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

April 11th, 2018

HOT TOPICS

1. Influenza update
2. Pandemic preparedness and global markets
3. US government appointment update
4. Chemical attacks; implications for bioterrorism
5. Lassa fever
6. Yellow fever
7. Chronic Wasting Disease (CWD)

UPDATES

8. Antimicrobial resistance
9. MERS
10. Horsepox study / gain of function
11. WHO Roadmaps
12. Zika
13. Other

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US flu activity drops further as hospitalizations rise

Filed Under: Influenza, General

Stephanie Soucheray | News Reporter | CIDRAP News | Mar 02, 2018

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The Centers for Disease Control and Prevention's (CDC's) weekly FluView update today shows that although flu most likely peaked in mid-February, several indicators remain elevated because of the season's severity.

shironosov / iStock

The percentage of outpatient visits for influenza-like illness (ILI) dropped to 5.0% last week, down from the previous week's rate of 6.7%. That ILI is now similar to what was seen during the peak of last season, the CDC said in an accompanying summary.

The 2017-18 season has now surpassed a severe 2014-15 season in terms of hospitalizations. According to the CDC, last week's cumulative overall rate of hospitalizations was 81.7 per 100,000 people.

"The overall hospitalization rate and all age-specific hospitalization rates, with the exception of children 5-17 years, are now higher than the end-of-season hospitalization rates for 2014-2015; a high severity, H3N2-predominant season. The hospitalization rate for children 5-17 is similar to that of 2014-2015," the CDC said.

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Flu activity drops across country as season ebbs

Filed Under: **Influenza, General**

Stephanie Soucheray | News Reporter | CIDRAP News | Mar 09, 2018

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According to the Centers for Disease Control and Prevention's (CDC) latest FluView surveillance report today, influenza-like illness (ILI) activity is markedly down across the country this week, a clear sign that this year's severe flu season continues to wind down.

Jacques Kloppers / iStock

The percentage of outpatient visits for ILI was 3.7%, down from 5.0% the previous week. The national baseline is 2.2%. The current ILI rate is similar to what was observed at the height of the 2015-16 season.

Season not over yet

Despite the good ILI news, Anne Schuchat, MD, acting director of the CDC, said yesterday that more cases can be expected this season.

"We cannot predict how long this season will last, and while we have started to see a decline in rates of people visiting their doctor for influenza-like illness, we expect to see several more weeks of ongoing flu activity, with continued reports of hospitalizations and flu deaths in children and adults,"

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Flu declines, but hospitalizations are still high

Filed Under: Influenza, General; Influenza Vaccines

Stephanie Soucheray | News Reporter | CIDRAP News | Mar 19, 2018

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Influenza is on the retreat, but several indicators still show high activity in many parts of the country, according to the latest data compiled in the Centers for Disease Control and Prevention's (CDC's) weekly FluView report.

Xavier Donat/ Flickr cc

The percentage of outpatient visits for influenza-like illnesses (ILI) is down to 3.3%, significantly lower than the season's mid-February peak of 7.5%. That indicator has been at or above the national baseline of 2.2% for 16 weeks so far this season.

A total of 26 states plus Puerto Rico reported widespread flu activity and 12 states (Alaska, Arizona, Georgia, Kansas, Kentucky, Missouri, Nebraska, New Jersey, New Mexico, South Carolina, Virginia, and Wyoming) continue to experience high ILI activity.

Hospitalization rates still on the rise

Similar to last week, hospitalization rates rose slightly to a cumulative rate of 89.9 laboratory-confirmed influenza-associated hospitalizations per 100,000 population. In the previous week, that rate was 86.3 per 100,000 population.

The hospitalization rate of Americans over 65 increased to 386.2 per 100,000 population, up from the previous week's 370.6 per 100,000 population. The rate for adults aged 50 to 64 was 97.3 per 100,000 population, and children aged 0 to 4 years were hospitalized at a rate of 64.9 per 100,000 population.

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News Scan for Mar 30, 2018

As US flu cases continue to slow, influenza B picks up

The rate of outpatient visits for influenza-like illnesses (ILI) dropped again this week to 2.5%, down from 2.7% in the previous week, and influenza B continues to cause an increasing percentage of flu cases, according to the latest influenza surveillance data reported today by the Centers for Disease Control and Prevention (CDC).

This is the 18th week ILI has been at or above the national baseline, which is 2.2%.

Only 4 states reported high ILI activity, while 16 states and Puerto Rico reported widespread flu activity, a clear sign that these are the last weeks of a severe flu season. Last week 6 states had high ILI activity, and 17 reported widespread flu.

The CDC confirmed 4 additional pediatric deaths, bringing the season's total to 137.

Overall hospitalization rates were 96.1 per 100,000 persons—up from 93.5 last week—with adults over the age of 65 representing the highest proportion of hospitalizations, at 412.6 per 100,000 population, followed by adults aged 50 to 64 (104.2 per 100,000 population) and children aged 0 to 4 years (68.7 per 100,000 population). A strong majority of hospitalizations (76.6%) were associated with influenza A virus.

Influenza B was the most commonly detected strain among all cases last week, seen in 57.8% of clinical lab specimens and 64.4% of public health lab specimens sent to the CDC. Influenza B tends to be the dominant strain at the end of a flu season.

Mar 30 CDC FluView

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News Scan for Apr 04, 2018

Flu retreats throughout most of Northern Hemisphere

According to the latest global flu update from the World Health Organization (WHO), flu is declining everywhere in the Northern Hemisphere except Eastern Europe, where case counts are still rising.

Globally, influenza strains are almost evenly divided among types A and B, with 46.8% of laboratory specimens typed as influenza A and 53.2% as influenza B. Of the sub-typed influenza A viruses, 64% were influenza 2009 H1N1 and 36% were influenza H3N2. Of the characterized B viruses, 91% belonged to the Yamagata lineage and 9% to the Victoria lineage.

"In Eastern Europe, influenza activity continued to increase with influenza A virus most frequently detected followed by influenza B virus. In particular, influenza activity was still increasing in the Russian Federation, with all seasonal influenza subtypes co-circulating," the WHO said.

Flu declined in the United States, Canada, Mexico, and all Asian regions. In the temperate zones of the Southern Hemisphere, flu remained at typical inter-seasonal levels.
Apr 2 WHO update

中国国家流感中心
Chinese National Influenza Center

Chinese Influenza Weekly Report

(All data are preliminary and may change as more reports are received)

Summary

- During week 13, influenza activity level in both southern and northern provinces were low, and continued to decrease. A(H1N1)pdm09 viruses were the dominant viruses, secondly were B Yamagata-lineage.

- Among influenza viruses antigenically characterized by CNIC since October 1st, 2017, 213(91.0%) influenza A(H1N1)pdm09 viruses were characterized as A/Michigan/45/2015-like; 111(32.9%) influenza A(H3N2) viruses were characterized as A/Hong Kong/4801/2014 (H3N2)(EGG)-like, 302(89.6%) influenza A(H3N2) viruses were characterized as A/Hong Kong/4801/2014 (H3N2)(CELL)-like; 98(56.3%) influenza B/Victoria viruses were characterized as B/Brisbane/60/2008-like; 520(98.5%) influenza B/Yamagata viruses were characterized as B/Phuket/3073/2013-like.

- Among the influenza viruses tested by CNIC for antiviral resistance analysis since October 1st, 2017, all influenza A(H1N1)pdm09 and A(H3N2) viruses were resistant to adamantine; All influenza A(H1N1)pdm09, A(H3N2) and B viruses were sensitive to neuraminidase inhibitors.

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CDC vaccine panel brings back FluMist for 2018-19 season

Filed Under: Influenza Vaccines

Lisa Schnirring | News Editor | CIDRAP News | Feb 21, 2018

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CDC / Dr. Bill Atkinson

A US Centers for Disease Control and Prevention (CDC) vaccine advisory group today voted to include FluMist in the vaccine line-up for the 2018-19 flu season, returning the vaccine to the US market after a two-season hiatus.

Intense discussions swirled around how to weigh the latest scientific data on the nasal-spray vaccine, how keeping the vaccine on the sidelines might reduce vaccine uptake, and challenges healthcare providers may face in communicating the policy change to parents and patients. But in the end, the CDC's Advisory Committee on Immunization Practices (ACIP) approved restoring the live attenuated influenza virus (LAIV) by a 12-to-2 margin.

Today's action marks the latest turnaround for a vaccine, first licensed in 2003, that has offered a needle-free option—a plus for children and a formulation that has been useful in school-based flu immunization campaigns.

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WHO changes 2 strains for 2018-19 flu vaccine

Filed Under: Influenza Vaccines

Lisa Schnirring | News Editor | CIDRAP News | Feb 22, 2018

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Following a meeting in Geneva this week, the World Health Organization's (WHO's) flu vaccine advisory group today recommended changing two of the four components for quadrivalent vaccines to be produced for the Northern Hemisphere 2018-19 flu season.

Sanofi Pasteur, Vincent Moncorge / Flickr cc

The group recommended a new influenza A H3N2 vaccine strain and switched the influenza B Victoria lineage component from a B/Brisbane/60/2008-like virus to a B/Colorado/06/2017-like virus.

Also, in reviewing the latest genetic information on the most recently identified zoonotic flu viruses, the experts recommended having on hand one new H5N6 avian flu candidate vaccine virus for pandemic preparedness purposes.

H3N2 same as in Southern Hemisphere vaccine

The new H3N2 vaccine strain, known as A/Singapore/INFIMH-16-0019/2016, reflects the same change the WHO vaccine advisors made in September for the Southern Hemisphere's 2018 flu season.

Early season co-circulation of influenza A(H3N2) and B(Yamagata): interim estimates of 2017/18 vaccine effectiveness, Canada, January 2018

Danuta M Skowronski[1,2], Catharine Chambers[1], Gaston De Serres[3,4], James A Dickinson[5], Anne-Luise Winter[6], Rebecca Hickman[6], Tracy Chan[1], Agatha N Jassem[1,2], Steven J Drews[7,8], Hugues Charest[3], Jonathan B Gubbay[9,10], Nathalie Bastien[11], Yan Li[11], Mel Krajden[1,2]

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Using a test-negative design, we assessed interim vaccine effectiveness (VE) for the 2017/18 epidemic of co-circulating influenza A(H3N2) and B(Yamagata) viruses. Adjusted VE for influenza A(H3N2), driven by a predominant subgroup of clade 3C.2a viruses with T131K+R142K+R261Q substitutions, was low at 17% (95% confidence interval (CI):−14 to 40). Adjusted VE for influenza B was higher at 55% (95% CI: 38 to 68) despite prominent use of trivalent vaccine containing lineage-mismatched influenza B(Victoria) antigen, suggesting cross-lineage protection.

