



CIDRAP

Center for Infectious Disease Research and Policy
University of Minnesota

**CIDRAP Leadership Forum
Infectious Disease BRIEFING**

April 12th, 2017

HOT TOPICS

1. Yellow Fever
2. Avian Influenza
3. Chemical/Bioterrorism
4. Bat/salad (Walmart)

UPDATES

5. Zika
6. MERS-CoV
7. Avian Influenza
8. Antimicrobial resistance
9. CEPI
10. Ebola
11. Other

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10 April 2017

Situation summary in the Americas

Since epidemiological week (EW) 1 to EW 14 of 2017, **Brazil, Colombia, Ecuador, Peru, the Plurinational State of Bolivia, and Suriname** have reported suspected and confirmed yellow fever cases.

Following is a summary of the situation in Brazil.

In **Brazil**, since the beginning of the outbreak in December 2016 up to 6 April 2017, there were 2,210 cases of yellow fever reported (604 confirmed, 1,054 discarded, and 552 suspected under investigation), including 302 deaths (202 confirmed, 52 discarded, and 48 under investigation). The case fatality rate (CFR) is 33% among confirmed cases.

According to the probable site of infection,¹ the cases were reported in 342 municipalities, while the confirmed cases were distributed among 103 municipalities in 5 states (Espírito Santo, Minas Gerais, Pará, Rio de Janeiro, and São Paulo).

With regard to the confirmed fatal cases and their probable site of infection, 148 were in Minas Gerais, four in São Paulo, 43 in Espírito Santo, four in Pará, and three in Rio de Janeiro. In descending order, the CFR among suspected and confirmed cases by state is 100% in Pará, 80% in São Paulo, 34% in Minas Gerais, 29% in Espírito Santo, and 27% in Rio de Janeiro.

In the state of Minas Gerais, the downward trend in reported cases persists. The date of symptoms onset of the last reported case is 6 March 2017. In the state of Espírito Santo, since EW 9 of 2017, a new increase has been observed in the number of cases, the majority of which are being reported from the southern part of the state. Local and state authorities are investigating and characterizing this increase in cases while also intensifying immunization activities. Similarly, in the state of Rio de Janeiro, an increase in the number of suspected cases was observed between 15 and 25 March; it will be necessary to observe if this trend is maintained in the following weeks (**Figure 1**).

Moreover, since EW 13, four autochthonous cases of yellow fever were confirmed in the state of Pará, in the municipalities of Alenquer (3) and Monte Alegre (1).²

¹ There are also 41 discarded cases that were reported by other Federal Units.

² Information available at: <http://www.saude.pa.gov.br/?p=4997>



PAHO: More yellow fever in Espirito Santo, Brazil

Filed Under: **Yellow Fever**

Stephanie Soucheray | News Reporter | CIDRAP News | Apr 11, 2017



The Pan American Health Organization (PAHO) released its latest epidemiologic update on the current yellow fever outbreak in Brazil, noting that while cases have decreased in Minas Gerais state, there have been increasing reports of the mosquito-borne disease in Espirito Santo.

Cases move toward Atlantic coast

Though Minas Gerais, an interior state in Brazil, has been the epicenter of the country's yellow fever outbreak, there has not been a new patient with a symptom onset later than Mar 6.

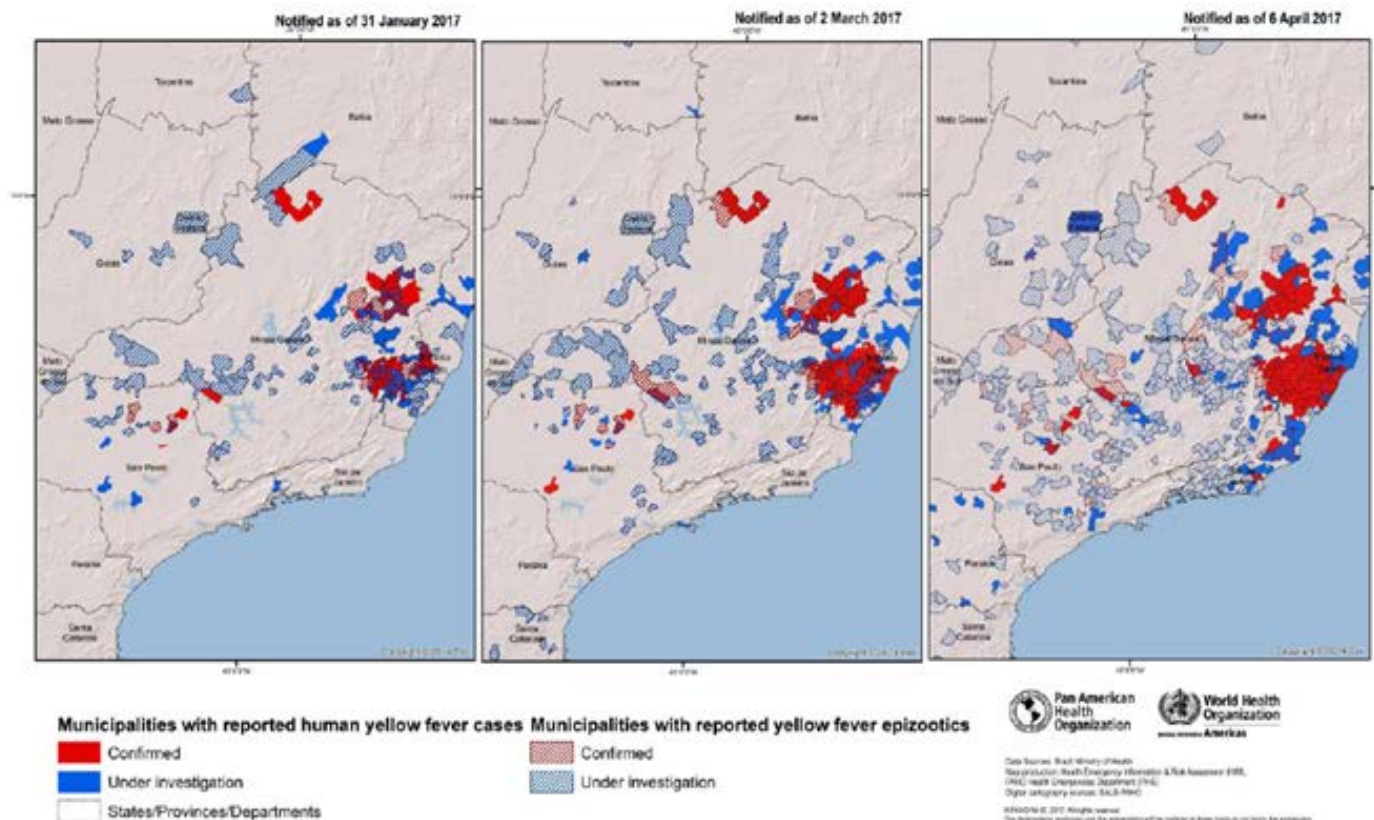
That downward trend is not seen in Espirito Santo, where the southern part of the state is reporting a sharp increase in cases. The state of Rio de Janeiro also reported an uptick of cases between Mar 15 and 25. Both Espirito Santo and Rio de Janeiro are in the middle of a massive yellow fever vaccination campaign.



Moises Silva Lima / Flickr cc

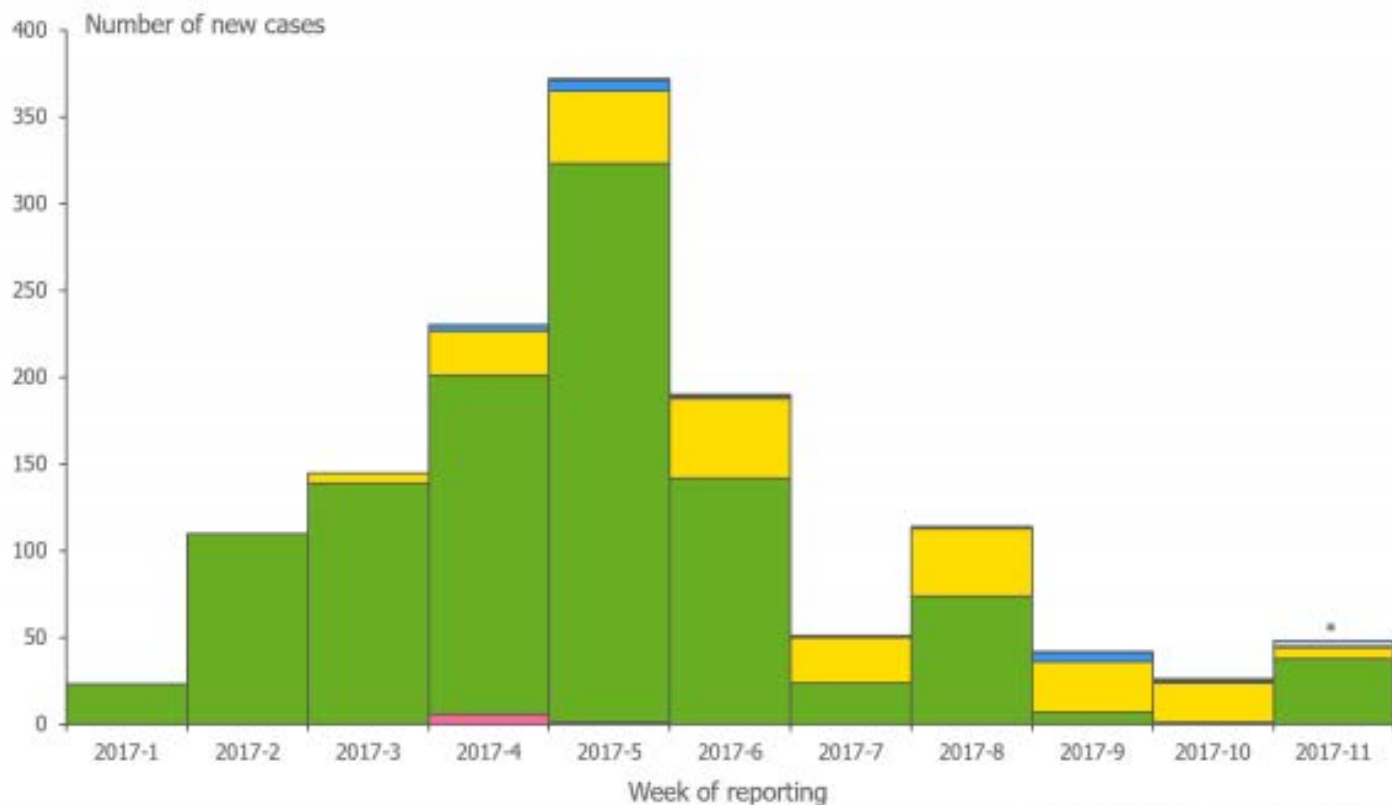
Almost 3,000 epizootics in monkeys have been noted in Brazil.

