas this year to 214,547.

The country with the highest increase in the Jul 29 report was Honduras, with 617 new cases, bringing that country's total for the year to 12,907. Bolivia reported 570 new cases, raising that country's total to 19,588.

The previous PAHO report showed more than 15,000 new cases in Brazil, but no new cases were reported in that country this week.

The chikungunya outbreak began in December 2013 on St. Martin in the Caribbean with the first recorded cases of the disease in the Americas.

Jul 29 PAHO update



News Scan for Aug 09, 2016

Chikungunya infects 617 more in the Americas

The Pan American Health Organization (PAHO) recently reported 617 more suspected or confirmed chikungunya cases, lifting the total in the Americas since the first of the year to 215,164.

The weekly increase was smaller than previous weeks, and several countries didn't report new cases. For example, the rise in PAHO's previous report was 1,708 new cases.

The largest portion of the newly reported cases were from El Salvador and the Dominican Republic, which reported in for the first time this year with 112 cases. Other countries reporting additional cases were Costa Rica, Ecuador, and Mexico.

One more death from the virus was reported, putting that number at 29 so far for the year.

The Americas' chikungunya outbreak began in December 2013 on St. Martin in the Caribbean.

Aug 5 PAHO update



News Scan for Aug 10, 2016

WHO: 1,792 chikungunya cases in Kenya

Yesterday the World Health Organization (WHO) posted a statement on a chikungunya virus outbreak in Kenya that began in May, with partial genetic sequencing suggesting that the strain is linked to one that has circulated in the Indian Ocean islands, Asia, and Europe since 2005.

On May 28 the Kenyan Ministry of Health reported an outbreak of the mosquito-borne disease in the Mandera East sub-country. The Kenya Medical Research Institute (KEMRI) Arboviral Laboratory in Nairobi has confirmed chikungunya in 38 out of 177 samples. As of Jun 30, Kenya had 1,792 suspected cases of the disease, which is being transmitted by the *Aedes albopictus* mosquito. So far, no deaths have been reported.

The WHO cautioned that this strain of chikungunya could cause a wider outbreak, especially because the Mandera area borders an area of Somalia with few healthcare facilities.

The agency said the chikungunya strain that began spreading in the Indian Ocean islands in 2005 had a mutation that increased its adaptation to one strain of *A. albopictus*, leading to increased transmission to humans, If the preliminary sequencing results for the Kenyan outbreak strain are confirmed, the outbreak could involve "significantly higher attack rate[s] than with the formerly circulating African strain," the statement said.

Aug 10 WHO statement

Politics and Nation

Chikungunya on the rise in Delhi, but under-reported

By IANS | Aug 15, 2016, 06.36 PM IST

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NEW DELHI: Chikungunya has been on the rise in the national capital this year but is being under-reported due to shortage of testing facilities and high cost of diagnosis, doctors said.

Delhi's three municipal corporations, which collect data for the entire city, have surprisingly reported just one case of chikungunya in DELHI until August 6, even though AIIMS said it treated over 70 patients in July alone.



A typical chikungunya patient manifests high-grade fever, severe joint pain, headache, muscle pain, joint swelling, or rash.

Clearly, the data put out by the municipal bodies completely excludes the cases reported by the All India Institute of Medical Sciences (AIIMS) and may also have other omissions.



"In July, we received more than 70 positive chikungunya cases. There are much more chikungunya cases than dengue right now. They are also more this year than last couple of years," said Lalit Dar, Professor (microbiology) at AIIMS.



Dengue outbreaks feared in southern Vietnam

Thanh Nien News

HO CHI MINH CITY - Monday, August 15, 2016 10:17

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The number of dengue fever cases is on the rise even as major outbreaks are forecast in southern provinces, according to the Ho Chi Minh City-based Pasteur Institute.

So far this year 31,000 people have contracted the mosquito-borne disease in 20 southern cities and provinces, with 13 people dying, Phan Trong Lan, the institute's director, said.

The number of cases is up 76 percent year-on-year.

"Dengue fever is spreading rapidly and dangerously with hotspots in HCMC, Binh Phuoc, Binh Duong, Ben Tre and Lam Dong," Lan said.

According to the HCMC Preventive Health Center, around 200 people were hospitalized with dengue every week in July. It recorded 875 cases in July, 527 in June and 616 in May.

It has warned that infections could peak in September-October.



Hard Times in Venezuela Breed Malaria as Desperate Flock to Mines

Many turn to panning for black-market gold in the watery pits of mines, where mosquitoes infect them. Once they return home to recover, the disease spreads.

Written by NICHOLAS CASEY. Photographs by MERIDITH KOHUT

1. Vectorborne diseases

- Zika
- Yellow Fever, Chikungunya, Dengue , Malaria
- Zika + Yellow Fever Vaccines

2. Polio

3. Influenza

4. Antibiotic resistance

- MCR-1, ASP landing page

5. Anthrax

6. Ebola + vaccine

7. CEPI - Coalition for Epidemic Preparedness and Innovation

8. MERS-CoV

9. Other

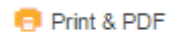
- Cyclospora infections, Guinea worm



Three Zika vaccine candidates successful in monkeys

Filed Under: [Zika](#)

[Stephanie Soucheray](#) | News Reporter | [CIDRAP News](#) | Aug 05, 2016



Three inactivated-virus, gene- and vector-based vaccines protected rhesus monkeys from a Zika challenge, a study yesterday in *Science* noted. The promising outcomes set the stage for trials involving human subjects.

"The explosion of the Zika virus epidemic in Brazil and in the Americas led the WHO [World Health Organization] to declare this to be a public health emergency of international concern on Feb 1 of this year," Dan H. Barouch, MD, PhD, professor of medicine at Harvard Medical School and senior author, told CIDRAP News.



Garrett Ziegler / Flickr cc

"The development of a safe and effective vaccine is therefore an important priority."



Contrary dengue vaccine response hints at possible problems with Zika

Filed Under: [Dengue](#); [Zika](#)

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"It's happened. We have a vaccine that enhances dengue," said Scott B. Halstead, MD, talking about a phenomenon whereby the dengue vaccine sets up dengue-naive recipients for severe disease.

Halstead, the leading figure in dengue research in the past 50 years, is referring to CYD-TDV (Dengvaxia, Sanofi Pasteur), the first dengue vaccine approved by the World Health Organization in April, and now licensed for use in five countries. When Halstead, a former senior advisor of the Dengue Vaccine Initiative and the founder of Children's Vaccine Initiative, first saw the 3-year results of the vaccine published in the *New England Journal of Medicine* last summer, he immediately saw a problem in the data.

"It's clear as the nose on my face: Vaccine recipients less than 5 years old had five to seven times more rates of hospitalizations for severe dengue virus than placebo controls."



rogerashford / iStock

Journal of Infectious Diseases Advance Access published August 11, 2016

1

Zika-induced antibody response enhances dengue serotype 2 replication *in vitro*

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- Cyclospora infections, Guinea worm

HEALTH

Polio rears its head in Nigeria, after two years with no cases

By HELEN BRANSWELL [@HelenBranswell](#)

AUGUST 11, 2016

In a disappointing setback for the global effort to eradicate polio, two children have been paralyzed by the virus in Nigeria, which had gone two years without reporting a case.