The 2017/18 influenza season in Canada has been characterised by co-circulation of influenza A(H3N2) and B(Yamagata) viruses, the latter unusual so early in the season [1]. Most European countries are also experiencing simultaneous influenza A and B epidemics, with B(Yamagata) predominating [2], whereas the United States (US) has experienced a substantial epidemic due predominantly to influenza A(H3N2) [3].

The 2017/18 trivalent influenza vaccine (TIV) includes influenza A/Hong Kong/4801/2014(H3N2)-like (clade 3C.2a) and B/Brisbane/60/2008(Victoria-lineage)-like (clade 1A) antigens. The quadrivalent influenza vaccine (QIV) contains an additional influenza B/Phuket/3073/2013(Yamagata-lineage)-like (clade 3) antigen. The same components were included in the 2016/17 northern and 2017 southern hemisphere vaccines [4].

Low vaccine effectiveness (VE) for the 2017/18 season has been anticipated following the interim report from Australia indicating VE of just 10% during its 2017 influenza A(H3N2) epidemic [5]. In the context of exclusive QIV use, Australia reported higher VE of 57% against co-circulating influenza B viruses [5]. Here we report interim 2017/18 VE estimates for influenza A(H3N2) and influenza B from participating provinces of the Canadian Sentinel Practitioner Surveillance Network (SPSN), where QIV comprised less than one third of vaccine doses distributed overall through the publicly funded campaign.

Vaccine effectiveness evaluation

VE was derived using a test-negative design [6-9]. Nasal/nasopharyngeal specimens and epidemiological data were collected from patients presenting within 7 days of onset of influenza-like illness (ILI) to community-based sentinel practitioners in Alberta, British Columbia, Ontario and Quebec. ILI was defined as acute onset of fever and cough and at least one other symptom including sore throat, myalgia, arthralgia or prostration. Fever was not a requirement for elderly adults ≥65 years of age and older. Vaccination status was based on patient and/or practitioner reporting of 2017/18 vaccination at least 2 weeks before symptom onset; patients vaccinated less than 2 weeks before onset or with unknown vaccination status/timing were

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US study finds 36% flu vaccine protection, 25% against H3N2

Filed Under: Influenza Vaccines

Lisa Schnirring | News Editor | CIDRAP News | Feb 15, 2018

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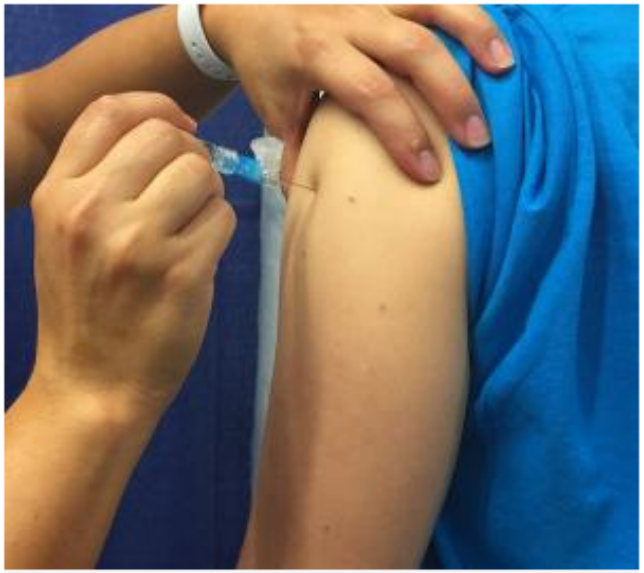
An eagerly awaited estimate today of flu vaccine effectiveness (VE) in the United States so far this season confirmed that protection against the H3N2 strain is low and not much different than a similar report from Canada earlier this month.



NIAID

The latest findings flesh out a vaccine protection gap that is part of what's fueling a record-high flu season in the United States and bolster the case that researchers and public health experts are making for the development of much improved flu vaccines.

With H3N2 as the dominant strain again this season, scientists have grappled with complex challenges regarding declining vaccine protection believed to be related to problems with egg-based production and wide genetic diversity in circulating H3N2 strains.

Seasonal Influenza Vaccine Effectiveness, 2005-2017

CDC conducts studies to measure the benefits of seasonal flu vaccination each flu season to help determine how well flu vaccines are working. These vaccine effectiveness (VE) studies regularly assess and confirm the value of flu vaccination as a public health intervention. Study results of vaccine effectiveness can vary based on study design, outcome(s) measured, population studied and the season in which the flu vaccine was studied.

CDC has been working with researchers at universities and hospitals since the 2003-2004 flu season to estimate how well flu vaccine works through observational studies using medically attended laboratory-confirmed flu as the outcome. This is the U.S. Flu Vaccine Effectiveness (VE) Network. The U.S. Flu VE Network currently consists of five study sites across the United States that measure the flu vaccine's effectiveness at preventing outpatient medical visits due to laboratory-confirmed influenza. CDC's observational studies at U.S. Flu VE Network sites measure outpatient visits* for laboratory-confirmed influenza infections using a highly accurate lab test called rRT-PCR to verify the outcome. These studies compare the odds of vaccination among outpatients with acute respiratory illness and laboratory-confirmed influenza infection to the odds of vaccination among outpatients with acute respiratory illness who test negative for influenza infection.

The overall, adjusted vaccine effectiveness estimates for influenza seasons from 2005-2017 are noted in the chart below. (Estimates are typically adjusted for study site, age, sex, underlying medical conditions, and days from illness onset to enrollment.)

Seasonal Influenza Vaccine Effectiveness, 2005-2018

Table. Adjusted vaccine effectiveness estimates for influenza seasons from 2005-2018

Influenza Season†	Reference	Study Site(s)	No. of Patients‡	Adjusted Overall VE (%)	95% CI
2004-05	Belongia 2009	WI	762	10	-36, 40
2005-06	Belongia 2009	WI	346	21	-52, 59
2006-07	Belongia 2009	WI	871	52	22 ,70
2007-08	Belongia 2011	WI	1914	37	22, 49
2008-09	Unpublished	WI, MI, NY, TN	6713	41	30, 50
2009-10	Griffin 2011	WI, MI, NY, TN	6757	56	23, 75
2010-11	Treanor 2011	WI, MI, NY, TN	4757	60	53, 66
2011-12	Ohmit 2014	WI, MI, PA, TX, WA	4771	47	36, 56
2012-13	McLean 2014	WI, MI, PA, TX, WA	6452	49	43, 55
2013-14	Gaglani 2016	WI, MI, PA, TX, WA	5999	52	44, 59
2014-15	Zimmerman 2016	WI, MI, PA, TX, WA	9311	19	10, 27
2015-16	Jackson 2017	WI, MI, PA, TX, WA	6879	48	41, 55
2016-17*	Unpublished final estimates.	WI, MI, PA, TX, WA	7410	40*	32, 46*
2017-18**	Flannery 2018	WI, MI, PA, TX, WA	4,562	36**	27, 44**

The New York Times

Opinion | OP-ED CONTRIBUTORS

We're Not Ready for a Flu Pandemic

By MICHAEL T. OSTERHOLM and MARK OLSHAKER JAN. 8, 2018

The influenza season is just getting started in the United States, and it already promises to be more severe than usual. Hospital emergency rooms are filling up with flu sufferers, and pharmacies have reported medicine shortages. Twelve children had died as of last month. To make matters worse, in Australia, which experienced its flu season four to six months ago, the current vaccine appeared to be only about 10 percent effective against this year's dominant strain.

Yet as bad as this winter's epidemic is, it won't compare with the flu pandemic that is almost certainly on the horizon if we don't dedicate energy and resources to a universal vaccine.

Influenza pandemics occur when a novel animal flu virus acquires the ability to infect humans and they, in turn, transmit it to other humans. The 1918-19 Spanish flu epidemic (which despite the name may have originated in the American Midwest) killed 50 million to 100 million around the globe. Accounts at the time described people falling ill in the morning and dying that night.

THE COMPELLING NEED FOR GAME-CHANGING INFLUENZA VACCINES

AN ANALYSIS OF THE INFLUENZA VACCINE ENTERPRISE AND RECOMMENDATIONS FOR THE FUTURE

OCTOBER 2012

CIDRAP
Center for Infectious Disease Research & Policy
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StarTribune

EDITORIAL

A timely boost to push forward on a next-generation flu shot

Developing a universal influenza vaccine would be a public health game-changer.

By Editorial Board Star Tribune | FEBRUARY 22, 2018 — 5:56PM

It is easy to forget the terror that polio inspired in every generation of parents until the middle of the last century. While decades have passed since the development of polio vaccines by Drs. Jonas Salk and Albert Sabin, time has not dimmed this remarkable accomplishment — vanquishing a disease in most areas of the globe that once crippled 35,000 people in the United States each year.

This year's severe flu season is a reminder that fearsome diseases remain unconquered. Towering among them: the easily transmissible influenza virus, which circles the globe each year and can mutate rapidly, with new strains having the potential to create another deadly worldwide epidemic like the 1918 "Spanish flu" that killed millions.

The current annual flu shot barely keeps up with this crafty virus. What's needed is a new vaccine that stymies the virus on the same scale as the polio vaccine — and doesn't require a new shot every year. This is a massive scientific undertaking but one that is doable with robust resources and global leadership. It reflects well on Minnesota that its policymakers and scientists are at the forefront of pushing for what is known as the "universal flu vaccine."

This week, Minnesota's two senators — Democrats Amy Klobuchar and Tina Smith — announced that they are among the eight Senate champions of a bill to dramatically increase flu vaccine funding. The Flu Vaccine Act would provide a total of $1 billion from 2019 to 2023 for dedicated research at the National Institutes of Health (NIH). According to CIDRAP News, an infectious-disease news service at the University of Minnesota, about $64 million was spent on universal flu vaccine research last year.

CAROLYN KASTER • ASSOCIATED PRESS

A scientist worked with a box of frozen flu virus strains recently at the Vaccine Research Center at the National Institutes of Health in Bethesda, Md. Last year, about $64 million was spent on universal flu vaccine research. Now, the proposed Flu Vaccine Act would provide $1 billion for such research.

nature medicine

A checkup for the flu vaccine

Influenza causes almost 650,000 deaths worldwide each year, yet a long-lasting, protective vaccine remains elusive. Global investment—both scientific and financial—in a universal flu vaccine is overdue.