Figure 2. Geographic distribution of reported human yellow fever and yellow fever epizootics, 31 January, 2 March, and 6 April 2017.



Source: Data published by the Brazil Ministry of Health (Monitoring of yellow fever cases and deaths), compiled and reproduced by PAHO/WHO

Distribution of suspected and confirmed human cases of yellow fever in Brazil by week of reporting from 1 January to 16 March 2017



* incomplete data for this week

■ Bahia
 ■ Minas Gerais
 ■ Espírito Santo
 ■ Goiás
 ■ São Paulo
 ■ Tocantins
 ■ Rio Grande do Norte
 ■ Rio de Janeiro

Emergencies preparedness, response

WHO dispatched 3.5 million doses of yellow fever vaccine for outbreak response in Brazil

30 March 2017



Vaccination campaigns against yellow fever are currently ongoing in Brazil.
WHO/A. Costa

In response to the yellow fever outbreak currently on-going in Brazil some 3.5 million doses of vaccine from the emergency stockpile were deployed to the country through the International Coordinating Group (ICG) on Vaccine Provision for yellow fever. The ICG oversees a continuously replenished emergency stockpile of 6 million doses of yellow fever vaccine. The ICG includes four agencies: the World Health Organization (WHO), United Nations Children's Fund (UNICEF,) the International Federation of Red Cross and Red Crescent Societies (IFRC), and Médecins Sans Frontières (MSF). The Government of Brazil will reimburse the cost of the 3.5 million doses sent through the yellow fever emergency stockpile financed by Gavi Alliance.



News Scan for Apr 07, 2017

Brazil changes yellow fever vaccine recommendations

Brazil's Ministry of Health announced they are changing their yellow fever immunization recommendation from two doses to one, according to a report from a daily newspaper based in Sao Paulo.

Historically, the country has recommended one initial dose of the vaccine with a second given 10 years later. The change follows the World Health Organization 2014 recommendation, which stated that one dose of yellow fever vaccine provided lifelong immunity from the mosquito-borne disease.

According to the Brazilian health ministry, people who have received the first dose no longer require a second. This change could help stretch the yellow fever vaccine supply as the country undergoes vaccination campaigns in the wake of the current outbreak that began in January.

The primary supplier in Brazil, Bio-Manguinhos at the Fiocruz Institute, has been producing more than 8 million doses per month, and the country has also acquired 3.5 million doses from the WHO's international fund.

The Brazilian ministry of health said there's no shortage of vaccine, but demand is high.

Apr 6 *Fohla de S. Paulo* article

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4. Bat / salad (Walmart)

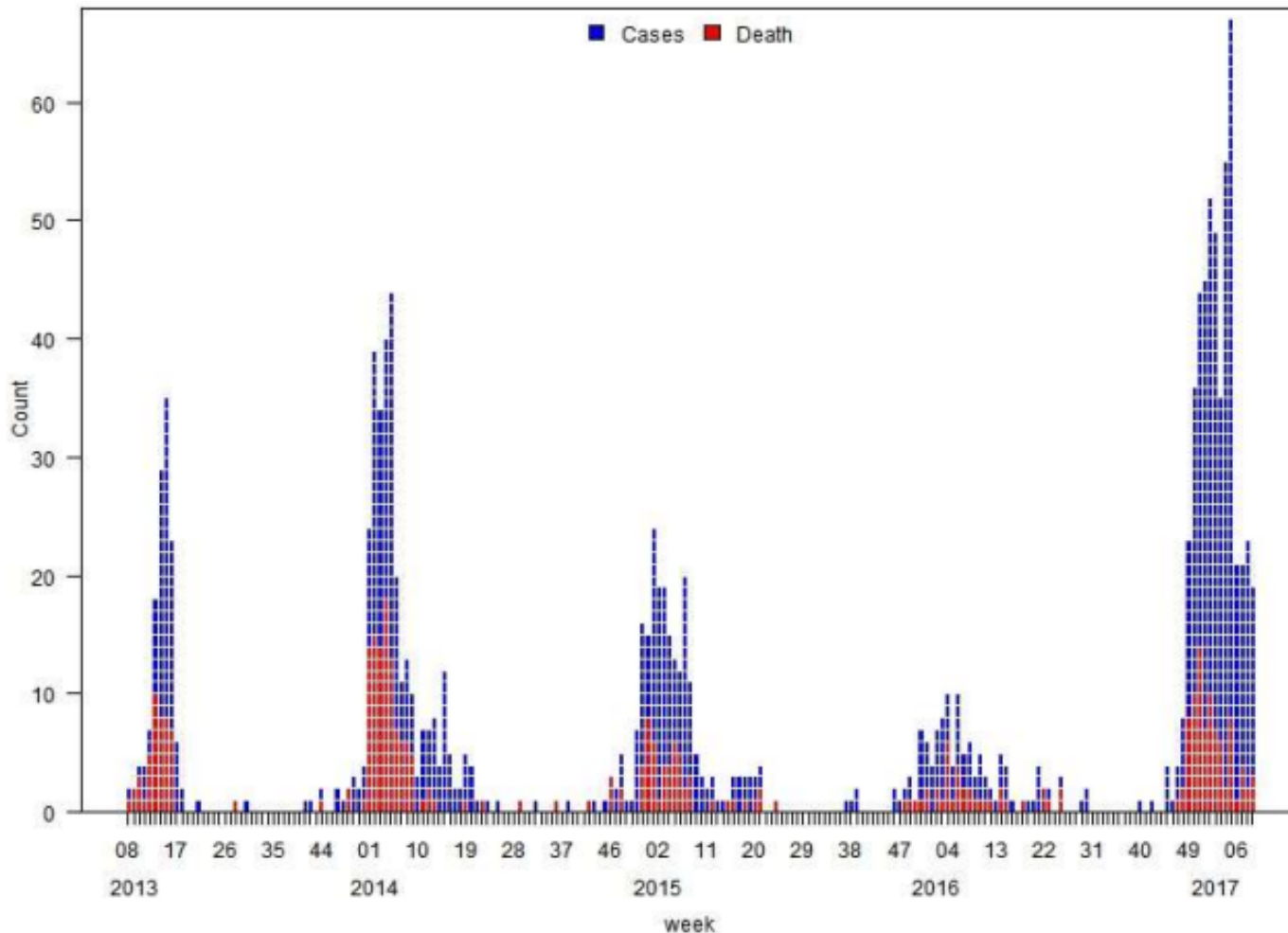
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Figure 2: Epidemiological curve of avian influenza A(H7N9) cases in humans by week of onset, 2013-2017

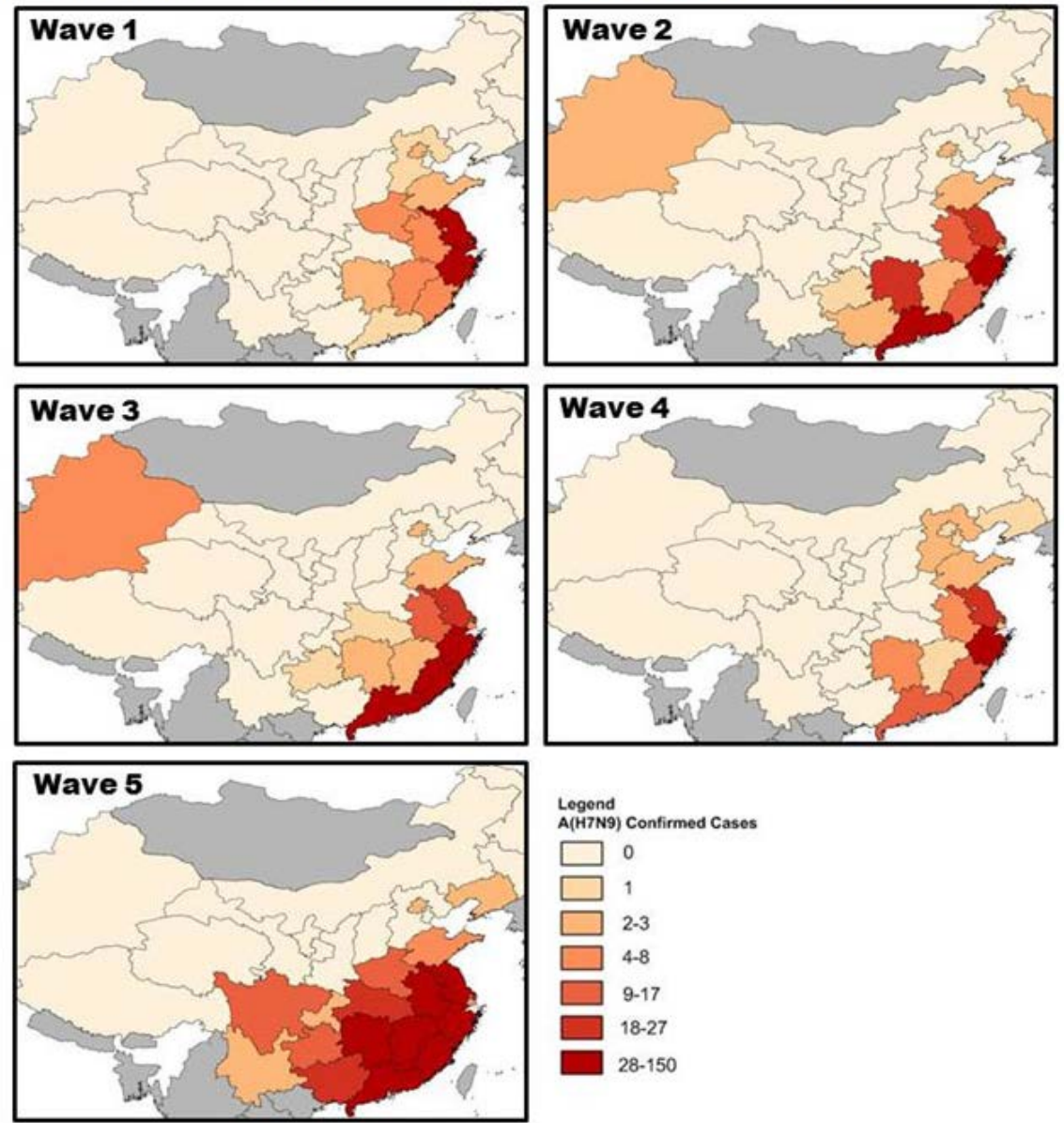
Number of confirmed human H7N9 cases and deaths, as reported to WHO by week, as of 2017-3-13





Public Health Agency of Canada

Figure 2. Spatial distribution of human cases of avian influenza A(H7N9), China, March 2013 to April 5, 2017.