Prior to Thursday's announcement by the World Health Organization, it had been thought that polioviruses were only circulating in [two countries](#) in the world, Afghanistan and Pakistan.

The development is one the community of people fighting polio had been dreading.

"I think of all of those things that have kept people in polio eradication up at night, this is the one that we have been most fearful of," said Dr. Stephen Cochi, a senior polio program scientist at the Centers for Disease Control and Prevention.



The New York Times

Polio Response in Africa to Be Fast, Difficult and Possibly Dangerous

By DONALD G. McNEIL Jr. AUG. 12, 2016

The counterattack against resurgent [polio](#) in Africa will be rapid, logistically difficult and potentially dangerous, involving millions of doses of vaccine, thousands of vaccinators and the health ministries and militaries of five countries, experts from the [World Health Organization](#) and other groups say.

Stopping the disease in Africa is crucial to the high-stakes effort to eradicate it from the world, a campaign that has been pressed for almost 30 years and has consumed billions of dollars.

After [two years with no cases in Africa](#), experts were elated at the imminent taste of victory on the continent, considered the toughest front in the fight against [infectious diseases](#). Those hopes were dashed this week when [two new cases were discovered](#). Now [Nigeria](#) rejoins [Pakistan and Afghanistan](#) on the list of countries where the disease has not been completely eliminated.

To contain the virus before it spreads out of Borno State in Nigeria, where both paralyzed children were found last month, a first round of [vaccinations](#) will begin as early as next week. Five more rounds will take place over the coming months in ever-widening circles that ultimately encompass the entire Lake Chad basin in Nigeria, Chad, Niger, Cameroon and the Central African Republic.



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Figure 1: Epidemiological curve of avian influenza A(H5N1) cases in humans by week of onset, 2003-2016

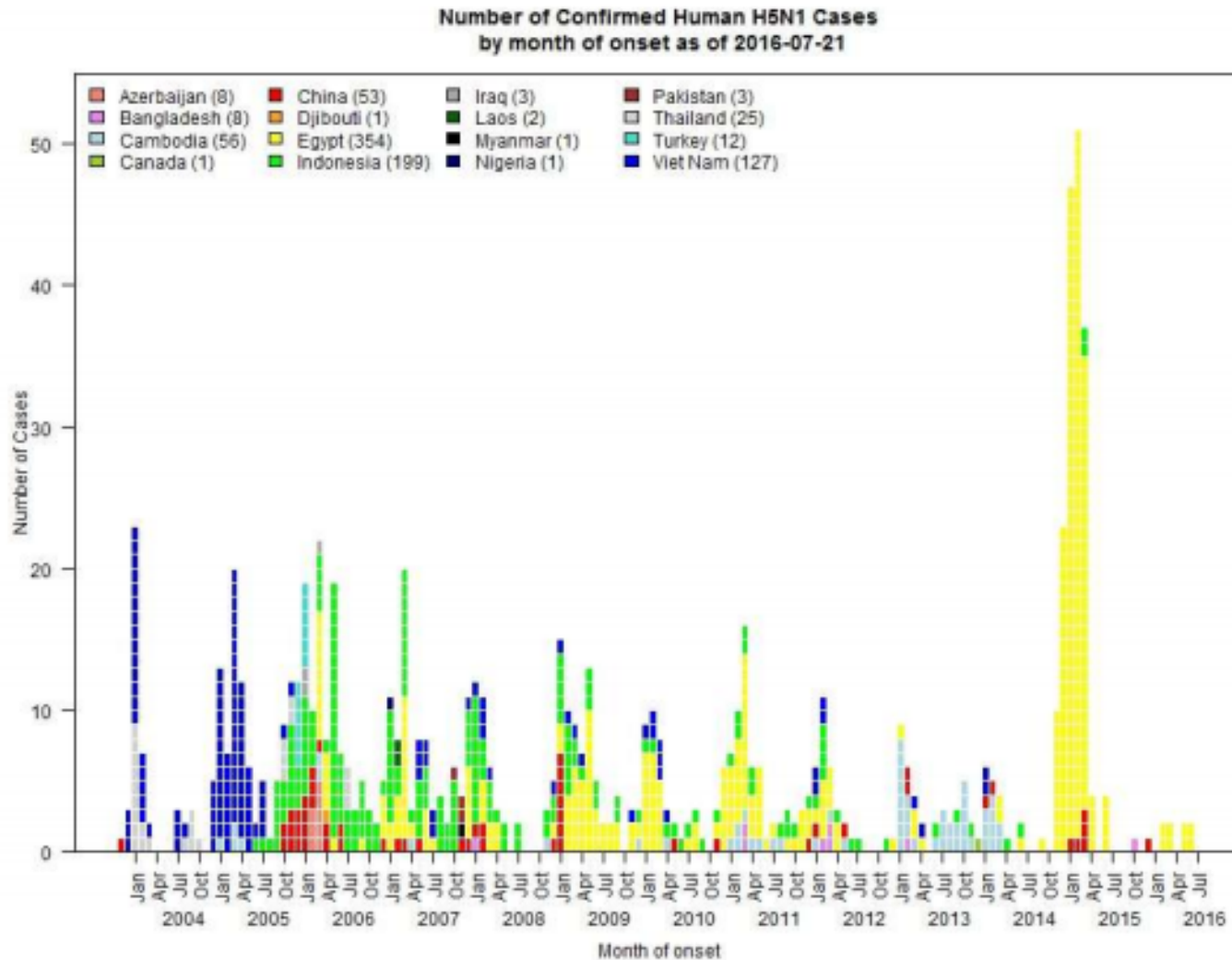
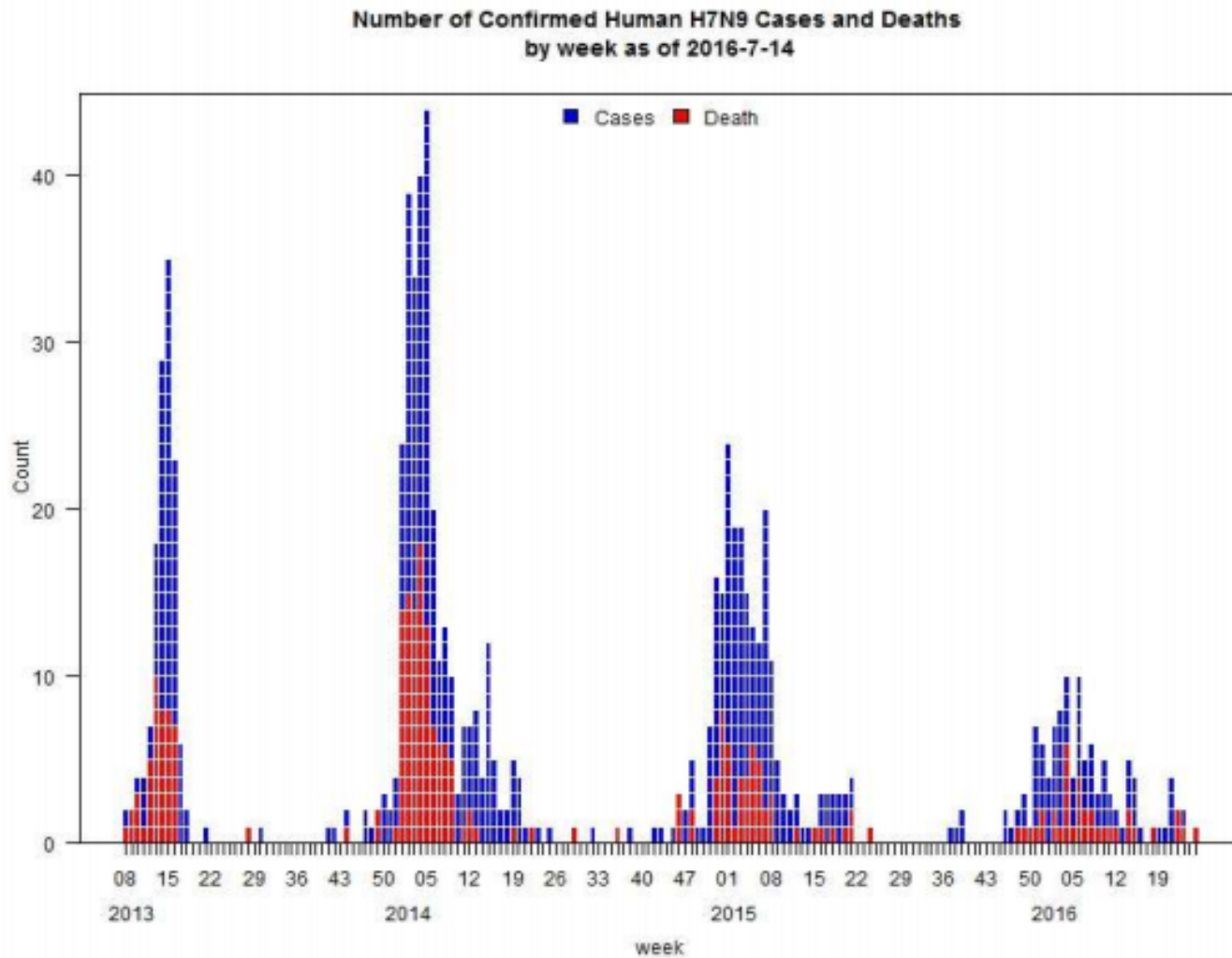