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Each year in February and September, the World Health Organization (WHO) issues its recommendations for the virus composition of the seasonal influenza vaccine for the Northern and Southern hemispheres, respectively. The recommendations are based on global surveillance and clinical data on circulating virus strains and are issued 6–8 months prior to the start of flu season in each hemisphere to enable manufacture and distribution of the vaccines. Yet despite annual updates, vaccine efficacy ranges from only 10% to 60%, with this year's vaccine for the Northern hemisphere estimated to be 36% effective in the United States (http://www.cdc.gov/flu/professionals/vaccination/effectiveness-studies.htm/). Improvements to the flu vaccine are clearly needed.

The low efficacy of seasonal flu vaccines is due to high antigenic diversity. Human infections are primarily caused by two types of influenza virus, types A and B, and there are dozens of strains of each type. Formulations of seasonal flu vaccines include inactivated versions of two type A viruses and one type B virus (in trivalent vaccines) or two of both type A and B viruses (in the newer quadrivalent vaccines). If the virus strains chosen six months ahead do not match the predominant circulating strains during a flu season, the ability of the vaccine to protect against infection is diminished.

Incorrect predictions are not the only cause of reduced vaccine efficacy, however. Influenza A and B viruses undergo frequent genetic variation through antigenic drift, causing small changes that enable them to evade antibody responses elicited by a closely related vaccine virus. Influenza A also undergoes antigenic shift, in which viral strains—including those that infect different species—can reassort their genetic material to generate a new virus with completely distinct phenotypic and immunogenic properties. Both antigenic drift and shift can contribute to vaccine failure and influenza epidemics, and antigenic shift in influenza A is associated with flu pandemics, most recently in 2009.

Influenza vaccine manufacturing—most commonly using chicken eggs—also creates conditions that can reduce effectiveness. Viruses propagated in eggs can acquire mutations that make them antigenically distinct from circulating viruses, resulting in poor antibody recognition of epidemic virus strains.

A universal influenza vaccine that provides broad and lasting protection against multiple virus strains would ideally stay ahead of the viral antigenic changes, increase protection against respiratory illness, and reduce the need for annual immunization. To this end, US Senators proposed a new bill in February, the Flu Vaccine Act, requesting $1 billion over 5 years for the country's National Institutes of Health (NIH) to fund efforts to develop a universal flu vaccine. This investment would substantially boost NIH funding of influenza research, estimated at $215 million for 2018, down from $304 million in 2013. Funding of a universal flu vaccine is lower still—last year, the US National Institute of Allergy and Infectious Diseases (NIAID) spent only $64 million on a universal flu vaccine. Compared to $10.4 billion in annual influenza-related medical costs and $16.3 billion in lost revenue in the United States alone, a $1 billion investment seems well worth the expense (http://www.cdcfoundation.org/businesspulse/flu-prevention-infographic/). More recently in March, the NIAID published a strategic research plan focused on influenza transmission and pathogenesis, immunity, and vaccine design as three key components in the rational development of a universal flu vaccine (*J. Infect. Dis.* doi:10.1093/infdis/jiy103, 2018).

A more comprehensive understanding of influenza pathogenesis may improve the rate of success of universal vaccine designs. Seasonal flu vaccines generate an immune response narrowly focused on the globular 'head' of the viral hemagglutinin (HA) protein, which sticks out from the viral envelope. Several efforts to develop a universal vaccine are targeting different viral antigens or epitopes to broaden the immune response beyond the HA head.

For instance, NIAID has initiated a clinical trial testing the safety and immunogenicity of vaccination with a ferritin nanoparticle containing the HA protein either alone, or in combination with a DNA plasmid encoding HA. In animals, the nanoparticle elicited antibodies to both the HA 'stem' and head that neutralized antigenically distinct viruses, an effect that may be attributed to the HA-stem-specific antibodies.

Taking an alternate approach to targeting HA, Vaccitech in the United Kingdom is testing in phase 2 trials a modified vaccinia virus Ankara vector encoding influenza nucleoprotein and matrix-1 (M1) protein. Their vaccine induced T cell responses and reduced the intensity of symptoms and the duration of virus shedding—which enables viral spread—in humans. This T cell–focused approach is in sharp contrast to the majority of influenza vaccine designs that measure neutralizing antibody as reflective of protective efficacy. And Vaccitech is not alone in trying to engage T cells: BiondVax's M-001 vaccine similarly elicits T cell responses to conserved viral epitopes from influenza A and B strains and is in trials as a standalone vaccine and as a priming step before administration of the seasonal flu vaccine.

To induce immune responses beyond one or two viral proteins, FluGen, a Wisconsin-based company, has developed a live, attenuated virus that lacks the M2 protein but makes all of the other viral proteins after infection of cells. Delivered as a nasal spray, it will undergo human testing in May in Europe.

While these vaccines are all designed to protect against more than a single influenza strain, whether they are 'universal' vaccines is unknown, and some feel we are still a long way from that goal. Vaccitech CEO Tom Evans estimated that their vaccine, which is in advanced clinical development—if successful—would take 5–7 years to reach market. And even then, it is not clear that existing manufacturing capacity is sufficient to meet the global demand for an entirely new vaccine modality. Investments are therefore needed across the board—in basic research and in vaccine development, but also in manufacturing technologies and infrastructure to respond more rapidly in the advent of pandemics and in the absence of a universal flu vaccine. Without sustained commitment, we will always be a season behind.

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NIAID releases strategy toward universal flu vaccine

Filed Under: Influenza Vaccines; Pandemic Influenza

Lisa Schnirring | News Editor | CIDRAP News | Feb 28, 2018

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Federal health officials today spelled out a strategy for developing a universal flu vaccine that includes a profile of what such a vaccine would accomplish and the different research areas that scientists would need to tackle to bring more protective vaccines for seasonal and pandemic influenza to market.

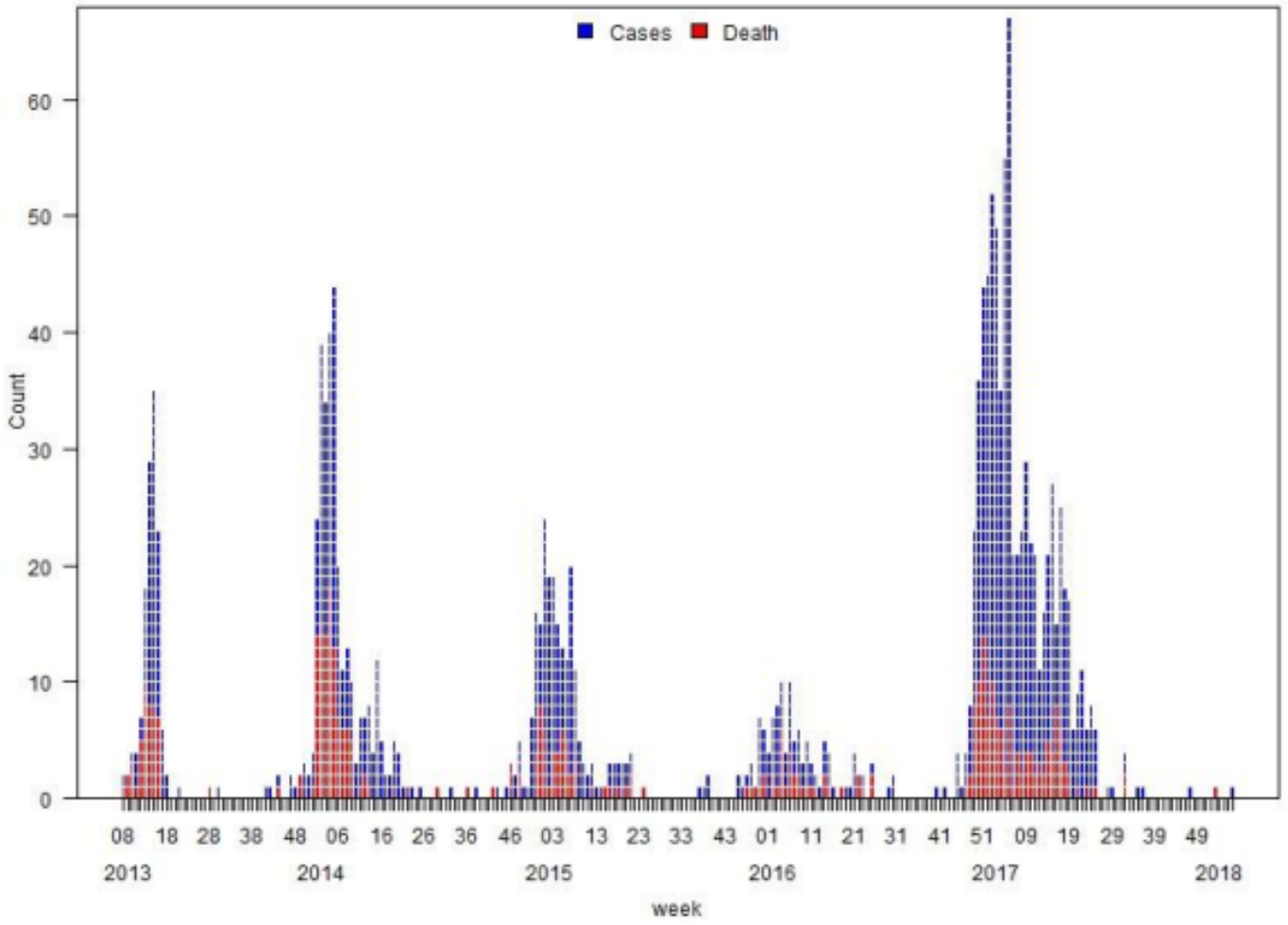
NIAID

A team from the National Institute of Allergy and Infectious Diseases (NIAID), led by its director, Anthony Fauci, MD, based the plan on discussions from a workshop convened in June 2017. They published the strategy today in the *Journal of Infectious Diseases*.