China reports 17 H7N9 cases as fast disease progression noted

Filed Under: [H7N9 Avian Influenza](#); [Avian Influenza \(Bird Flu\)](#)

[Lisa Schnirring](#) | News Editor | [CIDRAP News](#) | Mar 31, 2017



China's weekly number of H7N9 avian flu cases continues to slowly decline following an unprecedented spike of cases over the winter, with 17 more illnesses, 3 of them fatal, reported in the past week.

Also, a research team from China published an analysis of cases in Jiangsu province this season, which raises questions about whether illnesses have become more severe over the past few H7N9 waves.

New cases in 6 Chinese provinces

Citing mainland health officials, Hong Kong's Centre for Health Protection (CHP) said today in a weekly update that 17 new cases were reported from Mar 24 to Mar 30 in six provinces, most of them in Hunan, Jiangsu, and Guangxi provinces. All patients were adults, with illness onsets ranging from Mar 6 to Mar 24.

Sixteen of the patients had exposure to poultry or poultry markets, a known risk factor for contracting H7N9.



DmyTo / iStock



Detailing recent H7N9 cases, WHO notes 3 clusters

Filed Under: [H7N9 Avian Influenza](#); [Avian Influenza \(Bird Flu\)](#)

Lisa Schnirring | News Editor | CIDRAP News | Mar 16, 2017

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The World Health Organization (WHO) in two new reports weighed in on 84 recently reported H7N9 avian influenza infections reported by China, including a recent imported case from Hong Kong, noting three possible human-to-human illness clusters.

In the overviews, posted yesterday and today, the WHO covered cases reported between Feb 24 and Mar 10. China is experiencing its fifth and biggest wave of H7N9 activity, which surged dramatically in December and peaked in February.

Though cases are starting to decline, China continues to report new infections, such as a case from the city of Chongqing reported today by Hong Kong's Centre for Health Protection (CHP).

Clusters include family members, hospital patient

Of the 84 patients noted in the WHO updates, illness onsets ranged from Feb 24 to Mar 4. Fourteen deaths were reported, and for patients with available clinical information, 60 have pneumonia or severe pneumonia. One had a mild infection.



Ben Piven / Flickr cc

Why Chinese Scientists Are More Worried Than Ever About Bird Flu

April 11, 2017 · 5:06 AM ET
Heard on Morning Edition



At a research lab on top of a forested hill overlooking Hong Kong, scientists are growing viruses. They first drill tiny holes into an egg before inoculating it with avian influenza to observe how the virus behaves.

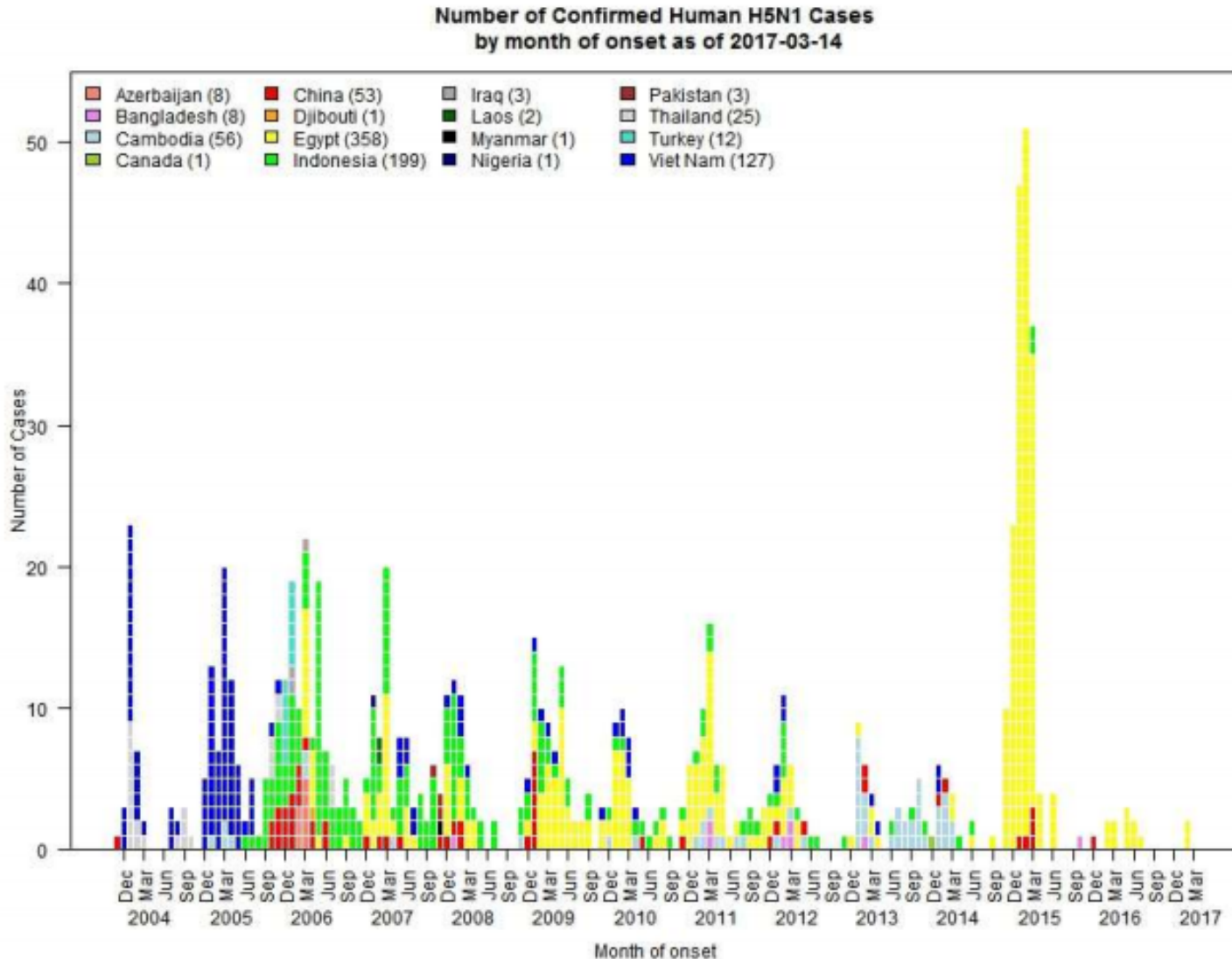
This lab at Hong Kong University is at the world's forefront of our understanding of H7N9, a deadly strain of the bird flu that has killed more people this season — 162 from September up to March 1 — than in any single season since when it was first discovered in humans four years ago. That worries lab director [Guan Yi](#). But what disturbs him more is how fast this strain is evolving. "We're trying our best, but we still can't control this virus," says Guan. "It's too late for us to eradicate it."

Guan is one of the world's leading virologists. He has held some of the worst in his hands: H1N5, H1N1 and SARS. His work on Severe Acute Respiratory Syndrome, or SARS, in 2003 led to the successful identification of its infectious source from live animal markets and helped China's government control the virus that had killed hundreds, avoiding a second outbreak.

He has now moved on to avian influenza.



Figure 1: Epidemiological curve of avian influenza A(H5N1) cases in humans by week of onset, 2003-2017



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Middle East

Deadly nerve agent sarin used in Syria attack, Turkish Health Ministry says

By **Louisa Loveluck** April 6 

BEIRUT — The chemical used in an attack that killed scores of Syrian civilians was most likely the deadly nerve agent sarin, the Turkish Health Ministry said Thursday.

Autopsies conducted on three victims by Turkish doctors confirmed that chemical weapons were used in a daybreak strike on Tuesday widely attributed to the Syrian government, providing the most concrete evidence to date for why so many people died.

“According to the preliminary results, the findings suggest that the patients were exposed to a chemical substance (Sarin),” the statement said.

[\[Which chemical weapon was used in Syria? Here's what investigators know.\]](#)

[Dozens of victims](#) of the attack on the northwestern town of Khan Sheikhoun have been evacuated to Turkey for medical treatment. Turkish Justice Minister Bekir Bozdag said that the World Health Organization supervised the autopsies and that the results were sent to The Hague for further analysis.



Panel report recommends blueprint for fixing biodefense gaps

Filed Under: [Avian Influenza \(Bird Flu\)](#); [Biosecurity Issues](#); [Bioterrorism](#); [Ebola](#); [VHF](#)

Lisa Schnirring | News Editor | CIDRAP News | Oct 29, 2015

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Biological threats lack the same attention as other security concerns and need the political muscle of the vice president's office to form a national policy and streamline funding, according to a high-level panel that aired its findings in a Senate hearing yesterday.

The Blue Ribbon Study Panel on Biodefense—headed by seasoned politicians Joseph Lieberman and Tom Ridge—published its complete findings in an 82-page report that contains 33 urgent recommendations and 100 action items.