Figure 2: Epidemiological curve of avian influenza A(H7N9) cases in humans by week of onset, 2013-2016



Emergencies preparedness, response

Human infection with avian influenza A(H7N9) virus – China

Disease outbreak news
17 August 2016

On 11 August 2016, the National Health and Family Planning Commission of China notified WHO of five additional cases of laboratory-confirmed human infection with avian influenza A(H7N9) virus, including one death.

Onset dates ranged from 24 June – 29 July 2016, and three of the five cases are male. Cases ranged in age from 13 – 79 years with a median age of 68 years (among cases reported so far, age range is from 0 – 91 years, with a median age of 58 years).

Two of the five cases reported exposure to live poultry, or were involved in the slaughter of poultry. There was no reported history of exposure to poultry for the other three cases. Cases were reported from two provinces (Fujian and Hebei) and one municipality (Beijing). Cases reported from Hebei and Beijing were reported to be family members. Investigations are on-going, at this stage human-to-human-transmission cannot be ruled out, however to date no further transmission has been reported.

A total of 798 laboratory-confirmed human cases with avian influenza A(H7N9) virus have been reported through IHR notification since early 2013.

Live Attenuated Versus Inactivated Influenza Vaccine in Hutterite Children

A Cluster Randomized Blinded Trial

Mark Loeb, MD; Margaret L. Russell, MD, PhD; Vanessa Manning, BSc; Kevin Fonseca, PhD; David J.D. Earn, PhD; Gregory Horsman, MD; Khami Chokani, MD; Mark Vooght, MD; Lorne Babiuk, PhD; Lisa Schwartz, PhD; Binod Neupane, PhD; Pardeep Singh, BSc; Stephen D. Walter, PhD; and Eleanor Pullenayegum, PhD

Background: Whether vaccinating children with intranasal live attenuated influenza vaccine (LAIV) is more effective than inactivated influenza vaccine (IIV) in providing both direct protection in vaccinated persons and herd protection in unvaccinated persons is uncertain. Hutterite colonies, where members live in close-knit, small rural communities in which influenza virus infection regularly occurs, offer an opportunity to address this question.

Objective: To determine whether vaccinating children and adolescents with LAIV provides better community protection than IIV.

Design: A cluster randomized blinded trial conducted between October 2012 and May 2015 over 3 influenza seasons.

Setting: 52 Hutterite colonies in Alberta and Saskatchewan, Canada.

Participants: 1186 Canadian children and adolescents aged 36 months to 15 years who received the study vaccine and 3425 community members who did not.

Intervention: Children were randomly assigned according to community in a blinded manner to receive standard dosing of either trivalent LAIV or trivalent IIV.

Measurements: The primary outcome was reverse transcriptase polymerase chain reaction-confirmed influenza A or B virus in all participants (vaccinated children and persons who did not receive the study vaccine).

Results: Mean vaccine coverage among children in the LAIV group was 76.9% versus 72.3% in the IIV group. Influenza virus infection occurred at a rate of 5.3% (295 of 5560 person-years) in the LAIV group versus 5.2% (304 of 5810 person-years) in the IIV group. The hazard ratio comparing LAIV with IIV for influenza A or B virus was 1.03 (95% CI, 0.85 to 1.24).

Limitation: The study was conducted in Hutterite communities, which may limit generalizability.

Conclusion: Immunizing children with LAIV does not provide better community protection against influenza than IIV.

Primary Funding Source: The Canadian Institutes for Health Research.

Ann Intern Med. doi:10.7326/M16-0513

www.annals.org

For author affiliations, see end of text.

This article was published at www.annals.org on 16 August 2016.

Influenza is a major cause of morbidity and mortality, resulting in excess hospitalization and death (1-3). Data from longitudinal studies suggest that children are an important source of community transmission of influenza (4-8). Vaccinating children against influenza not only protects them but can also provide indirect benefit through herd protection (that is, reducing the risk for influenza in susceptible persons by rendering immunity in others) (9-16). However, the choice of vaccine that best achieves herd protection remains uncertain (17, 18). Intranasal live attenuated influenza vaccine (LAIV) has been reported to provide 55% greater protection against influenza in children than inactivated influenza vaccine (IIV) (19, 20). Vaccinating children with LAIV compared with IIV should provide better community protection because of better direct protection of children and better indirect effects of herd protection. This question is of public health importance, particularly given differences in recommendations on preferential use of LAIV (21-23).

Most comparative influenza vaccine studies assess direct protection only (24). Understanding the comprehensive benefit of LAIV versus IIV requires evaluation of both direct and indirect effects. This is best addressed through a randomized, controlled trial; however, ran-

dom assignment of the children of entire communities to vaccination with LAIV versus IIV is not possible in most settings. Hutterite colony members live communally and are relatively isolated from cities and towns, and influenza is regularly introduced into these colonies. This offers an opportunity to test the effect of vaccinating children with LAIV versus IIV on community protection in a cluster randomized trial (11). We hypothesized that a 70% or greater uptake of trivalent LAIV compared with a similar uptake of trivalent IIV among healthy children and adolescents would reduce laboratory-confirmed influenza by 50% in the LAIV versus IIV group. A 50% risk reduction was selected on the basis of a previous trial showing a 55% direct risk reduction in children who received LAIV compared with IIV (19). We also hypothesized that this would translate to a reduction in influenza-associated outcomes.