The plan's release comes amid a tough flu season dominated by the problematic H3N2 strain, which again laid bare gaps in protection with most currently available vaccines. Suboptimal protection by flu vaccines and the desire for better ones that can provide long-lasting protection against a range of strains, even a new pandemic one, has also caught the attention of a group of US senators. On Feb 15 they proposed a law what would invest $1 billion in

World Health Organization

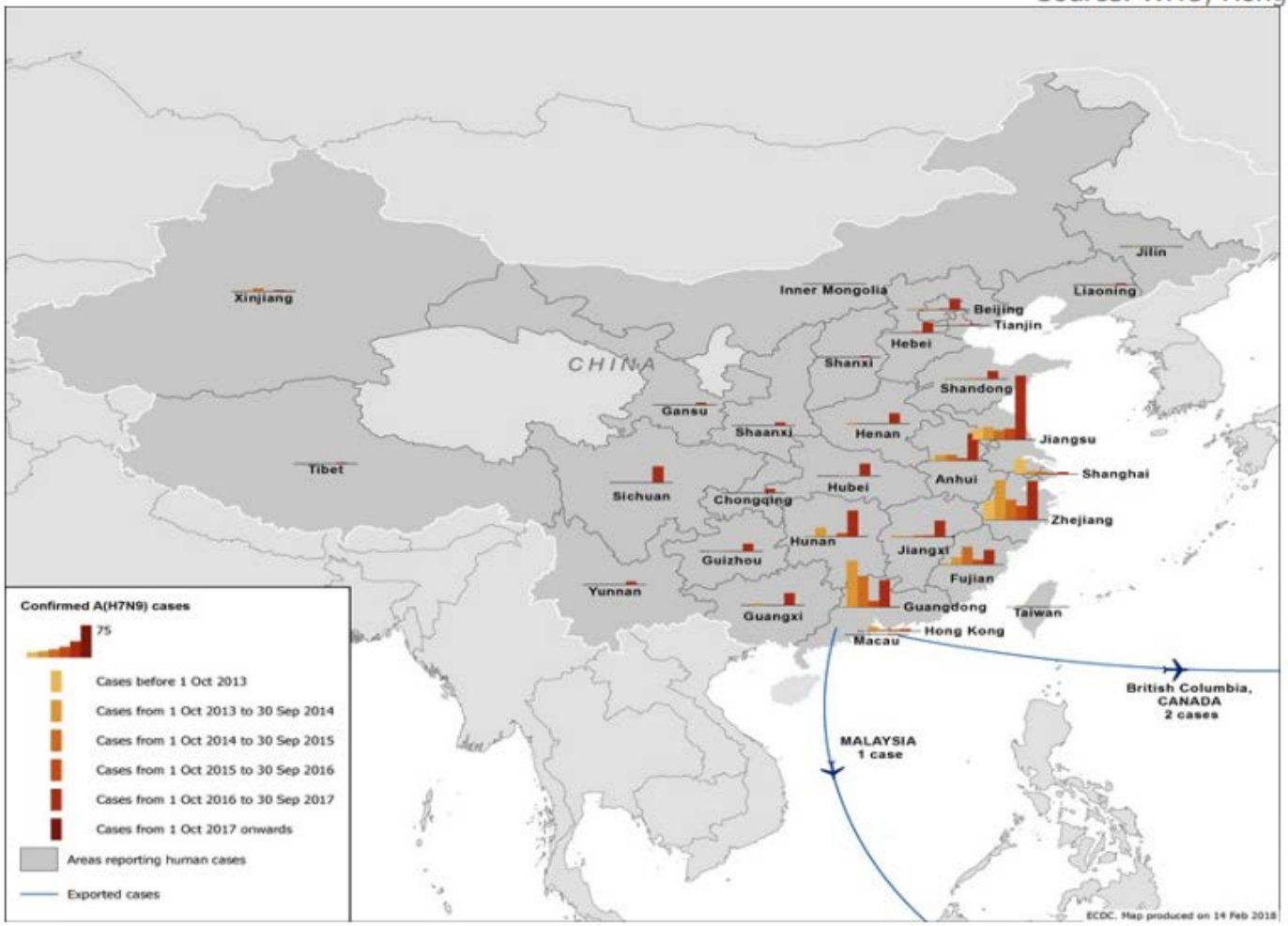
Figure 1: Epidemiological curve of avian influenza A(H7N9) cases in humans by week of onset, 2013-2018.



European Centre for Disease Prevention and Control

Distribution of confirmed cases of A(H7N9) by first available month, February 2013 to 31 March 2018

Source: WHO, Hong Kong



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News Scan for Dec 01, 2017

Flu expert says H7N9 viruses are rare 2nd warning of public health threat

The world rarely receives advance notice of a significant public health threat, but the detection of the highly pathogenic form of H7N9 avian influenza in China serves as a second warning, an expert from the World Health Organization's collaborating center in Australia said today in a *Cell Research* commentary.

Recent studies found a high level of genetic diversity in H7N9 viruses from China, including seven highly pathogenic viruses bearing four different hemagglutinin sequences. In addition, an isolate from a human showed a mutation that may make it more virulent. So far, 28 human infections with highly pathogenic H7N9 have been reported.

Kanta Subbarao, MBBS, MPH, wrote that the emergence of highly pathogenic H7N9 represents a second warning in two ways. First, uncontrolled spread of highly pathogenic H5N1 allowed the virus to become enzootic, allowing it to evolve, spread, and cause severe sporadic infections in humans. Second, low-pathogenic H7N9 viruses in 2017 spread more widely, and scientists found that highly pathogenic viruses came from more than one low-pathogenic precursor. "Once is a warning, twice is a lesson; we cannot afford to ignore the spread of H7N9 viruses and allow them to become enzootic," she wrote.

Focusing control measures on only poultry flocks infected with highly pathogenic H7N9 won't solve the problem, Subbarao said. Both forms of H7N9 need to be eradicated from avian species, and human isolates need to be monitored very closely.

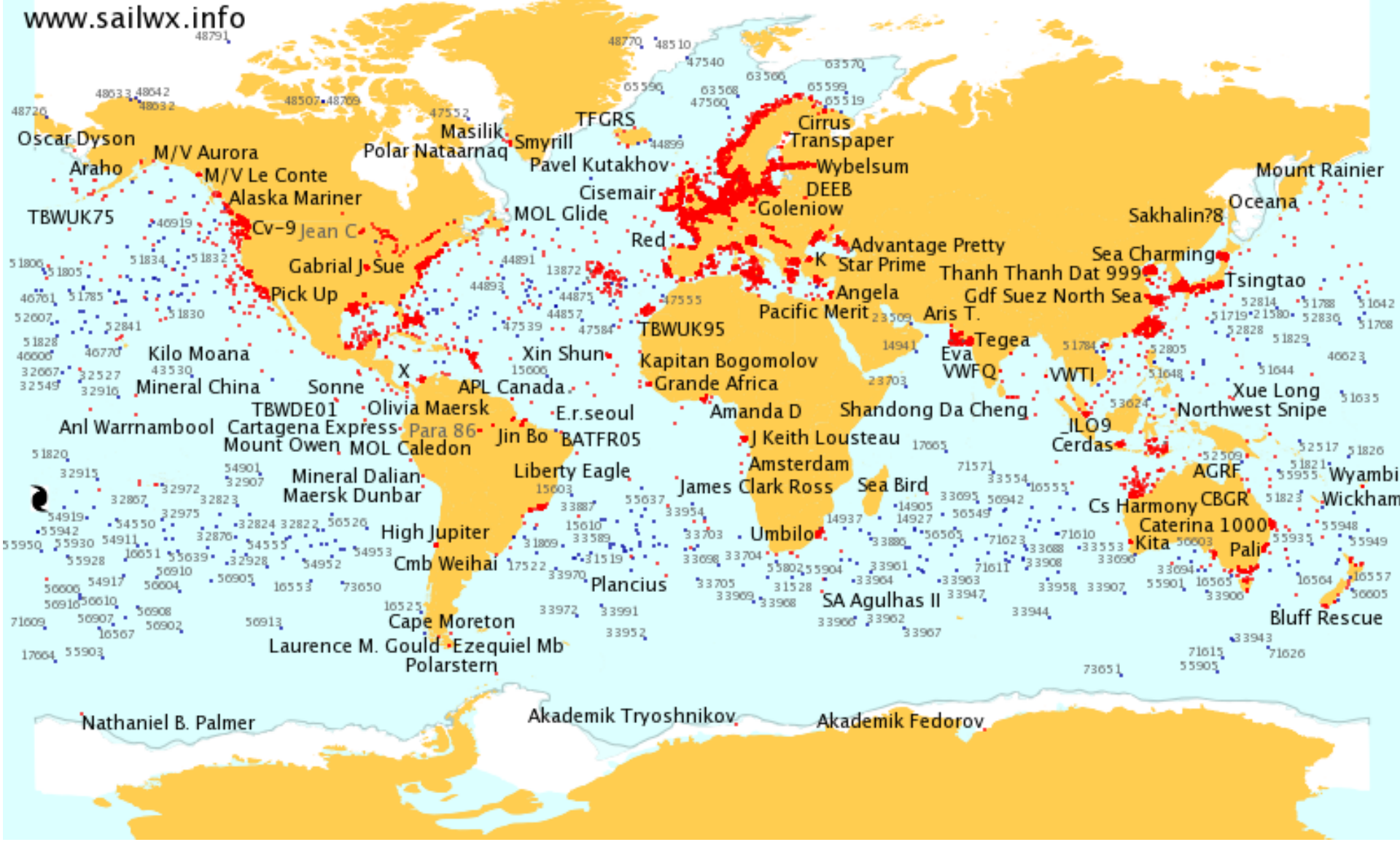
Dec 1 *Cell Res* commentary

HOT TOPICS

1. Influenza update
2. Pandemic preparedness and global markets
3. US government appointment update
4. Chemical attacks; implications for bioterrorism
5. Lassa fever
6. Yellow fever
7. Chronic Wasting Disease (CWD)

UPDATES

8. Antimicrobial resistance
9. MERS
10. Horsepox study / gain of function
11. WHO Roadmaps
12. Zika
13. Other



World container ship traffic has doubled since 1997

Ship Traffic Worldwide: **Tuesday, April 10, 2018, 8:55 PM UTC**


OOCL HONG KONG
OOCL

UNIVERSITY OF MINNESOTA

CIDRAP Center for Infectious Disease Research and Policy

News Scan for Oct 09, 2017

Puerto Rico hurricane damage stretches supply of IV saline

Damage in Puerto Rico from Hurricane Maria has disrupted the nation's supply of some intravenous (IV) saline and dextrose bags, the *Washington Post* reported today. Baxter International, one of the makers of small-volume IV bags, widely used for rehydration and to dilute medications, said "multiple production days" were lost in the aftermath of the storm, and it has established a system to allocate the product to hospitals based on past purchases.