Lieberman represented Connecticut in the Senate for 24 years, which included 6 years as chair of the Senate Homeland Security Committee. Ridge is a former Secretary of Homeland Security, who also served in the US House of Representatives and as governor of Pennsylvania.



sborisov / iStock

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Packaged salad contained bat, possible rabies exposure

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

Stephanie Soucheray | News Reporter | CIDRAP News | Apr 10, 2017



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The Centers for Disease Control and Prevention (CDC) and the Food & Drug Administration (FDA) are helping the Florida Department of Health investigate a dead bat that was found in a packaged salad purchased from a grocery store in Florida.

According to a CDC statement, the two people who bought the salad have been prophylactically treated for rabies, a potentially deadly disease. The CDC said the bat's remains were too deteriorated to test for rabies, so the agency could not rule out the disease.

"It's extremely rare for rabies to be transmitted through mucosal membrane contact with a dead animal," CDC spokesman Tom Skinner told CIDRAP News. "The likelihood of transmission is a theoretical risk, but we're taking every precaution."

The bat was found in a salad mix, produced by Fresh Express and packaged in a clear container. The company, of Orlando, Fla., issued a recall of its product, the Organic Marketside Spring Mix, on Apr 8, according to an FDA notice. The recalled salads were sold only in Walmart stores in the southeastern United States.



danielwilliams / iStock

CDC assisting investigation of animal material found in packaged salad



Media Statement

For Immediate Release: Saturday, April 8, 2017

Contact: [Media Relations](#)

(404) 639-3286

Experts from the Centers for Disease Control and Prevention (CDC) are working with the Florida Department of Health and the U.S. Food and Drug Administration (FDA) to support an investigation of a dead bat that was found in a packaged salad purchased from a grocery store in Florida. Two people in Florida reported eating some of the salad before the bat was found. The bat was sent to the CDC rabies lab for laboratory testing because bats in the United States sometimes have been found to have this disease. The deteriorated condition of the bat did not allow for CDC to definitively rule out whether this bat had rabies.

Transmission of rabies by eating a rabid animal is extremely uncommon, and the virus does not survive very long outside of the infected animal. CDC is supporting Florida local and state health officials in evaluating the people who found the bat in the salad. In this circumstance, the risk of rabies transmission is considered to be very low, but because it isn't zero, the two people who ate salad from the package that contained the bat were recommended to begin post-exposure rabies treatment. Both people report being in good health and neither has any signs of rabies. CDC is not aware of any other reports of bat material found in packaged salads.

On April 8, 2017, Fresh Express [issued a recall](#) [↗](#) of a limited number of cases of Organic Marketside Spring Mix. The salads were sold in a clear container with production code G089B19 and best-if-used-by date of APR 14, 2017 located on the front label. The recalled salads were distributed only to Walmart stores located in the Southeastern region of the United States. All remaining packages of salad from the same lot have been removed from all store locations where the salad was sold.

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Zika birth defects noted in 1 in 10 infected US pregnant women

Filed Under: [Zika](#)

Lisa Schnirring | News Editor | CIDRAP News | Apr 04, 2017



Of 250 pregnant women in the United States with confirmed Zika infections in 2016, 1 in 10 had a fetus or baby with Zika-related birth defects, the largest study so far of its kind has found, with levels similar to earlier reports from Brazil and French Guiana.

The new information comes from a Centers for Disease Control and Prevention (CDC) registry for monitoring pregnant women who have potential Zika exposure. The findings also came with a warning that too few babies born with congenital Zika infections are getting the recommended brain imaging. CDC experts published their findings today in a Vital Signs report in *Morbidity and Mortality Weekly Report (MMWR)*.

At a media telebriefing today, Anne Schuchat, MD, acting CDC director, said most of the pregnant women were infected with Zika virus during travel outside of the United States and that the Zika threat is far from over. She said the CDC is still receiving about 30 to 40 reports of pregnant women infected with Zika virus each week.



oceandigital / iStock



News Scan for Mar 30, 2017

Experts theorize why Brazil had fewer microcephaly cases in 2016 than 2015

A new letter published in the *New England Journal of Medicine* attempts to explain why Brazil saw fewer babies born with microcephaly in 2016 as compared to 2015, despite more suspected Zika infections. The authors suggest that 2016's second wave of Zika infections could have actually been another flavivirus, such as chikungunya.

Using data from two national databases, experts from Brazil and the World Health Organization (WHO) showed that in 2015 a spike in Guillain-Barre syndrome (GBS) was followed 6 months later with a spike in microcephaly cases. Zika infection has been linked to both diseases. But in 2016, a spike in GBS was not followed by a subsequent rise in microcephaly numbers. The authors suggest that chikungunya —not Zika—was causing the GBS in 2016, and Brazil only experienced a true Zika outbreak in the previous year.

The authors posited two other possibilities for the lack of microcephaly cases in 2016: the women in 2015 suffered an unknown co-infection or co-factor that led them to have babies with microcephaly, or the fear of microcephaly and Zika infection led to more abortions and delayed pregnancies. But birth registry data are not yet complete enough to determine whether birth rates fell or abortion rates increased in 2016.

"Among these hypotheses, the first seems to be the most plausible — that is, both ZIKV and chikungunya viruses are important causes of GBS, but among the arboviruses circulating in Brazil, only ZIKV causes microcephaly and other neurologic disorders after infection during pregnancy," the authors conclude.

Mar 29 *N Engl J Med* letter



Texas expands Zika test guidelines for pregnant women

Filed Under: [Zika](#)

[Lisa Schnirring](#) | [News Editor](#) | [CIDRAP News](#) | [Apr 07, 2017](#)



Ahead of an increase in mosquito activity, Texas health officials today announced they were expanding Zika testing for all pregnant women plus people with symptoms in six counties on the southern tip of the state at the Mexico border.

The announcement comes amid other activities to prepare for more Zika cases, including an upcoming telephone town hall meeting from the US Centers for Disease Control and Prevention (CDC) to better prepare clinicians for treating pregnant women and babies affected by the virus.



shironosov / iStock

Texas casts wider net

Last October, even before it confirmed any local Zika cases, Texas issued testing guidance for pregnant women in six counties, but only in those who had two of the four most common symptoms. The counties were Cameron, Hildago, Starr, Webb, Willacy, and Zapata.

The race is on to stop a Zika virus epidemic in the US

Daniel Bukszpan, special to CNBC.com
6 Hours Ago



The weather is still cold in much of the United States, so many Americans have forgotten about the dangers that can accompany warm weather. One such danger is the Zika virus, and while it may not be on many people's minds just yet, it will be again, when temperatures climb.

According to the Pan American Health Organization's most recent Regional Zika Epidemiological [Update](#) (Americas), the number of people infected with the Zika virus in the Caribbean is 651 cases per week, and in South America the weekly average is 6,601 cases, of which 6,164 were reported in Brazil alone.

In the United States more than 5,000 cases were reported between Jan. 1, 2015, and March 1, 2017. While 4,779 of these were cases in travelers returning from areas outside of the United States already known to be Zika hot spots, six cases in Texas and 215 cases in Florida were presumed to be acquired through [local mosquito-borne transmission](#).

One company on the front lines in the Zika war is Oxitec, a biotech company in the U.K. But if you think they're working on a vaccine, you're wrong. Rather, they're creating genetically modified male *Aedes aegypti* mosquitoes to mate with the females who carry the disease.

Two live-attenuated Zika vaccines advance

Filed Under: **Zika**

Lisa Schnirring | News Editor | CIDRAP News | Apr 11, 2017

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In Zika vaccine developments, two different live-attenuated vaccine candidates progressed, with one research group reporting promising findings in mice and the other announcing that the first trial has been launched in humans.

Also, a study on breastfeeding mother and babies didn't have enough information to say if the virus can be passed through that route.

Vaccine fully protects mice

The animal study evaluated a live-attenuated vaccine containing a deletion in the Zika virus genome (10-del ZIKV), an approach that has been used to develop a dengue vaccine that is now in phase 3 trials. Researchers from the University of Texas Medical Branch at Galveston (UTMB) and the Evandro Chagas Institute in Brazil reported their preclinical trial findings yesterday in *Nature Medicine*.