See also:

Web-Only
Supplement



News Scan for Aug 08, 2016

Michigan reports two fair-linked H3N2v cases

Michigan health officials recently announced two variant H3N2 (H3N2v) influenza illnesses in Muskegon County residents who exhibited swine at the Muskegon County fair in late July. The cases appear to be the nation's first for 2016.

In an Aug 5 statement, the Michigan Department of Health and Human Services (MDHHS) said a sick pig from the fair tested positive for H3N2v at the National Veterinary Services Laboratories in Ames, Iowa. The county health department is contacting others who exhibited swine at the fair to identify any other possible illnesses, and health providers in the area have been asked to watch for patients with respiratory symptoms who were exposed to swine or the fair.

The virus was first found in humans in 2011, and cases the following summer, most of them linked to swine exhibit exposure, topped 300. Since then, only sporadic H3N2v cases have been detected. The virus is a swine H3N2 that contains the matrix (M) gene of the 2009 H1N1 virus, which researchers say could enhance its transmissibility.

Aug 5 MDHHS statement

CDC H3N2v case counts



Flu Scan for Aug 12, 2016

CDC reports two new swine-linked H3N2v cases in Ohio

Two new variant H3N2 (H3N2v) influenza cases have been reported in Ohio, both of them in people who had contact with pigs at agricultural fairs, the Centers for Disease Control and Prevention (CDC) said today in its weekly flu update. The report also notes two H3N2v cases that were reported in Michigan a week ago.

"Separate swine exposure events at fairs in each state are associated with infection and there is no indication that the cases in different states are related," the CDC said. It added that H3N2 viruses were found in at least one swine respiratory sample collected at each of the fairs involved.

Public health and agriculture officials are looking for further cases in humans and swine, but no increases in flu-like illness in the communities have been reported, the CDC said.

The CDC gave no other details on the Ohio cases, but the Associated Press (AP) reported that they involved two children who attended the Clark County Fair in west-central Ohio in late July. The Michigan cases involved swine exhibitors at the Muskegon County Fair, Michigan officials said in reporting the cases.

No information on the condition of the H3N2v patients was released. Most cases in the past have been mild.

H3N2v was first found in humans in 2011, and the following summer brought more than 300 cases in the United States, most of them linked to swine exposure. Since then, only sporadic H3N2v cases have been detected. The virus is a swine H3N2 that contains the matrix (M) gene of the 2009 H1N1 virus, which scientists say could enhance its transmissibility.

Aug 12 CDC FluView update

Aug 12 AP story

Aug 8 CIDRAP News item on Michigan cases



Flu Scan for Aug 15, 2016

Additional H3N2v in pigs at Michigan county fairs

Two more Michigan county fairs, one in Cass County and one in Ingham County, are reporting variant H3N2 (H3N2v) influenza in pigs, according to a media release from the Van Buren/Cass District Health Department. No ill human contacts have been reported, according to state health officials.

Twenty pigs tested positive for H3N2v at the Cass County fair, which took place from Jul 31 to Aug 6. More than 300 pigs were exhibited. The first pig tested positive on Aug 9.

On Aug 6 one pig that was exhibited at the Ingham County tested positive for swine flu. Last month a pig at the Muskegon county fair also tested positive for H3N2v.

Humans are at risk for swine flu if they come in close contact with infected pigs, but H3N2v usually causes only mild illness when transmitted to people.

Aug 12 Van Buren/Cass District Health Department [release](#)

Variant Virus Infections in People

Interim Guidance for Clinicians

August 15, 2016

Background

Influenza A viruses circulating in swine that have infected humans are referred to as “variant” viruses and denoted with a letter “v”. Human infections with H₁N₁v, H₃N₂v and H₁N₂v viruses have been detected in the United States.

Most commonly, human infections with variant viruses occur in people with exposure to infected swine (e.g., children near swine at a fair or workers in the swine industry). There have been documented cases of multiple people becoming sick after exposure to one or more infected swine and also rare cases of limited spread of variant influenza viruses from person-to-person. The vast majority of human infections with variant influenza viruses do not result in person-to-person spread. However, each human infection with a swine influenza virus should be fully investigated to be sure that such viruses are not spreading in an efficient and ongoing way in humans and, if infected animals are identified, to limit further exposure of humans to these animals.

Clinical Presentation and Risk Groups

Clinical characteristics of human infections with variant viruses generally have been similar to signs and symptoms of uncomplicated seasonal influenza, including fever, cough, pharyngitis, rhinorrhea, myalgia, and headache. Vomiting and diarrhea also have been reported in some infections in children. Milder clinical illness is possible, including lack of fever. The duration of illness appears to be similar to uncomplicated seasonal influenza, approximately 3 to 5 days. While assumed to be similar to seasonal influenza virus infection, the duration of viral replication and possible infectiousness of variant virus infection has not been studied.

Exacerbation of underlying conditions (e.g., asthma) has occurred. The same people at increased risk for complications of seasonal influenza are likely at high risk for serious complications from variant virus infection, including children younger than 5 years, pregnant women, people 65 years and older, those who are immunosuppressed, and persons with chronic pulmonary, cardiac, metabolic, hematologic, renal, hepatic, neurological or neurodevelopmental conditions, as well as those with other co-morbidities, including extreme obesity.

Clinical Diagnosis

Variant virus infection cannot be distinguished by clinical features from seasonal influenza virus infection, or from infection with other respiratory viruses that can cause influenza-like illness (fever and either cough or sore throat). Therefore, the key to suspecting variant virus infection in an ill patient is to elicit an epidemiological link to recent swine exposure in the week prior to illness onset. Exposure can be defined as follows:

- Direct contact with swine (e.g., showing swine, raising swine, feeding swine, or cleaning swine waste)
- Indirect exposure to swine (e.g., visiting a swine farm or walking through a swine barn), especially if swine were known to be ill; or
- Close contact (within 2 meters or approximately 6 feet) with an ill person who had recent swine exposure or is known to be infected with a variant virus.

For any ill person with an exposure as defined above, respiratory samples should be taken for testing. Clinicians should obtain a nasopharyngeal swab or aspirate (or a combined nasal swab and throat swab), place the swab or aspirate (or combined specimen) into viral transport medium, and contact their state or local health department to arrange transport and request a timely diagnosis at a state public health laboratory. Only CDC and state public health laboratories can confirm variant virus infections. If testing is also going to be done at the hospital or clinic, the specimen should be split or two specimens should be taken so that one can be immediately sent to the health department for testing.

Laboratory Diagnosis and Test Interpretation; Hospital and Clinical Laboratories

Antigen detection tests, such as commercially available rapid influenza diagnostic tests (RIDTs) and immunofluorescence assays [e.g. direct fluorescent antibody staining (DFA)] may detect variant virus in respiratory specimens, although some RIDTs may not detect these viruses (i.e., false negative result). A false negative result also can occur with other influenza viruses. While some variant virus infections have tested positive by RIDTs, other confirmed variant virus infections have tested negative by RIDTs.