On Oct 6, Food and Drug Administration (FDA) Commissioner Scott Gottlieb, MD, issued a statement saying the FDA is taking new steps to mitigate the impact of two recent hurricanes on the island's medical product manufacturing sector, alongside its ongoing efforts to directly assist Puerto Rico's residents. He said pharmaceutical and biological products account for about 30% of the territory's gross domestic product, and 10% of all drugs consumed by Americans are made in Puerto Rico. "And that doesn't even account for medical devices. Puerto Rico is vital to the health and wellbeing of Americans," he said.

Some facilities were hit harder than other, but the ones that sustained minor damage are running on generator power and aren't back at full production. "New shortages could result from these disruptions, and shortages that existed before the storms could potentially be extended," Gottlieb said, adding that the FDA is in close contact with senior management at the companies.

The FDA says it is monitoring 40 products on a list of critical products for which shortages could have a substantial public health impact. The FDA said it will provide more details on specific products as appropriate and as it learns more.

IV bags in short supply across US after Hurricane Maria

By Susan Scutti, CNN

Updated 4:21 PM ET, Wed January 17, 2018

Story highlights

The US IV bag shortage began before Hurricane Maria harmed operations of a supplier in Puerto Rico

FDA has approved importation of bags from other countries

(CNN) — Before Hurricane Maria made landfall in Puerto Rico on September 20, the United States had already experienced intermittent shortages of IV bags, which are used to administer and dilute medications. The devastation caused by the Category 4 hurricane -- the first to hit the island in more than eight decades -- amplified the IV bag shortage, in particular sodium chloride 0.9% injection bags, which are ubiquitous in medical facilities and hospitals.

Puerto Rico, which produces more pharmaceuticals by dollar value for the nation than any of the individual 50 states or any foreign country, has been key to the supply of these IV saline bags.

Since early November, the US Food and Drug Administration has issued updates and guidance to hospitals and medical facilities.

On Tuesday, Dr. Scott Gottlieb, the FDA commissioner, said in a statement the agency continues "to expect that the shortage of IV fluids will improve in the coming weeks and months."

REUTERS

#HEALTH NEWS JANUARY 16, 2018 / 1:02 PM / 3 DAYS AGO

FDA expects IV fluid shortage to improve in coming weeks, months

(Reuters) - The U.S. Food and Drug Administration said on Tuesday it expects a shortage of intravenous saline fluids for hospitals due to damage to key manufacturing facilities in Puerto Rico to improve over the coming weeks and months.

FDA Commissioner Scott Gottlieb said that the FDA has approved IV saline products from more companies, which is expected to boost U.S. supply. He said the tight supply of saline products had been exacerbated by increased demand as a result of a worse-than-normal flu season.

At the same time, Gottlieb said the agency is concerned about a potential shortage of IV containers as demand for empty IV containers increases as an alternative to filled bags.

"We understand that, with the shortage of filled bags, hospitals and other healthcare providers are turning to the repackaging or compounding of IV saline fluids and utilizing empty IV containers," he said. "This is resulting in diminished supplies of these containers and concerns that supplies of empty bags could tighten further."

UNIVERSITY OF MINNESOTA

CIDRAP Center for Infectious Disease Research and Policy

News Scan for Mar 09, 2018

FDA chief says situation involving IV saline bag shortage improving

In an update on an ongoing intravenous saline bag shortage, US Food and Drug Administration (FDA) Commissioner Scott Gottlieb, MD, said yesterday the situation is improving, and the agency expects that the problems will be resolved well before the next flu season begins.

In a series of Twitter posts, he said existing manufacturer Baxter, which has a facility in Puerto Rico, said manufacturing levels are now back to pre-hurricane levels.

Two new saline bag makers, Grifols and Fresenius Kabi, were licensed last year and are now producing saline bag products. Gottlieb said the FDA has permitted imports of saline from six facilities located outside of the United States, and officials are encouraging them to get approval to help address the long-term shortage issue.

Scott Gottlieb Twitter feed

EXPOSING THE RISKS OF AMERICA'S DEPENDENCE ON CHINA FOR MEDICINE

Emergency Department Visits

Data are for the U.S.

- Number of visits: 141.4 million
- Number of injury-related visits: 40.0 million
- Number of visits per 100 persons: 45.1
- Number of emergency department visits resulting in hospital admission: 11.2 million
- Number of emergency department visits resulting in admission to critical care unit: 1.8 million
- Percent of visits with patient seen in fewer than 15 minutes: 32.2%
- Percent of visits resulting in hospital admission: 7.9%
- Percent of visits resulting in transfer to a different (psychiatric or other) hospital: 1.9%

Source: National Hospital Ambulatory Medical Care Survey: 2014 Emergency Department Summary Tables, tables 1, 4, 15, 25, 26 [PDF – 1.9 MB]

BT item #	Description	Mfctr ETA for next release	Date Mfctr expects back orders to clear	Possible sub **	Description
0542-02	Adenosine 6mg, 2ml Vial (limited qty on hand)	mfctr allocation			
0301-67	Adenosine 6mg, 2ml LL Syringe	April			
0651-04	ADENOSINE 12MG 4ML SDV	mfctr allocation			
0301-68	Adenosine 12mg, 4ml LLSyringe	early April			
0302-66	Amiodarone 150mg, 3ml syringe	mfctr allocation		0616-03	Amiodarone 150mg, 3ml vial
374911	Atropine 1mg, 10ml Lifeshield	April	June	371006	Atropine 1mg, 10ml Luer Jet
ab1630-10	Atropine 1mg, 10ml ANSYR	April	June	6006-10	Atropine 8mg 20ml Vial
374910	ATROPINE 0.5MG 5ML LIFESHIELD SYRINGE 1040A 10EA/BX	April	June	No Available Sub	
371631	Calcium Chloride 1gm, 10ml Lifeshield	April	June	No Available Sub	
373304	Calcium Chloride 1gm, 10ml Luer Jet	mfctr allocation			
371010	Calcium Chloride 1gm, 10ml ANSYR	May	June		
311-19	Calcium Gluconate	NDC# change use item # 360-19		360-19	Calcium Gluconate
0370-01	Cyanokit 5 gm Hydroxocobalamin Kit, Contains 1 IV Admin set and 1 Transfer Spike, 16ea/cs	short term mfctr backorder, no ETA available			
371117	C2 DEMEROL 100MG/ML 1ML CPJ LL 10/BOX	June 2019		No Available Sub	
371176	C2 DEMEROL 25MG/ML 1ML CPJ LL SLM 10/BX	June 2019			
371116	C2 DEMEROL 50MG/ML, 1ML, CPJ LL SLM 10/BX	June 2019			
371775	Dextrose 25% 10ml ANSYR Syringe	April	June	No Available Sub	
0074490201	Dextrose 50% 50ml Lifeshield	April	June	No Available Sub	
373301	DEXTROSE 50% 25GM, 50ML LUER JET 1013B	mfctr allocation			
377515	DEXTROSE 50% 25GM, 50ML ANSYR SYRINGE 1013C 10EA/BX	April	June		
D6648-02	Dextrose 50%, 25gm, 50ml Vial 25ea/bx	April	June		
370951EA	C4 DIAZEPAM 10MG AUTO- INJECTOR	Unknown	Unknown	3213-12	DIAZEPAM 5MG/ML 10ML VIAL
371104	DIAZEPAM 10MG, 2ML CARPUJECT	TBD	March 2019		
0409-4350-03	DILTIAZEM 100MG ADD-VANTAGE VIAL	June	March 2019	No Available Sub	
1171-01ea	DILTIAZEM 25MG, 5ML VIAL	Mar-19	June 2019		
6013-10	Diltiazem, 25 mg, 5 ml Vial *Refrigerate* 10ea/Box	late April	April		
6014-10	Diltiazem, 50mg, 10ml Vial *REFRIGERATE* 10ea/Box	April			
374402	DIPHENHYDRAMINE 50MG LUER LOCKING CARPUJECT	June 2019		No Available Sub	
0376-25	DIPHENHYDRAMINE 50MG/ML 1ML SDV 2035 - BENADRYL 25 VIALS/PK	April			
234401	DOBUTAMINE 250MG 20ML/VIAL	May	June	No Available Sub	
0074581901	MFG B/O DOPAMINE 200MG 5ML VIAL 2040 25EA/BX			No Available Sub	
379104	DOPAMINE 400MG, 10ML VIAL	June 2019			
377808	DOPAMINE 200MG/ D5 250ML BAG	April	June		
118-2B0832	Dopamine, 200 mg, 5% Dextrose, inj, 250ml	unknown			
7808-22	MFG B/O Dopamine 400mg/D5W 250ml Bag 12EA/CS	April	June		
118-2B0842EA	Dopamine, 400mg, 5% Dextrose, injection, 250ml	unknown			
377809	DOPAMINE 800MG/D5W 500ML BAG 3025 12EA/CS	mid July	Q3 2017		
118-2B0843EA	Dopamine, 800mg, 5% Dextrose, injection, 500ml	April	June		
620-01	Duodote Auto Injectors	Product now available		No Available Sub	
6019-10	Duramorph CII 10mg, 10ml ampule	mfctr allocation		No Available Sub	
AB2122-01	Enalaprilat 1.25mg, 1ml vial	June 2018	June 2019	No Available Sub	
9787-10	Enalaprilat 1.25mg, 1ml Vial				