bdsnp/iStock

HOT TOPICS

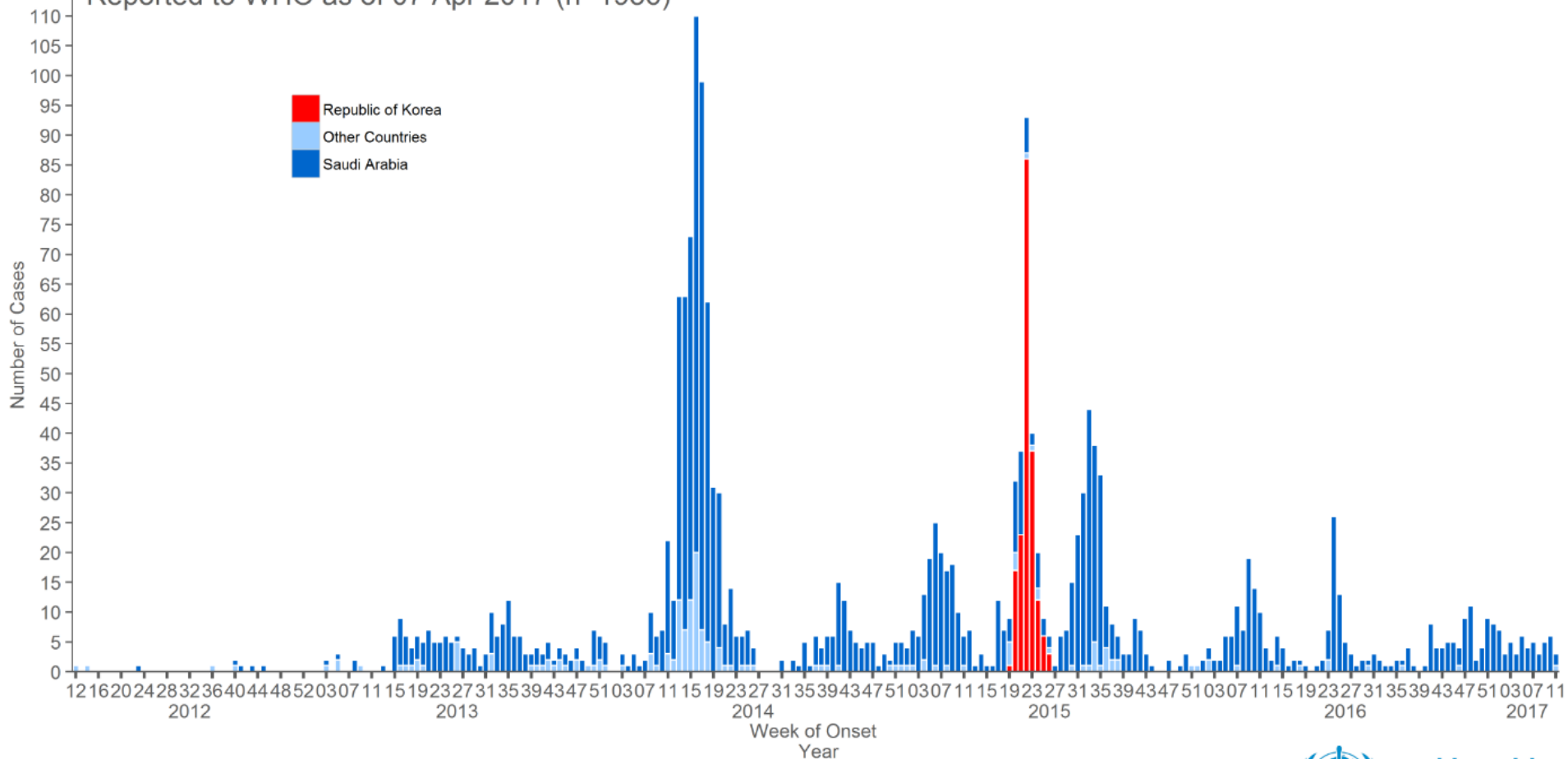
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Confirmed global cases of MERS-CoV

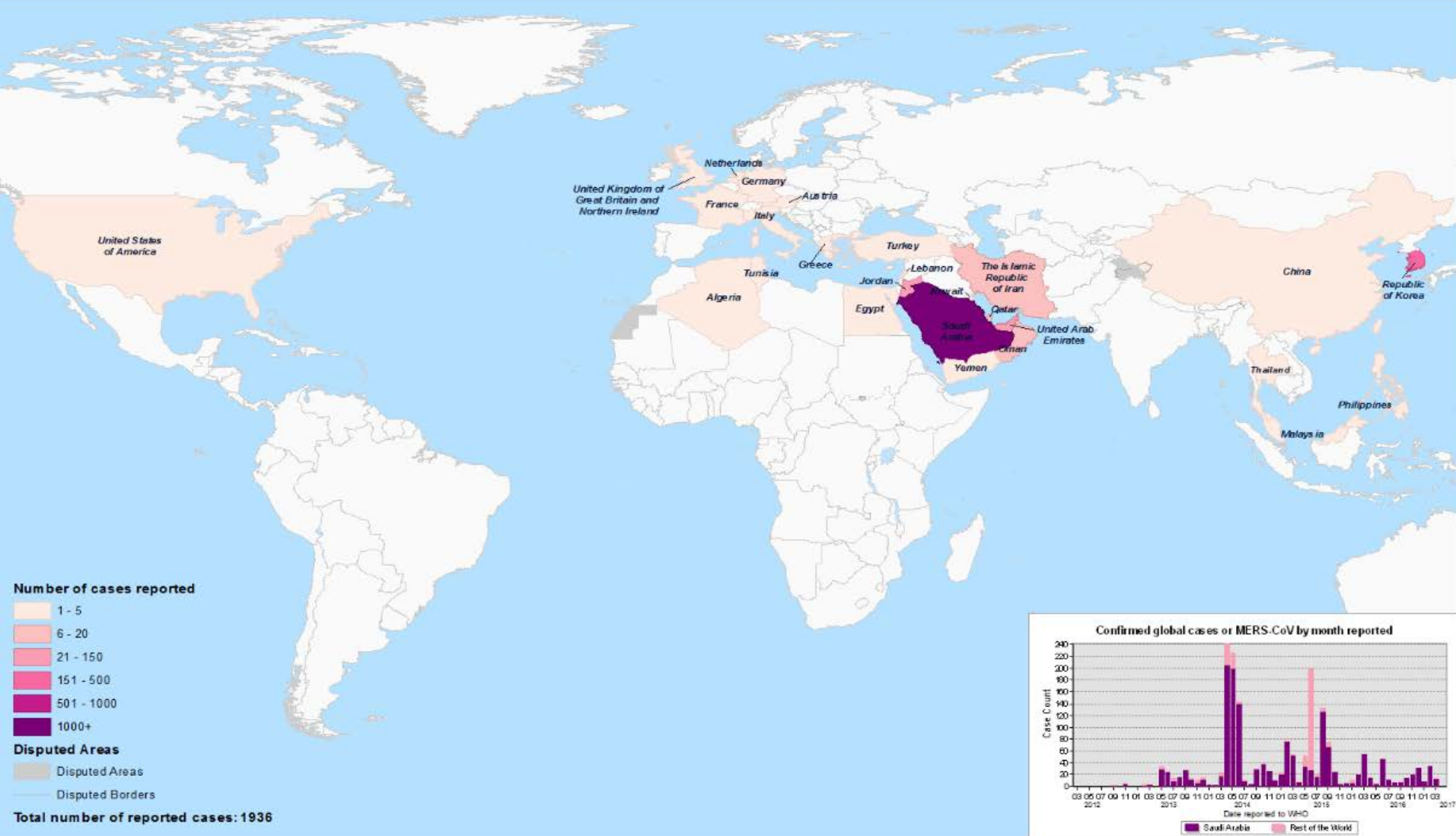
Reported to WHO as of 07 Apr 2017 (n=1936)



Other countries: Algeria, Austria, Bahrain, China, Egypt, France, Germany, Greece, Iran, Italy, Jordan, Kuwait, Lebanon, Malaysia, Netherlands, Oman, Philippines, Qatar, Thailand, Tunisia, Turkey, United Arab Emirates, United Kingdom, United States of America, Yemen

Please note that the underlying data is subject to change as the investigations around cases are ongoing. Onset date estimated if not available.

CONFIRMED GLOBAL CASES OF MERS-COV 2012 - 2017



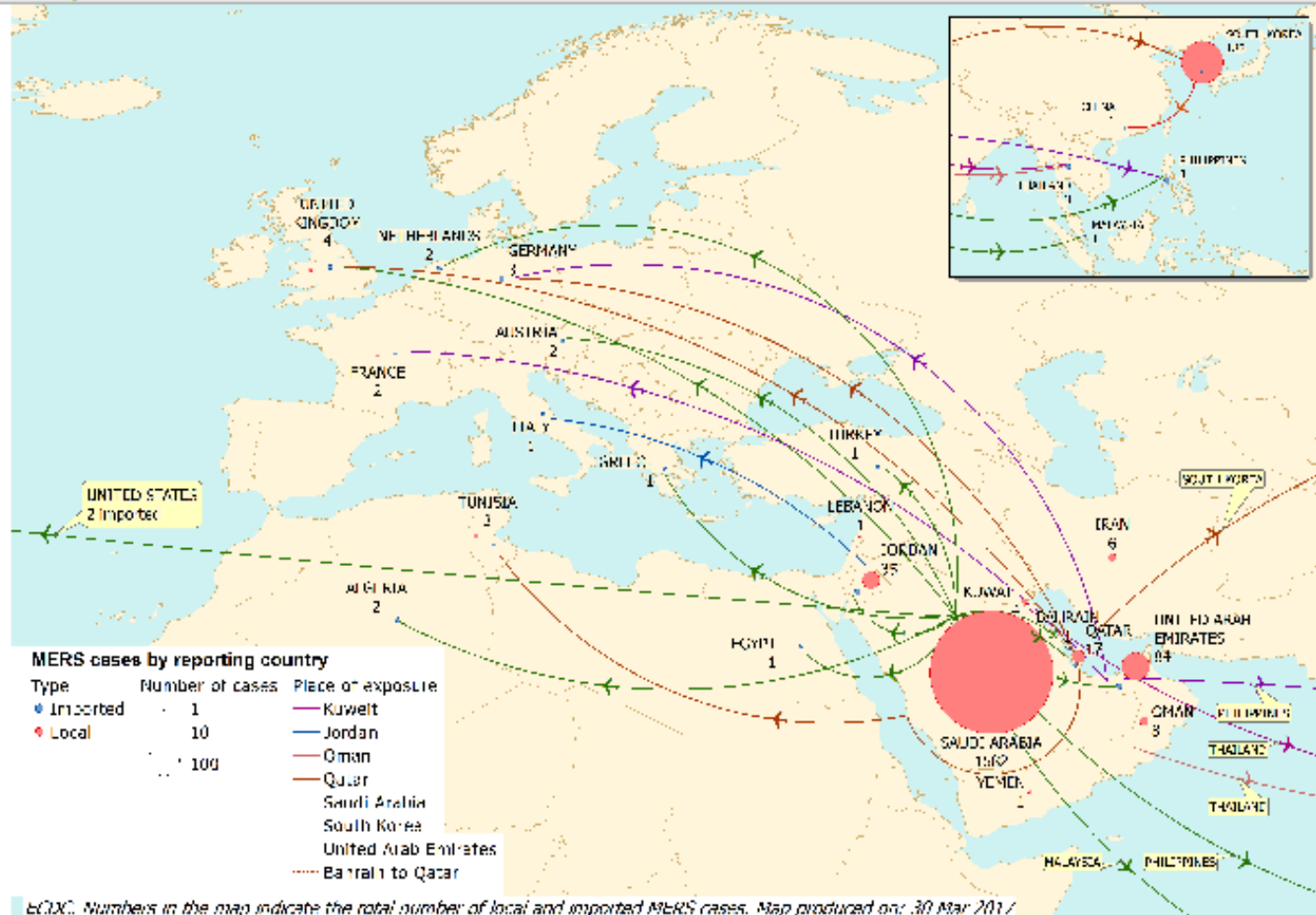
Map Scale (A3): 1:1,109,175,793
1 cm = 11,092 km

Coordinate System: GCS WGS 1984
Datum: WGS 1984
Units: Degree

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 authorities, 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.