There are a variety of commercial molecular assays, including RT-PCR assays, that can detect influenza viruses. All of the available assays are likely to detect influenza A virus infection and, in general, are more sensitive and specific than RIDTs. However, commercially available molecular assays cannot differentiate variant viruses from seasonal influenza A viruses, and the sensitivity and

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Drug-resistant *Shigella* on the rise in gay men

Filed Under: [Shigella](#); [Antimicrobial Stewardship](#)

Stephanie Soucheray | News Reporter | CIDRAP News | Aug 11, 2016

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A new study in *Emerging Infectious Diseases* and a report in the Center for Disease Control and Prevention's (CDC's) *Morbidity and Mortality Weekly Report (MMWR)* detail evidence of rising antibiotic resistant in shigellosis outbreaks among gay men.

Three different antibiotics have shown increasing resistance to *Shigella*, the third most common enteric bacterial pathogen in the United States. And all infections passed between men who have sex with men (MSM) were resistant to at least one antibiotic therapy, according to the *Emerging Infectious Diseases* study.

"Although shigellosis rates are highest for young children, most reports document ciprofloxacin- or azithromycin-resistant shigellosis largely among men who have sex with men," the authors wrote.



CDC / James Archer



Latest MCR-1 findings include highly resistant isolate

Filed Under: [MCR-1](#); [Antimicrobial Stewardship](#)

[Chris Dall](#) | News Reporter | [CIDRAP News](#) | [Aug 02, 2016](#)

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Two new studies in *Emerging Infectious Diseases* provide more evidence of the spread of MCR-1, the gene that confers resistance to the last-resort antibiotic colistin, in both animals and humans, including an isolate that was resistant to multiple antibiotics.

In the first study, an international group of researchers reported that, out of 150 strains of *Escherichia coli* cultured from the fecal samples of European cattle from 2004 through 2010, 45 were classified as multidrug-resistant. Three of those multidrug-resistant strains showed elevated levels of resistance to colistin. Further analysis identified one isolate—an *E coli* 29957 strain—as MCR-1 positive.



Frans de Wit / Flickr cc



Antimicrobial Resistance Scan for Aug 08, 2016

Brazil reports first detection of MCR-1 in a human

Researchers in Brazil said today they've detected the MCR-1 gene, which confers resistance to the antibiotic colistin, in a hospital patient. It's the first time the plasmid-mediated antibiotic resistance mechanism has been detected in a human in Brazil.

In a study published today in *Antimicrobial Agents and Chemotherapy*, researchers report the MCR-1 gene was found in a strain of *Escherichia coli* taken from a diabetic patient who had been hospitalized with an infected foot wound. Whole genome sequencing revealed the presence of the gene on an IncX4 plasmid.

Since MCR-1 was first identified in *E coli* isolates in China in November 2015, public health officials have warned about its ability to quickly spread resistance to colistin, considered an antibiotic of last resort for multi-drug resistant (MDR) infections. Because plasmids are mobile pieces of DNA, the gene can jump to other types of bacteria, raising the possibility it could latch on to superbugs and create infections that are impossible to treat.

According to a news release from the American Society for Microbiology (the publisher of the journal), earlier research from the same investigators has shown that MCR-1-harboring *E coli* has been present in food-producing livestock in Brazil since 2012. Brazilian farmers commonly use colistin and other antibiotics to promote animal growth.

The researchers noted that the IncX4 plasmid identified in the study is highly similar to MCR-1-harboring IncX4 plasmids found in *E coli* isolates on other continents, which suggests the plasmid is contributing to intercontinental spread of the gene. Overall, MCR-1 has now been detected in human, animal, and environmental isolates in more than 30 countries.

Aug 8 *Antimicrob Agents Chemother* abstract

Aug 8 American Society for Microbiology news release



Antimicrobial Stewardship Project

About ASP

Antimicrobial resistance is a critical global public health issue, and antimicrobial stewardship strategies are key to curtailing the problem. CIDRAP's Antimicrobial Stewardship Project provides current, accurate, and comprehensive information on the topic and works to build an online community to address leading issues.

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ASP Monthly Poll

Feature coming soon!



Minnesota takes a 'One Health' approach to antibiotic stewardship

Chris Dall | News Reporter | CIDRAP News | Aug 08, 2016

The new effort is designed to ease tensions between human and animal health groups to better address resistance issues.

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- MCR-1, ASP landing page

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6. Ebola + vaccine

7. CEPI - Coalition for Epidemic Preparedness and Innovation

8. MERS-CoV

9. Other

- Cyclospora infections, Guinea worm

Anthrax sickens 13 in western Siberia, and a thawed-out reindeer corpse may be to blame

First a heatwave hit Siberia. Then came the anthrax.

Temperatures have soared in western Russia's Yamal tundra this summer. Across Siberia, some provinces warmed an additional [10 degrees](#) Fahrenheit beyond normal. In the fields, large bubbles of vegetation appeared above the melting permafrost — strange pockets of methane or, more likely, [water](#). Record [fires](#) blazed through dry Russian grassland.

In one of the more unusual symptoms of unseasonable warmth, long-dormant bacteria appear to be active. For the first time since 1941, anthrax struck western Siberia. Thirteen Yamal nomads were hospitalized, including four children, the Siberian Times [reported](#). The bacteria took an even worse toll on wildlife, claiming some 1,500 reindeer since Sunday.





News Scan for Aug 01, 2016

Siberia anthrax outbreak grows to 40 suspected cases

Siberia is reporting 40 cases of suspected anthrax in hospitalized nomadic herders, up from 13 cases last week, the *Siberian Times* reported on Jul 30.

The infections may be linked to the carcasses of decades-old reindeer thawing during unseasonably hot weather and releasing *Bacillus anthracis*, the bacterium that causes anthrax.

According to a *Popular Science* report today, high temperatures have melted a layer of permafrost in Siberia and exposed the carcasses of reindeers that died during an anthrax outbreak in 1941. *B anthracis*, which lives in soil, can infect and kill humans and animals. Humans can contract the bacteria when they touch infected animals, inhale spores, or eat contaminated foods.

The *Siberian Times* reports that half of the suspected cases are in children, and that 1,200 reindeer have already died of suspected anthrax infection. The outbreak is in the Yamalo-Nenets region, which is above the Arctic Circle. That area had a heat wave in July, with several days in the 90s.

Jul 30 *Siberian Times* article

Aug 1 *Popular Science* article

Jul 29 CIDRAP News scan on earlier reports

CIDRAP overview on anthrax



News Scan for Aug 03, 2016

Reports: 90 now hospitalized for suspected anthrax in Siberia

Several news organizations reported yesterday that 90 people are now hospitalized in the Yamal-Nenets area of Siberia and a 12-year-old boy is dead from suspected anthrax infection. So far, 20 cases have been confirmed.

The New York Times reports the boy's death is the first from anthrax in 75 years.

A very warm summer has melted a layer of permafrost in Yamal-Nenets, revealing carcasses of reindeer that may be releasing *Bacillus anthracis*, the bacterium that causes anthrax, into soil. *B. anthracis* can infect and kill humans and animals. Authorities in Siberia say 2,300 reindeer have died from suspected anthrax infection this summer, while more than 3,000 have been vaccinated against anthrax as of Tuesday.

Humans contract anthrax when they touch infected animals, inhale spores, or eat contaminated foods. The 90 people hospitalized are nomadic reindeer herders, and authorities suspect they had close contact with sick or dead animals.