BT item #	Description	Mfctr ETA for next release	Date Mfctr expects back orders to clear	Possible sub **	Description
374921	EPINEPHRINE 1:10000 1MG 10ML LIFESHIELD SYRINGE	April	September	103-10	Epinephrine 1mg, 1ml ampule (not a direct sub, potential alternate)
373316	Epinephrine 1:10000 1mg 10ml Luer Jet	mfctr allocation			
6695-02	ETOMIDATE 40MG, 20ML VIAL	May	June 2018	6695-01	ETOMIDATE 20MG, 10ML VIAL
376029	AMIDATE 40MG, 20ML LIFESHIELD	TBD			
379094	C2 FENTANYL 0.05MG/ML 2ML SDV 25/BX	April	March 2019	6027-25 (mfctr allocation)	C2 Fentanyl, 0.05mg/ml, 2ml Vial, 25/Bx with Safety Seal
371276	C2 FENTANYL 2ML CPJT	June 2019			
371124	C2 FENTANYL 0.05MG/ML 2ML AMPULE 10/BOX CS24	April	March 2019		
379425	FENTANYL 0.05MG/ML 5ML SDV	mfctr allocation		6028-25 (mfctr allocation)	C2 Fentanyl, 0.05mg/ml, 5ml Vial, 25/Bx
371133	C2 FENTANYL 5ML AMP	April	March 2019		
186063501	FUROSEMIDE 40MG 4ML ANSYR	April	June	6102-04	FUROSEMIDE 40MG 4ML SDV 2048 25EA/BX
1312-30	C2 Hydromorphone 2mg, 1ml cpjt	TBD	March 2019		
CS1283-01	C2 HYDROMORPHONE 1MG/ML 1ML CARPUJECT 10/BX	TBD	March 2019		
2051-05	C3 KETAMINE 100MG/ML, 5ML VIAL, 10/BX	Apr-19	June 2019	No Available Sub	
0205310	C3 KETAMINE 50MG/ML, 10ML VIAL, 10/BX	Apr-19	June 2019		
9508-10	C3 KETAMINE 50MG/ML 10ML VIAL	mfctr allocation			
3795-01	KETOROLAC 30MG/ML 1ML SDV 25EA/BX	April	June	No Available Sub	
3796-01	KETOROLAC 60MG 2ML VIAL 25EA/BX	April	February		
378701	Ketorolac 30mg cpj	June 2019			
378702	Ketorolac 60mg, 2ml cpj	June 2019			
372339	LABETALOL 20MG 4ML LUER LOCK CARPUJECT 1030 10EA/BX	TBD	March 2019		
2267-20	Labetalol 100 mg, 20 ml Vial	April	June	alt item in set up process	
3375-04	LEVOPHED 0.1% 4MG, 4ML VIAL 10ea/bx	March 2019	June 2019	No Available Sub	
4276-02	LIDOCAINE 1% 500MG, 50ML MDV 25/BX	June	June		
3178-03EA	Lidocaine 1% w/Epinephrine 1:100,000 50ml Vial 25ea/bx 4bx/cs	April	June		
374904	LIDOCAINE 2% 100MG 5ML Lifeshield	April	June	No Available Sub	
373390 (limited availability)	LIDOCAINE 2% 100MG 5ML LUER JET 1026B 10EA/PK	mfctr allocation		No Available Sub	
0074490301	LIDOCAINE 2% 100MG 5ML ANSYR	April	Mar-19		
373178	Lidocaine w/Epi 100,000ml 20ml vial	April	Sep-18		
2066-05	Lidocaine 2% 100mg, 5ml vial Preserv Free	Apr-19	Jun-19		
2b0973	Lidocaine 2gm, 500ml bag	mfctr removed from distribution channel			
5876	Lidocaine 2gm, 500ml bag	mfctr allocation			
118-2B096	Lidocaine 2gm/ D5 250ml bag	mfctr removed from distribution channel			
9594-20	Lidocaine 1gm, 250ml bag	mfctr allocation			
9594-20	Lidocaine 1 gm/D5W 250ml Bag 24ea/cs	mfctr allocation			

BT item #	Description	Mfctr ETA for next release	Date Mfctr expects back orders to clear	Possible sub **	Description
1539-31	C4 LORAZEPAM 4MG/ML 1MLCPJ	June 2019			
376779	C4 Lorazepam, 4mg, 1ml Vial	May	June		
371102	C4 LORAZEPAM 2MG 1ML LUER LOCKING CARPUJECT *REFRIG* CS02 10/BX	TBD	Mar-19	No Available Sub	
371100	C4 LORAZEPAM 2MG 1ML VIAL 10/BOX *REFRIGERATE**CS01	May	June		
6044-25	C4 Lorazepam, 2mg, 1ml Vial *Refrigerate* 25/Box	mfctr allocation			
0064-10ea	MAGNESIUM SULFATE 50% 5GM 10ML Vial	new NDC# use #064-11			
0064-02	Magnesium Sulfate 50% 1gm, 2ml vial	new NDC# use #064-03			
377715	Mannitol 20% 500ml bag	April	June	No Available Sub	
3414-01	Metoclopramide 10mg, 2ml vial	April	June	No Available Sub	
372285	Metoprolol 5mg, 5ml ampule	Mar-19	June 2019	No Available Sub	
660-05	Metoprolol 5mg, 5ml vial	April	April	No Available Sub	
2305-05	C4 Midazolam 5mg, 5ml vial 10/BX	June	Jun-19	6059-10	C4 Midazolam 5mg, 5ml vial 10/BX
371108	C4 MIDAZOLAM **VERSED** 1MG/ML 2ML SLIMPACK CPJ 10/BOX CS08	June 2019		371113	C4 MIDAZOLAM 10MG, 2ML VIAL 10/BOX
3815-12	Morphine 10mg, 10ml vial	May	Mar-19		
6127-25	C2 Morphine 10mg 1ml Vial 25/bx	manufacturer allocation			
1893-01	Morphine 10mg, 1ml CPJT	June 2019		No Available Sub	
1891-01	Morphine 4mg, 1ml CPJT	TBD	Mar-19		
1890-01	Morphine 2mg, 1ml CPJT	Apr-19			
0074146301	NALBUPHINE 10MG 1ML AMPULE 10EA/BX 2097	May	June	No Available Sub	
1465-01	Nalbuphine, 20mg, 1ml Ampule 10/bx	May	June		
0418-24	NITROSTAT TABS SL 0.4MG 100/BT	mfctr allocation			
0162-10	Norepinephrine 4mg, 4ml Ampule (1mg/ml) 10ea/bx	unknown		No Available Sub	
1120-12	Ondansetron Injection, 4mg, 2ml iSecure	June 2019			
4755-02	Ondansetron Injection, 4mg, 2ml vial	May	December		
4646-01	PANCURONIUM 1MG, 10ML VIAL	Due in week of 4/2		No Available Sub	
371902	PROCAINAMIDE 1GM 10ML VIAL	now available			
3157-83	PROMETHAZINE 25MG/ML 1ML AMP 2098 25EA/BX	mfctr allocation	Unknown		
4200-02	Rocuronium 10mg/ml, 5ml vial *REFRIGERATE* 10ea/bx	unknown	unknown	9558-05	Rocuronium 10mg/ml, 5ml vial *REFRIGERATE* 10ea/bx
4200-06	Rocuronium 10 mg/ml, 10 ml vial *REFRIGERATE* 10EA/BX	unknown	unknown	9558-10	Rocuronium 10 mg/ml, 10 ml vial *REFRIGERATE* 10EA/BX
376625	SODIUM BICARBONATE 8.4% SDV 50ML 25EA/BX	Q3 2017	Q3 2017	376637	SODIUM BICARBONATE 8.4% 50ML Lifeshield syr.

Bound Tree

April 2, 2018 Pharmaceutical Backorder Report

BT item #	Description	Mfctr ETA for next release	Date Mfctr expects back orders to clear	Possible sub **	Description
0074490000	SODIUM BICARBONATE 8.4% 10ML PEDI LIFESHIELD 1044 10EA/BX	June		600-10	Sodium Chloride 0.9% 10ml Prefilled Syringe
0074488810	Sodium Chloride 0.9% 10ml Plastic Flip-Top Single Dose Vial 2112 25ea/bx	April	March		
374888	Sodium Chloride 0.9% 10ml Plastic Vial 25ea/bx	June	December		
0074488710	Sterile Water 10ml vial	April	September		
374887	STERILE WATER FOR INJ 20ML SDV 25EA/BX	May	September		
4887-50	STERILE WATER 50ML VIAL, 25/bx	May	June		
9746-10EA	Terbutaline 1mg, 1ml Vial 10ea/bx	April	May		
372121	TETRACAINE 0.5% 15ML BOTTLE 2121	mfctr allocation			
371651	THIAMINE 100MG/ML 2ML MDV 2122				
1632-01	VECURONIUM 10MG 10ML VIAL 10EA/BX	Apr-19	June 2019	0931-44 (limited stock arriving week of 4/2; Best Dating avail 3/2019)	VECURONIUM 10MG 10ML VIAL 10EA/BX

Although BTM has commented on supply dates provided to us by the manufacturer, our noted times of arrival are best estimates. The supply allocation and shipments from the manufacturer are fluctuating daily. Please call the following number for additional questions: BTM Customer Service Department: 800-533-0523.

Letters

RESEARCH LETTER

Prevalence of Immunosuppression Among US Adults, 2013

The number of immunosuppressed adults in the United States is unknown but thought to be increasing because of both greater life expectancy among immunosuppressed adults due to improvements in medical management, as well as new indications for immunosuppressive treatments.[1-4] Immunosuppression increases the risks and severity of primary or reactivation infections; its prevalence has implications for food and water safety, tuberculosis control, vaccine programs, infection control strategies, outbreak preparedness, travel medicine, and other facets of public health.[1] We present data on the prevalence of self-reported immunosuppressed adults in the United States.

Supplemental content at jama.com

Methods | We conducted a cross-sectional analysis of noninstitutionalized civilian adults in the United States aged 18 years or older using the 2013 National Health Interview Survey (NHIS), an annual health survey conducted via household interviews.[5] The NHIS uses a multistage probability design; sample weights allow inferences on national prevalence to be estimated. The National Center for Health Statistics research ethics review board oversees the NHIS, including the questions used in this study; participants provided verbal informed consent.[5]

In 2013, respondents were asked whether they had ever been told by a "doctor or other health professional" that their immune system was weakened. Those responding yes were

Table. Self-reported Immunosuppressed Status

	No. (%) (n = 951)	Prevalence per 100 US Population, % (95% CI)
Currently immunosuppressed	951 (2.8)[a]	2.7 (2.4-2.9)
Sex		
Male	298 (31.3)	1.8 (1.5-2.1)
Female	653 (68.7)	3.5 (3.1-3.9)
Race/ethnicity[b]		
Hispanic	128 (13.5)	1.6 (1.2-1.9)
Non-Hispanic		
White	641 (67.4)	3.0 (2.7-3.4)
Black	122 (12.8)	2.3 (1.8-2.8)
Asian	29 (3.0)	1.7 (0.8-2.7)
Other	31 (3.3)	3.9 (2.0-5.9)
Age group, y		
18-39	182 (19.1)	1.6 (1.3-1.9)
40-49	136 (14.3)	2.3 (1.8-2.8)
50-59	281 (29.5)	4.4 (3.7-5.1)
60-69	213 (22.4)	3.9 (3.2-4.5)
70-79	101 (10.6)	3.1 (2.4-3.8)
≥80	38 (4.0)	2.5 (1.4-3.5)

[a] Based on responses from 34 426 participants to survey questions in the Box. Response of "yes" to question 1 (n = 2148) and question 2 and to either questions 3 or 4 or had hematologic cancer within last 2 years (latter based on question 7 and date calculations from question 8). Those not meeting this definition were categorized as not immunosuppressed. Remaining questions used to assess validity of responses; immune status of respondents providing contradictory answers was categorized using sensitivity analyses (eTable 1 and eTable 2 in the Supplement). There were 103 excluded due to response of "refuse" or "do not know" to any of the questions.