Data Source: World Health Organization
© WHO 2017. All rights reserved.
Map date: 07/04/2017

Distribution of confirmed cases of MERS-CoV by reporting country and place of probable infection, March 2012 - 30 March 2017





News Scan for Apr 03, 2017

Two more MERS cases confirmed in Saudi Arabia

Saudi Arabia reported two new MERS-CoV cases over the weekend, including a case in an asymptomatic healthcare worker who contracted the virus in a healthcare setting.

On Apr 1 the Saudi Arabian Ministry of Health (MOH) said a 58-year-old Saudi man from Dammam was in stable condition after showing symptoms of MERS-CoV (Middle East respiratory syndrome coronavirus) infection. The source of his infection is listed as primary, meaning it's unlikely he contracted the disease from someone else.

Yesterday, the MOH reported that a 31-year-old old Saudi healthcare professional from Abqaiq was diagnosed as having MERS. He was asymptomatic and described as acquiring the virus in a healthcare setting. Late last week, the MOH reported that a man in the same city was diagnosed as having MERS after having direct contact with camels.

The new cases raise Saudi Arabia's total to 1,584 MERS-CoV cases, 659 of them fatal, since the virus was first detected in humans in 2012. Nine people are still being treated for their infections, the MOH said.

Apr 1 MOH update

Apr 2 MOH update



Ten Saudi MERS cases linked to hospital outbreak

Filed Under: [MERS-CoV](#)

[Lisa Schnirring](#) | News Editor | [CIDRAP News](#) | Apr 04, 2017

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A MERS-CoV outbreak linked to a dialysis unit at a hospital in Wadi Aldwaser has sickened 10 people, 2 of them with asymptomatic infections, the World Health Organization (WHO) said yesterday in an update covering 18 recent cases in Saudi Arabia.

In a separate statement today on an infection reported a couple weeks ago from Qatar, the WHO said investigators are still trying to determine how the man was exposed to the virus.

Outbreak includes 2 health workers

Wadi Aldwaser is in Riyadh province and is about 420 miles south of the city of Riyadh. Details about more cases from the facility appeared in yesterday's WHO MERS-CoV (Middle East respiratory syndrome coronavirus) update. The 18 cases were reported by Saudi officials between Feb 23 and Mar 16.

Two of the patients in the hospital cluster are healthcare workers, men ages 36 and 39, both of whom are asymptomatic. Six of the cases were detected through contact tracing. All of the patients are adults, ranging in age from 31 to 72. The group includes six women and four men. Illness onsets range from Feb 26 to Mar 9.



Picsfive / iStock



News Scan for Apr 06, 2017

New Saudi MERS case linked to indirect camel contact

The Saudi Arabian Ministry of Health (MOH) reported a new case of MERS today, in a man who had indirect camel exposure.

The patient is a 62-year-old Saudi man from Riyadh who is in critical condition after presenting with symptoms of MERS-CoV (Middle East respiratory syndrome coronavirus). The MOH said the man had indirect exposure to camels, a risk factor for contracting the virus.

The new case brings Saudi Arabia's total to 1,585 MERS-CoV cases, 659 of them fatal, since the virus was first detected in humans in 2012. Seven people are still being treated for their infections, the MOH said.

Apr 6 MOH report



News Scan for Apr 11, 2017

Two new cases of MERS reported in Saudi Arabia

The Saudi Arabian Ministry of Health (MOH) reported two new cases of MERS-CoV today, the first since Apr 6.

A 72-year-old Saudi man from Riyadh is in stable condition after presenting with symptoms of MERS-CoV (Middle East respiratory syndrome coronavirus). The source of his infection is listed as primary, meaning it's unlike he contracted the virus from anyone else.

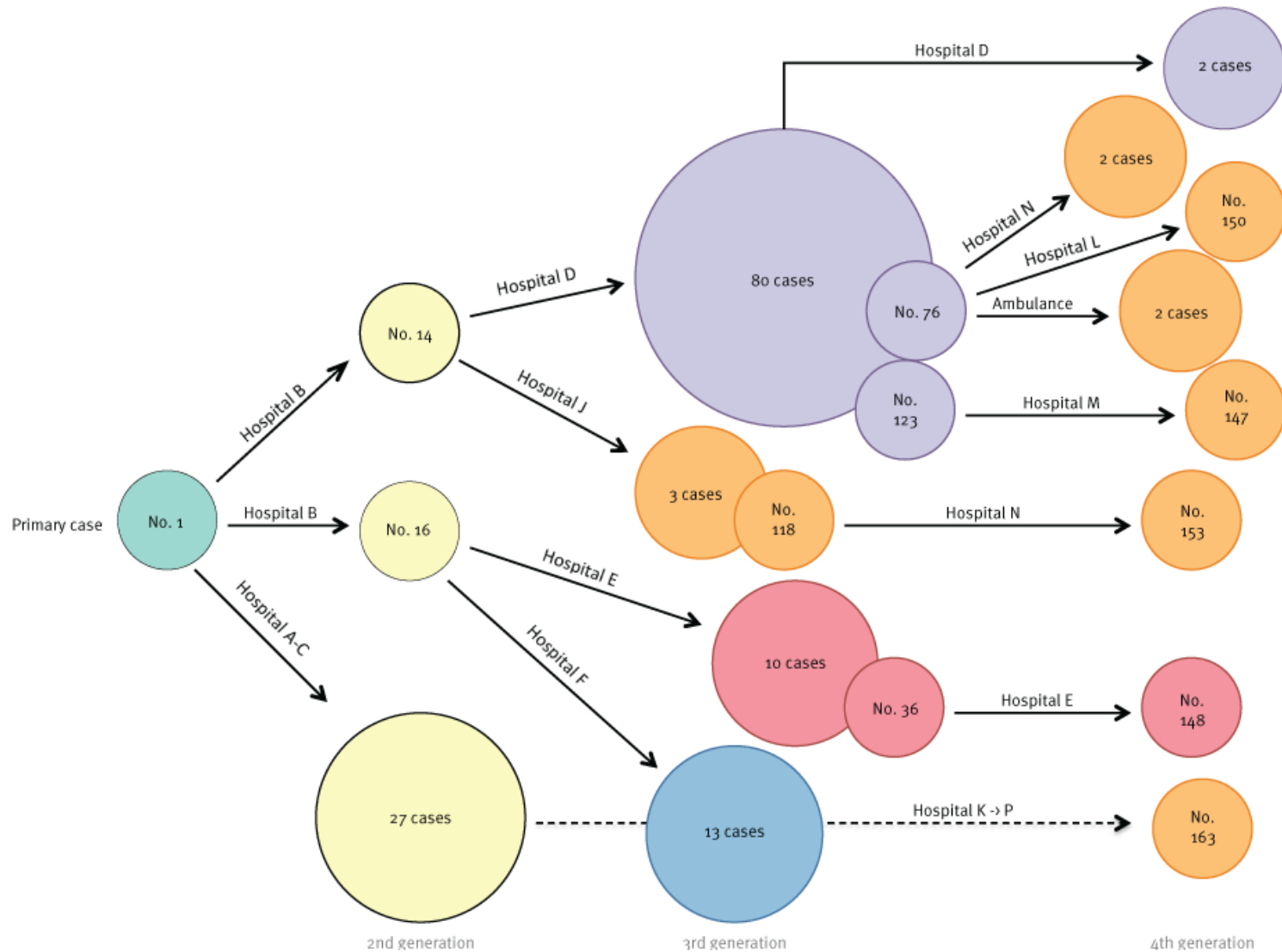
The second patient is a 60-year-old Saudi man from Al Huwayah. He is in critical condition after presenting with symptoms of the coronavirus. The MOH said the man had direct contact with camels.

The new case brings Saudi Arabia's total to 1,589 MERS-CoV cases, 659 of them fatal, since the virus was first detected in humans in 2012. Seven people are still being treated for their infections, the MOH said.