Earlier this week *Popular Science* reported that the reindeer carcasses were likely from 1941, the last year a major anthrax outbreak occurred in that area of Siberia.

Aug 2 *New York Times* story

Science

Anthrax genome reveals secrets about a Soviet bioweapons accident

By **Kai Kupferschmidt** | Aug. 16, 2016 , 9:45 PM

Some call it the “biological Chernobyl.” On 2 April 1979, a plume of anthrax spores was accidentally released from a secret bioweapons facility in the Soviet city of Sverdlovsk. Propelled by a slow wind, the cloud drifted southeast, producing a 50-kilometer trail of disease and death among humans and animals alike. At least 66 people lost their lives, making it the deadliest human outbreak of inhalation anthrax ever.

Now, 37 years later, scientists have managed to isolate the pathogen's DNA from the bodies of two human victims and piece together its entire genome. The study, under review at the journal *mBio* and **released today on the preprint server bioRxiv** , answers one of the many remaining questions about the Soviet Union's clandestine biowarfare program by showing that scientists hadn't tinkered with the anthrax strain to make it more resistant to antibiotics or vaccines. If they had, the Soviet bioweapons would have become even more lethal.



The Siberian Times

Experts warn of threat of born-again smallpox from old Siberian graveyards

By The Siberian Times reporter

12 August 2016

This summer's melting of permafrost is more than THREE TIMES greater than usual, unlocking long-frozen deadly diseases.



Currently 24 people are in hospital in Salekhard, on the Arctic Circle, after contracting potentially lethal anthrax from unfrozen reindeer or human burial sites, but scientists say this is far from the only threat as climate change grips Siberia.

Anthrax spores are already 'on the loose' on the Yamal peninsula, according to one scientist, and this should act as a warning of the real risk of a return of eradicated smallpox from melting permafrost which allows the erosion of river banks at sites where victims were buried, said another.

'Back in the 1890s, there occurred a major epidemic of smallpox,' said Boris Kershengolts, deputy director for research at the Institute for Biological Problems of Cryolithozone, of the Siberian Branch of the Academy of Sciences.

'There was a town where up to 40% of the population died. Naturally, the bodies were buried under the upper layer of permafrost soil, on the bank of the Kolyma River. Now, a little more than 100 years later, Kolyma's floodwaters have started eroding the banks.'

Experts from the Novosibirsk-based Virology and Biotechnology Centre had conducted research in the area, said Sergey Netesov, chief of the bionanotechnology, microbiology and virology laboratory at the natural sciences department of Novosibirsk State University.

The corpses they studied bore sores that looked like those smallpox might cause, he told an intriguing and troubling TASS video conference involving multi-disciplinary experts on the implications of the outbreak of anthrax on the Yamal peninsula in northern Siberia.

While the virus itself was not found, some fragments of its DNA were noted. 'This type of research should go on,' he urged. 'Examining deeper burials might help clear up the situation.'

1. Vectorborne diseases

- Zika
- Yellow Fever, Chikungunya, Dengue , Malaria
- Zika + Yellow Fever Vaccines

2. Polio

3. Influenza

4. Antibiotic resistance

- MCR-1, ASP landing page

5. Anthrax

6. Ebola + vaccine

7. CEPI - Coalition for Epidemic Preparedness and Innovation

8. MERS-CoV

9. Other

- Cyclospora infections, Guinea worm

News Scan for Jul 25, 2016

Merck's Ebola vaccine advances; evidence on virus shedding noted

Merck's vaccine against Ebola Zaire, V920, received a green light from both the US Food and Drug Administration (FDA) and the European Medicines Agency (EMA), the company announced today.

The FDA awarded the vaccine Breakthrough Therapy Designation, while the EMA labeled it a PRIME (PRiority MEdicines) medicine. Both awards are meant to speed the approval process for vaccines and medicines that target life-threatening diseases or unmet medical needs.

"The granting of Breakthrough Therapy Designation by the FDA and PRIME status by the EMA will enable us to continue to accelerate development of V920, and we greatly appreciate the collaboration of these agencies in moving this vaccine candidate forward in potentially meeting this public health need," said Paula Annunziato, MD, Merck's vice president for clinical research.

Jul 25 Merck press release

In other Ebola news, a study published last week in the *Journal of Infectious Diseases* described viral shedding and transmission levels of the disease in the wake of the 2014 outbreak, noting that, despite viral RNA presence in nearly all bodily fluids, some routes of transmission are more likely than others.

Swiss, US, and UK researchers conducted a comprehensive literature review and found that Ebola has been isolated and cultured from blood, saliva, urine, aqueous humor, semen, stool, and breast milk in infected patients. Viral RNA was found in breast milk 16 months after disease onset and in semen 18 months after initial diagnosis. Saliva and tears, however, contained Ebola RNA for only 22 and 28 days, respectively.

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8. MERS-CoV

9. Other

- Cyclospora infections

AN R&D BLUEPRINT FOR ACTION TO PREVENT EPIDEMICS

**PLAN OF ACTION
MAY 2016**



**World Health
Organization**

7. CONNECTING THE BLUEPRINT WITH OTHER INTERNATIONAL EFFORTS

A number of new initiatives have been put in place or are under discussion by international stakeholders to increase R&D preparedness for severe and emerging infectious disease threats. These could complement the efforts of the Blueprint in ensuring coordination and alignment of efforts. Below are three examples of such initiatives.

The Coalition for Epidemic Product Innovation (CEPI)

The Coalition for Epidemic Preparedness Innovation (CEPI) is an initiative established following the Annual Meeting of the World Economic Forum in Davos in January 2016, where stakeholders from governments, foundations, industry and civil society discussed the urgent need for a fresh approach to the development of vaccines for infections of epidemic potential.

The meeting reached a consensus that new mechanisms are required to finance and otherwise support vaccine development in cases of market failure, and that a partnership linking different sectors would be the best approach to delivering this.

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WHO details Riyadh hospital MERS outbreak as new UAE, Saudi cases noted

Filed Under: [MERS-CoV](#)

[Lisa Schnirring](#) | News Editor | [CIDRAP News](#) | Jun 21, 2016

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The World Health Organization (WHO) today released more details about a MERS-CoV outbreak at King Khalid University Hospital in Riyadh, triggered by a woman whose illness wasn't detected until after she was admitted to a vascular surgery ward.

In other new MERS-CoV (Middle East respiratory syndrome coronavirus) developments, the WHO said the United Arab Emirates (UAE) reported a new case and Saudi Arabia's Ministry of Health (MOH) announced a pair of new cases, both from Jeddah.



Alex Raths / iStock

WHO: Undetected case exposed others

All but 2 of 22 MERS cases reported by Saudi Arabia from Jun 16 to 18 are linked to the outbreak in Riyadh, the WHO noted in its update.



Patient proximity key in Korean MERS super-spreader event

Filed Under: [MERS-CoV](#)

Lisa Schnirring | News Editor | CIDRAP News | Jul 11, 2016



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In findings that could help other hospitals prevent or contain MERS-CoV transmission, South Korean researchers who did an in-depth analysis of a super-spreader event at Samsung Medical Center's crowded emergency department—part of a large South Korean outbreak in 2015—found that the highest risk was to nearby patients.