[b] Self-identified from provided categories; categories are mutually exclusive.

World Health Organization

Diabetes

Fact sheet
Updated November 2017

Key facts

- The number of people with diabetes has risen from 108 million in 1980 to 422 million in 2014 *(1)*.
- The global prevalence of diabetes* among adults over 18 years of age has risen from 4.7% in 1980 to 8.5% in 2014 *(1)*.
- Diabetes prevalence has been rising more rapidly in middle- and low-income countries.
- Diabetes is a major cause of blindness, kidney failure, heart attacks, stroke and lower limb amputation.
- In 2015, an estimated 1.6 million deaths were directly caused by diabetes. Another 2.2 million deaths were attributable to high blood glucose in 2012**.
- Almost half of all deaths attributable to high blood glucose occur before the age of 70 years. WHO projects that diabetes will be the seventh leading cause of death in 2030 *(1)*.
- Healthy diet, regular physical activity, maintaining a normal body weight and avoiding tobacco use are ways to prevent or delay the onset of type 2 diabetes.
- Diabetes can be treated and its consequences avoided or delayed with diet, physical activity, medication and regular screening and treatment for complications.

Centers for Disease Control and Prevention
CDC 24/7: Saving Lives, Protecting People™

New CDC report: More than 100 million Americans have diabetes or prediabetes

Diabetes growth rate steady, adding to health care burden

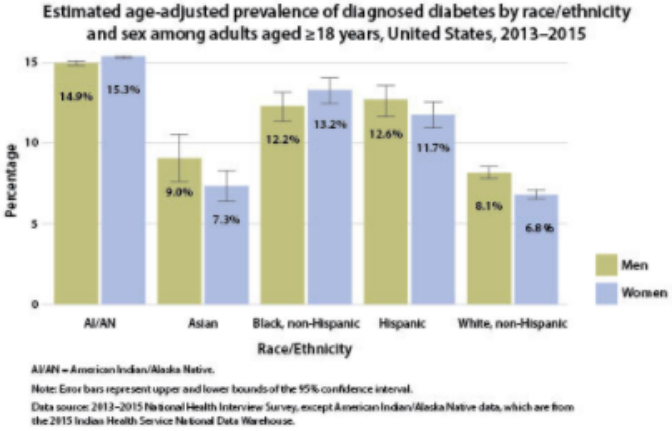
Press Release

For Immediate Release: Weekday, July 18, 2017

Contact: Media Relations
(404) 639-3286

More than 100 million U.S. adults are now living with diabetes or prediabetes, according to a new report released today by the Centers for Disease Control and Prevention (CDC). The report finds that as of 2015, 30.3 million Americans – 9.4 percent of the U.S. population –have diabetes. Another 84.1 million have prediabetes, a condition that if not treated often leads to type 2 diabetes within five years.

The report confirms that the rate of new diabetes diagnoses remains steady. However, the disease continues to represent a growing health problem: Diabetes was the seventh leading cause of death in the U.S. in 2015. The report also includes county-level data for the first time, and shows that some areas of the country bear a heavier diabetes burden than others.



View large image and text description

"Although these findings reveal some progress in diabetes management and prevention, there are still too many Americans with diabetes and prediabetes," said CDC Director Brenda Fitzgerald, M.D. "More than a third of U.S. adults have prediabetes, and the majority don't know it. Now, more than ever, we must step up our efforts to reduce the burden of this serious disease."

Symptoms, Testing, and Treatment

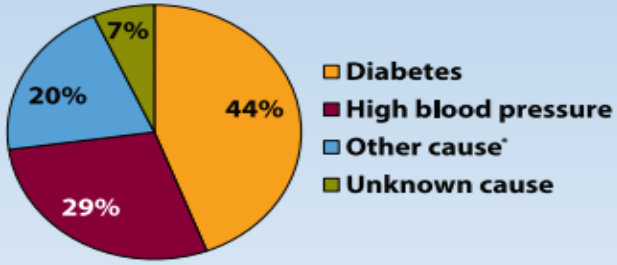
- People with CKD may not feel ill or notice any symptoms. The only way to find out for sure if you have CKD is through specific blood and urine tests. These tests include measurement of both the creatinine level in the blood and protein in the urine.
- Once detected, CKD may be addressed through lifestyle changes, including making healthier choices about what you eat and drink, and can often be treated with medications. These approaches and treatments may keep CKD from getting worse and may prevent additional health problems such as heart disease.
- People with diabetes or high blood pressure who are diagnosed with CKD should talk to their doctor about treating these conditions to keep their blood sugar and blood pressure under control and lower their risk for kidney failure.

Health Problems Caused and Affected by CKD

Kidney Failure

- Kidney disease usually gets worse over time though treatment has been shown to slow progression. When the kidneys stop working, dialysis or kidney transplant is needed for survival. Kidney failure treated with dialysis or kidney transplant is called end-stage renal disease (ESRD). Not all patients with kidney disease progress to kidney failure and, in some patients, kidney disease progresses to kidney failure even with proper treatment.

Reported Causes of New Cases of ESRD in the United States



N=118,014 (all ages, 2014)
Source: US Renal Data System
*Includes glomerulonephritis and cystic kidney disease, among other causes.

Renal is a medical term meaning "having to do with the kidneys."

Some Facts About ESRD

- In 2014, 118,000 people in the United States started treatment for ESRD, and 662,000 were living on chronic dialysis or with a kidney transplant.
- Men are 64% more likely than women to develop ESRD.
- African Americans are 3 times more likely than whites to develop ESRD.
- Hispanics are 35% more likely than non-Hispanics to develop ESRD.
- In US adults aged 18 years or older, the main reported causes of new cases of ESRD are diabetes and high blood pressure.
- In US adolescents aged 13 to 17 years, the main reported cause of new cases of ESRD is glomerulonephritis (inflammation of the kidneys).

Heart Disease and Stroke

- Having kidney disease increases the chances of also having heart disease and stroke.
- Managing blood pressure, blood sugar, and cholesterol levels—all risk factors for heart disease and stroke—is more difficult, but much more important in the presence of CKD.

Other Health Consequences of CKD

- Anemia or low number of red blood cells can cause fatigue and weakness.
- Infections can occur because of a weakened immune system.
- Low calcium levels and high phosphorus levels in the blood can cause bone problems.
- High potassium levels in the blood (hyperkalemia) can cause an irregular or abnormal heartbeat.
- Loss of appetite or eating less.
- Excess fluids in the body causing high blood pressure, swelling in the legs, or shortness of breath because of fluid in the lungs (a condition known as pulmonary edema).
- Depression or lower quality of life.

Risk of Dying

Premature death from both heart disease and from all causes is higher in adults with CKD compared with adults without CKD.

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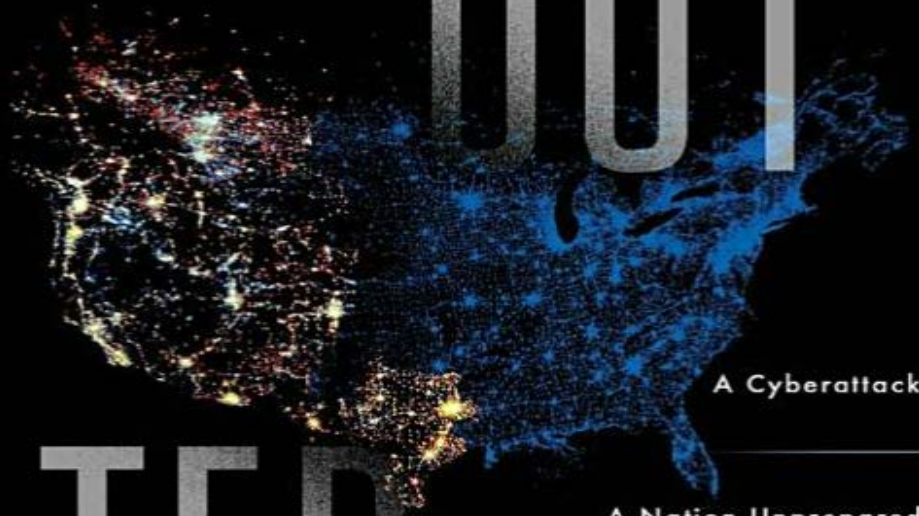
LIGHTS OUT



A Cyberattack

A Nation Unprepared

Surviving the Aftermath

TED KOPPEL

UNIVERSITY OF MINNESOTA

CIDRAP Center for Infectious Disease Research and Policy

In review of Ebola recovery, GAO urges better accountability

Filed Under: Ebola; VHF

Lisa Schnirring | News Editor | CIDRAP News | Mar 30, 2018

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A review of US-funded Ebola recovery projects in Guinea, Liberia, and Sierra Leone by the US Government Accountability Office (GAO) released this week found that, of $1.6 billion appropriated by Congress in 2014 for US Agency for International Development (USAID) in the hard-hit region, $411.6 million has been targeted to 131 specific projects.

Sarah McElroy, USAID / Flickr cc

However, in tallying up the projects and their scope, the GAO found that USAID needs to do more to ensure a complete inventory of all of its Ebola recovery projects.

Retooling response

Alongside staggering numbers of illnesses and deaths from the virus in West Africa, the outbreak stretched thin the already weak healthcare and infrastructure systems in the three countries. Border closures, job losses, and food shortages also followed in the wake of the Ebola outbreak. According to the GAO report, gross domestic product declined in all three of the countries in 2015, especially in Sierra Leone.

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News Scan for Mar 27, 2018

Donors pledge $15.3 million more to WHO contingency fund

At a meeting in Geneva yesterday, 11 countries pledged a total of $15.3 million more to the WHO emergency fund, which helps support a more rapid response to infectious disease outbreaks and other health crises, the WHO said today in a press release.

The additional funds were pledged by Canada, Denmark, Estonia, Germany, South Korea, Kuwait, Luxembourg, Malta, the Netherlands, Norway, and the United Kingdom. Contributions ranged from $20,000 to $5.6 million. The new pledges could increase emergency fund levels to $23 million.

The WHO said the emergency fund fills a critical gap between when a need for an emergency response is identified and when funds from other sources can be tapped. Unlike other sources, the emergency fund can release money within 24 hours, helping deliver an immediate and early response. It is seeking further donor commitments to reach its $100 million target for the 2018-2019 biennium.