Apr 11 MOH update

FIGURE 2

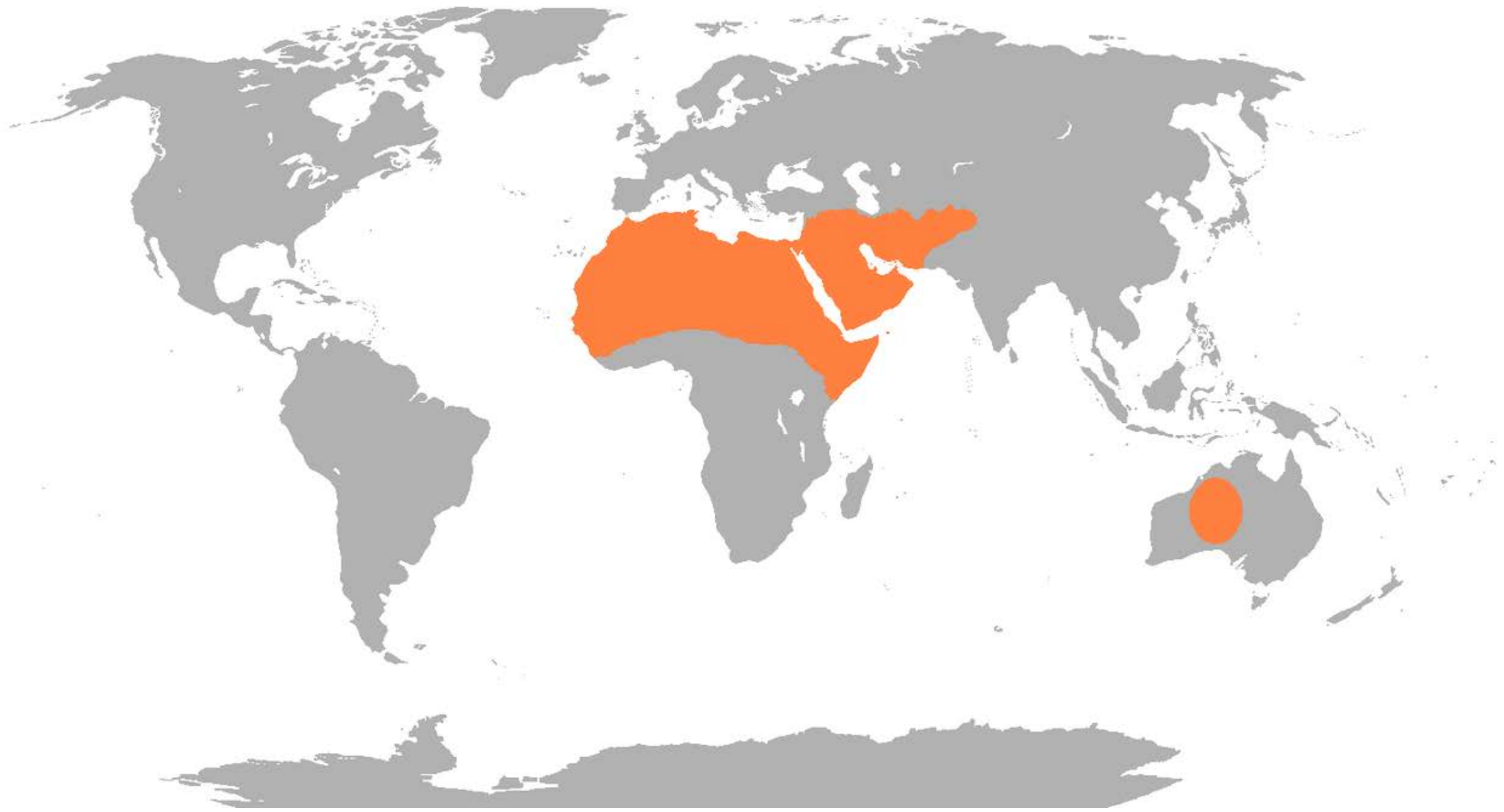
Simplified transmission diagram illustrating the superspreading events associated with Cases 1, 14, 16 and fourth-generation infections of MERS-CoV, South Korea, 11 May–19 June 2015 (n = 166)



MERS-CoV: Middle East respiratory syndrome coronavirus.

Source: Cowling BJ, Park M, Fang VJ, et al. Preliminary epidemiological assessment of MERS-CoV outbreak in South Korea, May to June 2015. *Euro Surveill* 2015 Jun 25;20(25):pii=21163







News Scan for Mar 30, 2017

MERS evidence found in camels from more African countries

Camels sampled in Burkina Faso, Ethiopia, and Morocco show evidence of exposure to MERS, and scientists also see seropositivity patterns based on location, type of camel herd, and density of the herd. Researchers reported their findings today in the latest issue of *Eurosurveillance*.

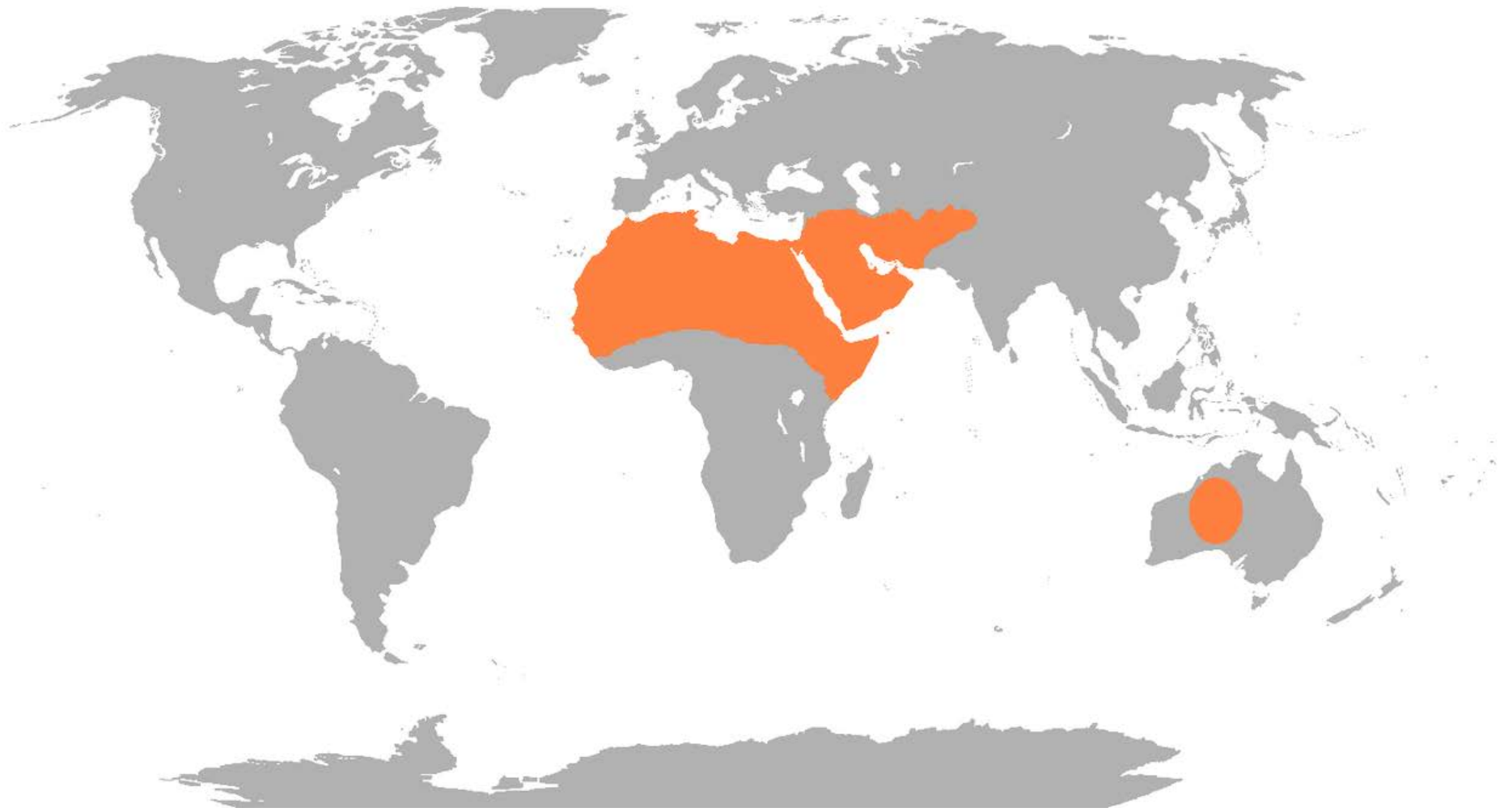
Camels from Ethiopia—a main exporter of camels to the Arabian Peninsula—are already known to test positive for Middle East respiratory syndrome coronavirus (MERS-CoV) RNA, but the findings for Burkina Faso and Morocco are the first and add to the growing list of countries in north, west, and east Africa where the virus is thought to circulate in the animals.

In the new study, researchers obtained blood and nasal samples from 1,500 camels in a variety of settings in the three countries in February and March of 2015. They found a relatively high rate of MERS-CoV RNA in samples from Ethiopian camels (up to 15.7%), followed by Burkina Faso (12%) and Morocco (7.6%).

MERS-CoV RNA detection rates were higher for camels that were raised for milk or meat, in younger animals, and large- and medium-sized herds. Research said the levels in younger camels might be higher, because they may be more susceptible due to lack of previous exposure, and that the female camels in milking herds might be re-exposed by the younger camels. Also, they noted camels in higher-density settings, compared to those used for transport in which the animals are separated from the herd, could amplify transmission when the virus is brought in from other sources.

They said genetic analysis of MERS-CoV from camels from the three countries is needed to better understand how the virus evolves in African camels.

Mar 30 *Eurosurveill* report





Researchers find novel bat coronaviruses, akin to MERS, SARS

Filed Under: [MERS-CoV](#); [SARS](#)

Lisa Schnirring | News Editor | CIDRAP News | Apr 05, 2017

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Two new studies shed more light on coronaviruses in bats, one identifying a novel coronavirus similar to MERS-CoV in a bat from Uganda and the other finding wide diversity in China that includes strains similar to the SARS virus.

The new findings add to an expanding list of coronaviruses identified in bats and strengthen the case that the viruses known to cause severe disease in humans originate in bats.

MERS-like virus said to pose no human threat

The study detailing the finding in the Ugandan bat was conducted by a team from the United States and Uganda, part of the US Agency for International Development Emerging Pandemic threats PREDICT project. The researchers published the results yesterday in *mBio*.



Adam Zdebel / Flickr cc

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3. Chemical/Bioterrorism
4. Bat/salad (Walmart)

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Flu Scan for Apr 10, 2017

High-path avian flu outbreaks continue in Africa, Asia, Europe

Five countries reported more highly pathogenic avian flu outbreaks, including H5N1 events in Nigeria and Vietnam, more H5N8 detections in Europe, and more farms hit by H5N2 in Taiwan, according to the latest notifications from the World Organization for Animal Health (OIE).

Nigeria reported two more H5N1 outbreaks on commercial farms in Bauchi state in the central part of the country, one housing pullets and the other layer poultry. Between the two events the virus killed 262 of 2,630 birds. Vietnam's latest H5N1 outbreak struck backyard birds starting on Apr 5, killing all 43 birds.

In Europe, German officials said a wild duck found dead on Apr 5 in Bavaria state in the southeast tested positive for H5N8, as did fattening turkeys at a commercial farm housing 9,800 birds in Lower Saxony state in the northwest. Also, Lithuania reported that a mute swan found dead on Mar 29 on a river bank near the city of Kaunas tested positive for H5N8.