In other MERS-CoV (Middle East respiratory syndrome coronavirus) developments, Saudi Arabia's Ministry of Health (MOH) over the past 3 days reported one more case and a death in a previously announced patient.

ED stay led to 82 other infections

The South Korean outbreak began in May 2015, triggered by MERS-CoV in a 68-year-old man who had traveled to Saudi Arabia. The outbreak involved 186 people over 3 months. Last fall, South Korean researchers identified five people as super-spreaders, those who disproportionately infected more secondary contacts.



iStock



News Scan for Aug 02, 2016

MERS camel outbreak in Jordan, new cases in Saudi Arabia

After a slowdown in the past 2 weeks, the Saudi Arabia Ministry of Health (MOH) reported two new cases of MERS-CoV today. Both patients are expatriates, and neither was linked to a recent outbreak at the King Khalid University Hospital in Riyadh.

A 52-year old woman from Al Jubail is in stable condition after presenting with symptoms of Middle East respiratory syndrome coronavirus (MERS-CoV). The MOH said she was a healthcare worker and contracted MERS in a healthcare setting. Last week the MOH said a man from Al Jubail also has MERS-CoV.

The second case involves a 49-year old man from Al Hofuf who is also in stable condition. The MOH listed him as having indirect contact with camels. Exposure to camels, including drinking raw camel milk, has been linked to several MERS cases in Saudi Arabia.

The new cases bring Saudi Arabia's MERS-CoV total to 1,443, including 608 deaths, since 2012.

In other MERS-CoV news, two camel herds were diagnosed as having the virus in Jordan, according to a report issued by the World Organization for Health Animal (OIE) today. The outbreaks occurred on May 16 and had a morbidity rate of 51.4% (36 of 70 susceptible camels).

One outbreak took place on a farm in Ar Ramtha, and the other took place in the village of Az-Zarqa. Camels can pass infections to humans, but the exact route of transmission is still unknown.

Aug 2 MOH report

Aug 2 OIE report



News Scan for Aug 08, 2016

New case of MERS in Saudi Arabia

The Saudi Arabia Ministry of Health (MOH) reported a new case of MERS-CoV over the weekend.

A 36-year old Saudi man from Huraymila is in stable condition after presenting with symptoms of MERS-CoV (Middle East respiratory syndrome coronavirus). The MOH said he had primary exposure to the virus, meaning not from another patient. He is not a healthcare worker, and has no known contact with camels.

The case brings the total in the country since the outbreak began in 2012 to 1,445, including 608 fatalities.

Aug 8 MOH report

Link of a ubiquitous human coronavirus to dromedary camels

Victor M. Corman^{a,b,1}, Isabella Eckerle^{a,1}, Ziad A. Memish^c, Anne M. Liljander^d, Ronald Dijkman^{e,f}, Hulda Jonsdottir^{e,f}, Kisi J. Z. Juma Ngeiywa^g, Esther Kamau^g, Mario Younan^h, Malakita Al Masriⁱ, Abdullah Assiriⁱ, Ilona Gluecks^j, Bakri E. Musa^k, Benjamin Meyer^a, Marcel A. Müller^l, Mosaad Hilali^l, Set Bornstein^m, Ulrich Werneryⁿ, Volker Thiel^{e,f}, Joerg Jores^{d,o}, Jan Felix Drexler^{a,b,2}, and Christian Drosten^{a,b,2}

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Edited by Luis Enjuanes, Centro Nacional de Biotecnología-Consejo Superior de Investigaciones Científicas, Madrid, Spain, and accepted by Editorial Board Member Diane E. Griffin June 27, 2016 (received for review March 17, 2016)

The four human coronaviruses (HCoVs) are globally endemic respiratory pathogens. The Middle East respiratory syndrome (MERS) coronavirus (CoV) is an emerging CoV with a known zoonotic source in dromedary camels. Little is known about the origins of endemic HCoVs. Studying these viruses' evolutionary history could provide important insight into CoV emergence. In tests of MERS-CoV-infected dromedaries, we found viruses related to an HCoV, known as HCoV-229E, in 5.6% of 1,033 animals. Human- and dromedary-derived viruses are each monophyletic, suggesting ecological isolation. One gene of dromedary viruses exists in two versions in camels, full length and deleted, whereas only the deleted version exists in humans. The deletion increased in size over a succession starting from camelid viruses via old human viruses to contemporary human viruses. Live isolates of dromedary 229E viruses were obtained and studied to assess human infection risks. The viruses used the human entry receptor aminopeptidase N and replicated in human hepatoma cells, suggesting a principal ability to cause human infections. However, inefficient replication in several mucosa-derived cell lines and airway epithelial cultures suggested lack of adaptation to the human host. Dromedary viruses were as sensitive to the human type I interferon response as HCoV-229E. Antibodies in human sera neutralized dromedary-derived viruses, suggesting population immunity against dromedary viruses. Although no current epidemic risk seems to emanate from these viruses, evolutionary inference suggests that the endemic human virus HCoV-229E may constitute a descendant of camelid-associated viruses. HCoV-229E evolution provides a scenario for MERS-CoV emergence.

coronavirus | evolution | ecology | zoonotic diseases | livestock

Coronaviruses (CoVs) (order Nidovirales, family *Coronaviridae*, subfamily *Coronavirinae*) are enveloped viruses with a large positive-strand RNA genome that infect a broad range of vertebrates, including mammals (1). Four human CoVs (HCoV-HKU1, HCoV-229E, HCoV-NL63, and HCoV-OC43) are globally endemic, causing mild to moderate respiratory tract disease. Two novel CoVs have emerged in humans during the past decade, causing outbreaks with high case fatality proportions. The severe acute respiratory syndrome (SARS)-CoV is thought to have been acquired by humans from carnivores, which, in turn, acquired the virus from rhinolophid bats (1–4). SARS-CoV is considered eradicated but SARS-related viruses carried by bats may still pose risks of human infection (5). The other emerging CoV, termed the Middle East respiratory syndrome (MERS)-CoV, is acquired as a zoonotic disease from dromedary camels, and is thought to have ancient ancestors in Old World vespertilionid bats (6–9).

Studying the origins of endemic HCoVs may provide retrospective insight into CoV emergence. Little is known about the

ecological history of these ubiquitous human pathogens. However, the similarity of HCoV-OC43 to the bovine CoV suggests a primordial zoonotic acquisition from cattle (10, 11). No obvious intermediary hosts are known for the other HCoVs.

The human common cold agent HCoV-229E is an alpha-CoV that was first isolated in 1967 and has been circulating in the human population for long time with little sequence variation (12). We have recently discovered and characterized several groups of related alpha-CoVs in African bats of the genus *Hipposideros*, sharing ancient common ancestors with HCoV-229E (13, 14). Crossley et al. (15, 16) isolated a virus similar to HCoV-229E from a single captive alpaca (*Vicugna pacos*) that had died in a limited outbreak of respiratory disease among farmed alpacas in California. The biogeographic origin of this alpaca-derived coronavirus (ACoV) has remained unclear, because the virus has never been observed in feral alpacas and has only occurred from October to December 2007 in farmed alpacas linked to a single trade show in Monterey, California. Because alpacas are New World camelids, the ecological connection to ancestral viruses carried in Old World bats is difficult to explain (14).

In the context of several studies on MERS-CoV, we took samples from dromedary camels on the Arabian Peninsula and Africa (17–19). Screening of these samples by generic CoV RT-PCR

Significance

Our results raise a scenario for the natural history of a ubiquitous respiratory coronavirus (CoV) that has established itself in humans after it was likely acquired from camels. This scenario reminds us of the pandemic potential of the Middle East respiratory syndrome CoV, an agent that is thought to be acquired from camels without presently causing sustained human-to-human transmission.

Author contributions: Z.A.M., A.A., V.T., J.F.D., and C.D. designed research; V.M.C., I.E., A.M.L., R.D., H.J., K.J.Z.J.N., E.K., M.Y., M. Al Masri, I.G., B.E.M., B.M., M.A. Müller, M.H., S.B., U.W., and J.J. performed research; Z.A.M., A.M.L., R.D., H.J., A.A., and B.M. contributed new reagent/analytic tools; V.M.C., I.E., M.A. Müller, and V.T. analyzed data; and J.F.D. and C.D. wrote the paper.

The authors declare no conflict of interest.

This article is a PNAS Direct Submission. I.E. is a Guest Editor invited by the Editorial Board. Freely available online through the PNAS open access option.

Data deposition: The sequences reported in this paper have been deposited in the GenBank database (accession nos. [KT253324-27](https://doi.org/10.1093/nar/ktt253) and [KU291448-49](https://doi.org/10.1093/nar/ktt291)).

¹V.M.C. and I.E. contributed equally to this work.

²To whom correspondence may be addressed. Email: drexler@virology-bonn.de or drosten@virology-bonn.de.

This article contains supporting information online at www.pnas.org/lookup/suppl/doi:10.1073/pnas.1604472113/-DCSupplemental.

1. Vectorborne diseases

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7. CEPI - Coalition for Epidemic Preparedness and Innovation

8. MERS-CoV

9. Other

- Cyclospora infections, Guinea worm



Cyclospora cases reported in Texas, Canada

Filed Under: [Cyclospora](#); [Foodborne Disease](#)

Lisa Schnirring | News Editor | CIDRAP News | Aug 12, 2016



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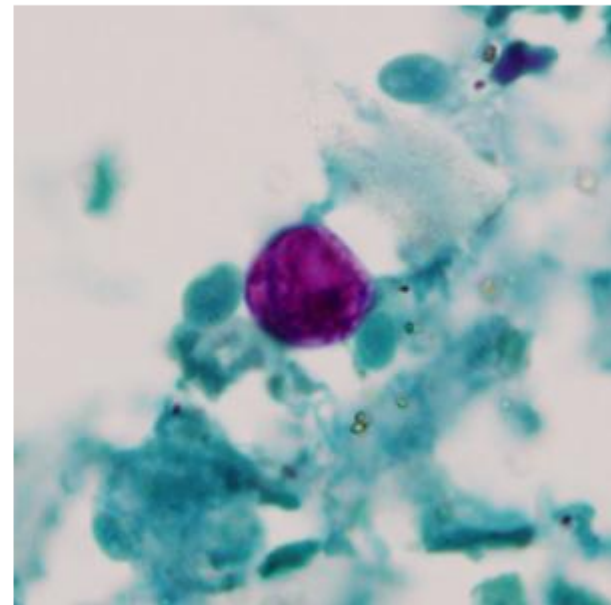


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Texas recently issued an advisory to health providers about a rise in *Cyclospora* cases, and Canada yesterday said it was investigating 51 cases in four provinces.

In a related development, an increase in *Cyclospora* infections in United Kingdom residents who traveled to Mexico prompted a warning on Aug 10 from Public Health England (PHE).

A number of *Cyclospora* infections occur each year in those who travel outside the United States, and foodborne outbreaks in the country over the past decades have been linked to imported produce, including raspberries, basil, and snow peas. Since 2013 the parasite *Cyclospora cayentanensis* has been the cause of large multistate outbreaks, including one in 2013 and a 2014 event centered in Texas that was partially linked to cilantro imported from Puebla, Mexico.



CDC

Why The World Isn't Close To Eradicating Guinea Worm

August 9, 2016 · 6:47 PM ET

Heard on [All Things Considered](#)

For the past few years, the world has been on the edge of one of the biggest medical triumphs of modern history: Wiping out a horrific parasite from the face of the Earth.

In the early '80s, there were 3.2 million cases of Guinea worm — a 2-foot-long worm that emerges slowly — and excruciatingly — from a blister on the skin.

A massive campaign, led by former President Jimmy Carter, has eradicated the worm from all but four countries. And this year, there have been only seven cases, the Carter Center reports.

"I'd like for the last Guinea worm to die before I do," President Carter [told](#) reporters last year.

But a surprising wrinkle has cropped up: The worm has found a new way to hide and thrive.



Memorandum



Date: July 19, 2016

From: WHO Collaborating Center for
Research, Training and Eradication of Dracunculiasis, CDC

Subject: GUINEA WORM WRAP-UP #242

To: Addressees

*Detect and Contain Every Guinea Worm Infection Immediately!!!***MALI'S MINISTER OF HEALTH VISITS ENDEMIC VILLAGES**

On June 16-17, 2016 Mali's Minister of Health the Honorable Dr. Marie Madeleine Togo, made an historic visit to Tominian district (Segou Region), which reported one of the five human cases of Guinea worm disease and the only infected dog reported in Mali in 2015. The minister's large delegation included the Governor of Segou Region, the *Prefet* of Tominian, the Regional Director of Health of Segou, the National Program Coordinator of Mali's Guinea Worm Eradication Program Dr. BERTHE Mohamed, Carter Center Country Representative Mr. Sadi Moussa, and the Mayor of Fangasso, as well as many other officials and persons. During her visit to Tominian, the district capital, after hearing a presentation on health with a focus on Guinea worm disease by the district medical officer in the district hospital, the minister urged the governor and the *prefet* to support the health staff in the struggle to eradicate Guinea worm disease.

On the second day, the minister and her entourage visited the village and health center at Fangasso, which reported one case of Guinea worm disease in its catchment area from the village of Parasilame in August 2015, as well as the village and health center at Ouan, which reported one infected dog in December 2015. The minister reminded the audience at Fangasso that the President of Mali has committed to stop transmission of Guinea worm disease in 2016, and she asked the national program coordinator to speak about the disease, its prevention, and the cash reward for reporting Guinea worm infections in humans or animals. In Ouan the welcome was especially effusive, because the Member of Parliament accompanying the minister is from that village. The Minister, Governor, Member of Parliament, National Program Coordinator and the Country Representative of The Carter Center addressed the crowd at the health center. All the events at Tominian, Fangasso and Ouan were covered by the mass media (television and radio). Fangasso is located 40 kilometers (~24 miles) from Tominian; Ouan is 70 kilometers (~42 miles) from Tominian.

The secretariat of the Guinea Worm Eradication Program (GWEP) visited several other areas in Tominian district after the minister departed to visit Mopti Region, where she also spoke about Guinea worm eradication. In the village of Dimana, about 2 kilometers from Fangasso, the team was informed of a dog with three Guinea worms, the first of which began emerging on June 15.

Questions, Comments and Discussion



Center for Infectious Disease Research and Policy
University of Minnesota

**CIDRAP Leadership Forum
Infectious Disease BRIEFING**

August 17, 2016

Thank you for attending!