Elsewhere, Taiwan reported 10 more highly pathogenic H5N2 outbreaks, nine at commercial farms and one at a slaughterhouse. The events began from Mar 23 to Apr 1, affecting birds in Yunlin, Chiayi, Changhua, and Nantou counties, as well as in the cities of New Taipei and Tainan. The virus killed 5,774 of 110,959 susceptible birds, and the remaining ones have been culled.

Apr 10 OIE report on H5N1 in Nigeria

Apr 7 OIE report on H5N1 in Vietnam

Apr 7 OIE report on H5N8 in Germany

Apr 8 OIE report on H5N8 in Lithuania

Apr 10 OIE report on H5N2 in Taiwan

Current Global Situation (ongoing outbreaks as of 27 of March 2017)

1. Avian Influenza strains causing disease events.

Strain	Count of countries affected	Increase /Decrease in countries from last report (13/03/2017)	# of ongoing outbreaks in poultry	# of ongoing outbreaks in wild birds	Increase/Decrease in ongoing outbreaks from last report (13/03/2017)	Aggregated count of poultry destroyed for ongoing outbreaks	Number of poultry destroyed since the last report (13/03/2017)
H5	2	↓ -2	3	2	↓ -2	120	0
H5N1	8	↑ 1	16	3	0	39 080	1 089
H5N2	2	0	108	2	↑ 68	922 640	389 685
H5N5	7	↓ -1	4	8	↓ -3	22	22
H5N6	6	↑ 1	49	0	↑ 9	541 667	15 398
H5N8	28	↓ -1	422	491	↓ -176	3 855 594	195 751
H7N9	2	0	10	0	↑ 2	299 135	225 835
Total	55	↓ -2	612	506	↓ -102	5 658 258	827 780

Table 1. Global situation for on-going outbreaks of Highly Pathogenic Avian Influenza in poultry and wild birds, by strain

News Scan for Apr 07, 2017

GOF study shows serial pig infection can enhance H9N2 transmissibility

In a gain-of-function (GOF) experiment, Belgian researchers showed that serial passaging of H9N2 avian flu viruses in pigs enhanced the virus's replication and transmissibility, the scientists reported yesterday in *PLoS One*.

Using an H9N2 virus isolated years ago from a quail in Hong Kong, the team performed multiple serial passages—consecutive infections—in flu-free swine to assess the potential of the pathogen to adapt to swine. The initial virus produced positive lung samples in half the pigs, but after four passages, the pigs had viral replication in their entire respiratory tract, resulting in 100% of H9N2-positive lung samples.

Viral shedding also increased. Whereas only one out of six contact pigs showed nasal virus excretion of the wild-type H9N2 for more than 4 days with the initial virus, all six contact pigs shed H9N2 after four passages.

The authors conclude, "Our data demonstrate that serial passaging of H9N2 virus in pigs enhances its replication and transmissibility. However, full adaptation of an avian H9N2 virus to pigs likely requires an extensive set of mutations."

GOF studies enhance the pathogenicity, transmissibility, or host range of a pathogen to learn more about it. They have triggered "dual-use" concerns—that methods meant for beneficial purposes could be used to create bioterror threats or for other nefarious purposes.

Apr 6 *PLoS One* study

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Studies show single-dose potential for new malaria drug

Filed Under: **Malaria**

Lisa Schnirring | News Editor | CIDRAP News | Mar 29, 2017



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Two human challenge studies on a new malaria drug called DSM265 yielded promising data about safety and dosage and how the drug might fit in to strategies to prevent and treat infections, a pair of research groups reported yesterday.

The studies—one by an international team and the other by a group based in Germany—appeared in *The Lancet Infectious Diseases*. Over the past 15 years, malaria levels have steeply dropped, but resistance to first-line drugs is threatening progress toward eliminating the disease.

Among several new drugs being studied, DSM265—which blocks a key *Plasmodium* biosynthesis enzyme—is one of the few long-acting new antimalarials in clinical trials. The drug was discovered using throughput screening by researchers from the University of Texas Southwestern, the University of Washington, and Monash University. It is being developed by the Medicines for Malaria Venture



NIAID

Malaria sporozoites.



Report warns of rise in drug-resistant tuberculosis

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

Chris Dall | News Reporter | CIDRAP News | Mar 23, 2017

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A new report warns that some of the incremental progress made in the global fight against tuberculosis (TB) could be lost with the emergence and spread of drug-resistant strains of the disease.

The report, published today in *The Lancet Respiratory Medicine*, is a reminder that despite some important gains in recent years, TB—a contagious bacterial disease that mainly affects the lungs—remains a vexing global health problem.

With the exception of Africa, the number of TB deaths and the TB incidence rate have fallen around the world. According to the World Health Organization (WHO), effective diagnosis and treatment of TB saved 49 million lives between 2000 and 2015. Yet TB still infects more than 10 million people each year and remains the leading infectious disease killer and one of the top 10 causes of death worldwide, responsible for 1.8 million fatalities in 2015.





CARB-X awards \$24 million for new antibacterial products

Filed Under: [Antimicrobial Resistance](#); [Antimicrobial Stewardship](#); [Public Health](#)

Chris Dall | News Reporter | CIDRAP News | Mar 30, 2017

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New antibiotic development is getting a much-needed shot in the arm.

CARB-X, a public-private initiative that aims to boost discovery and development of novel antibiotics and diagnostic tests to combat antibiotic resistance, announced today it will be awarding \$24 million to 11 biotech companies working on new antibacterial products that target gram-negative bacteria.

The announcement marks the first phase of funding by CARB-X (the Combating Antibiotic Resistant Bacteria Biopharmaceutical Accelerator), a joint US and UK effort launched in July 2016 to help provide a financial boost for global antibacterial innovation and development, which has been hampered both by scientific challenges and a lack of financial incentives. CARB-X officials hope the funding will help accelerate research and bring new antibiotics to market faster.



Credit: shironosov / iStock

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Vaccines for Epidemic Infections and the Role of CEPI

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Abstract

The author reviews the foundation of the Coalition for Epidemic Preparedness and Innovations and the choices it has made for funding of vaccine development against epidemic diseases. He comments on those decisions as well as proposing how CEPI could remain relevant for the long term.

Keywords

emerging infections, lassa, ebola, MERS, chikungunya, Nipah, commercialization, development, field delivery, infectious disease

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Prime-boost Ebola vaccine yields immune response at 1 year

Filed Under: [Ebola](#); [VHF](#)

[Lisa Schnirring](#) | News Editor | [CIDRAP News](#) | Mar 14, 2017

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A prime-boost Ebola vaccine regimen that is well into clinical trials shows immune response 1 year after vaccination, the longest so far for experimental vaccines against the disease using that strategy, researchers reported today.

The trial involved two vaccine candidates, a priming dose of the adenovirus vectored Ad26.ZEBOV developed by Johnson & Johnson and a booster dose of MVA-BN-Filo from Bavarian Nordic. A team based at the University of Oxford in the United Kingdom published its findings today in the *Journal of the American Medical Association (JAMA)*.



Wellcome Trust

World Health Organization (WHO) advisors have said different types of vaccines will likely be needed to protect people against Ebola. A different vaccine, VSV-EBOV, developed by NewLink Genetics and Merck, has shown good effectiveness in clinical trials in West Africa and has emerged as the frontrunner and offers a tool for outbreak response. Health experts, however, are eyeing other strategies that are likely to afford protection over a longer period for preemptive immunization of key groups such as healthcare workers.



Large trial launches of different Ebola vaccine strategies

Filed Under: [Ebola](#); [VHF](#)

[Lisa Schnirring](#) | News Editor | [CIDRAP News](#) | Apr 06, 2017



An international consortium is launching a large trial in West Africa to test different Ebola vaccines and strategies, a step that could shed light on how quickly a strong immune response kicks in, how long the response lasts, and the safety profile of the vaccine candidates.

According to a statement today from the National Institutes of Health (NIH), the group is called PREVAC (the Partnership for Research on Ebola VACCination). It includes the NIH, the French National Institute of Health and Medical Research (Inserm), the London School of Hygiene and Tropical Medicine, and health officials in Guinea and Liberia.

So far, no Ebola vaccines have been licensed, though some are far along in clinical trials. Global health officials see a role for different Ebola vaccine candidates, such as responding to disease flares or immunizing key groups to prevent outbreaks. In January, an expert panel report raised concerns about momentum stalling out since cases have dropped off and articulated remaining research challenges for the different vaccines and approaches.



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REPORT



INTEGRATING
CLINICAL
RESEARCH
INTO
EPIDEMIC
RESPONSE

**THE
EBOLA
EXPERIENCE**

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"A powerful book that looks at the threat of emerging diseases with clarity and realism, and offers us not just fear but plans." —RICHARD PRESTON, author of *The Hot Zone* and *The Demon in the Freezer*

DEADLIEST ENEMY

Michael T. Osterholm, PhD, MPH
and Mark Olshaker



OUR WAR AGAINST KILLER GERMS



**“A POWERFUL
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The Real Threat to National Security: Deadly Disease

By MICHAEL T. OSTERHOLM and MARK OLSHAKER MARCH 24, 2017

While the Trump administration is proposing significantly increased military spending to enhance our national security, it seems to have lost sight of the greatest national security threat of all: our fight against infectious disease.

We already spend far more on our military than any other country in the world. To help pay for the increases, President Trump wants to cut back many federal programs, including those that prepare us to wage war against microbes, the greatest and most lethal enemy we are ever likely to face. This is where “defense spending” needs to increase, significantly.

President Trump’s budget would cut funding for the [National Institutes of Health](#) by 18 percent. It would cut the State Department and the United States Agency for International Development, a key vehicle for preventing and responding to outbreaks before they reach our shores, by 28 percent. And the repeal of the Affordable Care Act would kill the billion-dollar Prevention and Public Health Fund, which provides funding for the [Centers for Disease Control and Prevention](#) to fight outbreaks of infectious disease. (While the budget also calls for the creation of an emergency fund to respond to outbreaks, there is no indication that it would offset the other cuts, or where the money would come from.)



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'Unseen Enemy'

Award-winning director Janet Tobias and top experts explore lurking viruses and bacteria that may create the next global pandemic.

Questions, Comments and Discussion



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