Several countries were making their first pledges, including Denmark, Kuwait, Luxembourg, Malta, and Norway. The United Kingdom boosted its overall commitment from $10.5 million to $16 million, making it the second largest donor after Germany.

Peter Salama, MBBS, MPH, the WHO's deputy director general for emergency preparedness and response, said the fund is already proving its value, and without the emergency funds, recent outbreaks of Ebola in the Democratic Republic of Congo, Marburg virus disease in Uganda, and pneumonic plague in Madagascar would have gotten out of control. "By acting decisively and quickly, we can stop disease outbreaks and save thousands of lives for a fraction of the cost of a late response," he added.

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The New York Times

Dr. Brenda Fitzgerald, C.D.C. Director, Resigns Over Tobacco and Other Investments

By SHEILA KAPLAN JAN. 31, 2018

The director of the Centers for Disease Control and Prevention resigned on Wednesday, in the middle of the nation's worst flu epidemic in nearly a decade, because of her troubling financial investments in tobacco and health care companies that posed potential conflicts of interest.

Alex Azar, the newly appointed secretary of Health and Human Services, announced the resignation of the director, Dr. Brenda Fitzgerald. An agency statement cited her "complex financial interests that have imposed a broad recusal limiting her ability to complete all her duties as the C.D.C. director."

The statement continued: "Due to the nature of these financial interests, Dr. Fitzgerald could not divest from them in a definitive time period. After advising Secretary Azar of both the status of the financial interests and the scope of her recusal, Dr. Fitzgerald tendered, and the secretary accepted, her resignation. "

Mr. Azar, a former executive with Eli Lilly, made the decision on his third day running the sprawling H.H.S. agency. Dr. Anne Schuchat, a veteran official with the C.D.C., was named acting director — the position she had filled before Dr. Fitzgerald took office. She has had prominent roles in many of the agency's emergency responses to disease outbreaks and vaccine programs around the world.

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HHS head names HIV expert Redfield as CDC director

Filed Under: Public Health

Stephanie Soucheray | News Reporter | CIDRAP News | Mar 22, 2018

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Robert R. Redfield, MD, is the new director of the Centers for Disease Control and Prevention (CDC) and the acting administrator of the Agency for Toxic Substances and Disease Registry, the nation's largest science-based public health service agency. Health and Human Services (HHS) Secretary Alex Azar announced the appointment yesterday.

James Gathany, CDC

"Dr. Redfield has dedicated his entire life to promoting public health and providing compassionate care to his patients, and we are proud to welcome him as director of the world's premier epidemiological agency," Azar said in a press release accompanying the announcement.

Redfield and Azar represent the second-wave of Trump-era public health leadership after their predecessors resigned in the wake of scandals.

Azar replaced Tom Price as HHS secretary after Price used taxpayer-funded charter flights. In January, Brenda Fitzgerald, MD, stepped down as CDC director after reports surfaced that she traded in tobacco stocks.

The Washington Post

White House homeland security adviser Tom Bossert resigns

By Josh Dawsey and Greg Jaffe April 10 at 12:31 PM Email the author

White House homeland security adviser Tom Bossert is leaving the Trump administration, another departure during what has been a chaotic few months of personnel changes.

Bossert, a favorite of Chief of Staff John F. Kelly, is leaving one day after national security adviser John Bolton began the job. Bossert was believed to be on shaky footing in the Bolton era and he resigned two days after Michael Anton, the National Security Council spokesman, also quit.

Bossert's resignation was requested by Bolton, according to two people familiar with the situation who requested anonymity to discuss internal personnel issues.

White House press secretary Sarah Huckabee Sanders declined to comment on whether Bossert was pushed out.

"I'm not going to get into specific details about the ongoings of personnel. But I can tell you that he resigned," she told reporters Tuesday. "The president feels he's done great job and wishes him the best as he moves forward."

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BBC

Russia spy: Allies condemn nerve agent attack

15 March 2018

The leaders of France, Germany, the US and UK say there is "no plausible alternative explanation" to Russia having been behind the nerve agent attack in the UK.

They condemned the "first offensive use of a nerve agent in Europe since the Second World War", calling it an assault on UK sovereignty.

In Washington, US President Donald Trump said "it certainly looks like the Russians were behind it".

The UK has expelled Russian diplomats.

"We do hold Russia culpable for this brazen, brazen act and despicable act," Prime Minister Theresa May said during a visit to the site of the attack in Wiltshire.

Mr Trump said it was a "very sad situation" that the US was taking "very seriously".

In France, President Emmanuel Macron is to snub the official Russian stand at the Paris book fair on Thursday, officials said. Earlier Mr Macron said he would announce more measures in the coming days.

Russia has denied any involvement and vowed a swift response to the expulsion of 23 of its diplomats, whom the UK said were operating as spies.

The Washington Post

Dozens killed in apparent chemical weapons attack on civilians in Syria, rescue workers say

By Louisa Loveluck and Erin Cunningham April 8 at 3:50 PM Email the author

ISTANBUL — Syrian doctors and rescue workers said Sunday that dozens of people had died in an apparent chemical attack on a besieged enclave near Damascus as government forces escalated their offensive to recapture the last rebel strongholds near the capital.

The attack, which killed at least 40 people in the city of Douma on Saturday night, many of them choking and foaming at the mouth, appeared to force the start of a final withdrawal of hard-line rebels from the most strategically important district to remain under opposition control. An agreement allowing them to pull out was announced by the Russian military command in Syria.

More than 500 people "were brought to local medical centers with symptoms indicative of exposure to a chemical agent," according to the Syrian American Medical Society, a Washington-based nonprofit group that supports health facilities in the area. Footage from the area showed bodies strewn across the floor of an air raid shelter. Among them was a young man who appeared to have died foaming at the mouth and clutching his child.

POLITICO

May links reported chemical attack in Syria and ex-spy poisoning

British PM says if found responsible for Douma reports, the Assad regime and its supporters 'must be held to account.'

By **MICHELLE STODDART** | 4/9/18, 5:45 PM CET

British Prime Minister Theresa May drew parallels on Monday between a reported chemical attack in Syria and the poisoning of an ex-spy in England, condemning the "recklessness" of how chemical weapons have been used.

May said "we must urgently establish what happened on Saturday" in Douma, Syria where dozens were reportedly killed in a chemical attack. Russia has denied that such an attack happened, and the Organization for the Prohibition of Chemical Weapons is investigating whether chemical weapons were used.

The British prime minister said at a press conference in Denmark that if the reports are confirmed and linked to Bashar al-Assad's regime, it would be "yet another example" of the government's "brutality, and brazen disregard for its own people and for its legal obligations not to use these weapons. If they are found to be responsible, the regime and its backers including Russia, must be held to account."

World Health Organization

Media centre

WHO concerned about suspected chemical attacks in Syria

Statement
11 April 2018

WHO is deeply alarmed by reports of the suspected use of toxic chemicals in Douma city, East Ghouta.

According to reports from Health Cluster partners, during the shelling of Douma on Saturday, an estimated 500 patients presented to health facilities exhibiting signs and symptoms consistent with exposure to toxic chemicals. In particular, there were signs of severe irritation of mucous membranes, respiratory failure and disruption to central nervous systems of those exposed.

More than 70 people sheltering in basements have reportedly died, with 43 of those deaths related to symptoms consistent with exposure to highly toxic chemicals. Two health facilities were also reportedly affected by these attacks.

WHO reminds parties to the conflict of their obligation to refrain from attacking medical facilities and personnel as per Security Council Resolution 2286 (2016). Any use of chemical weapons to cause harm is illegal under international law. Global norms against chemical weapons reflect a particular abhorrence to their disproportionate harm to the eldest, the most infirm, and the youngest among us.

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University of Minnesota

CIDRAP Center for Infectious Disease Research and Policy

Nigerian Lassa fever outbreak tops 1,000 suspected cases

Filed Under: Lassa fever; VHF

Stephanie Soucheray | News Reporter | CIDRAP News | Mar 06, 2018

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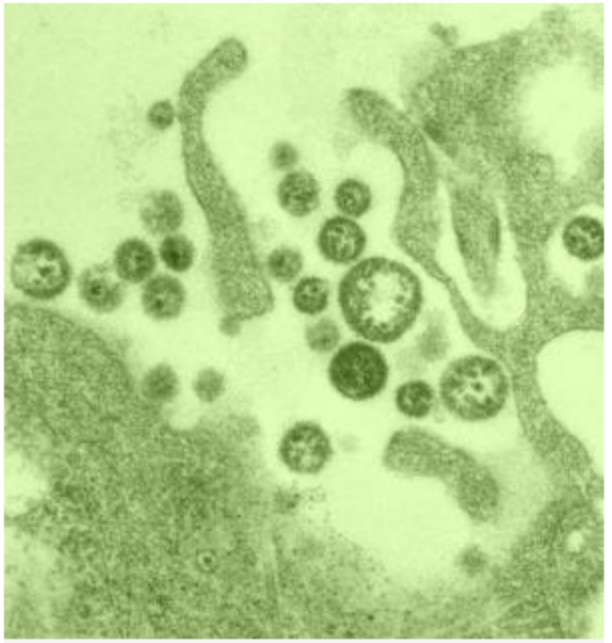
The Nigerian Lassa fever outbreak continues to grow, with more than 1,000 suspected cases, according to the latest report from the Nigeria Centre for Disease Control (NCDC).



CDC

Last week the NCDC reported 35 new cases and 7 more deaths, according to its Mar 4 update. That brings the total of suspected cases from Jan 1 to Mar 4 to 1,121 (353 confirmed) and 110 deaths. The case-fatality rate is 23.8%.

Eighteen states across the central swath of the country have reported cases, but three states, Edo, Ondo, and Ebonyi states have seen 85% of all cases.

Lassa fever is typically transmitted by rodents, although human transmission can occur when a patient comes into contact with the bodily fluids of an infected person. A total of 16 healthcare workers have become infected with the virus, the NCDC said, including 4 deaths.

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News Scan for Mar 27, 2018

WHO: Nigeria's Lassa fever outbreak slowing but far from contained

The pace of new infections in Nigeria's Lassa fever outbreak is starting to slow, but the epidemic is far from contained, the World Health Organization (WHO) and the Nigeria Centre for Disease Control (NCDC) said yesterday in a statement.

NCDC's latest data show that the number of new confirmed and probable cases has been falling for 5 consecutive weeks, hinting that public health steps are making an impact. However, the groups said they expect more infections until the end of the dry season. Though Lassa fever is endemic in Nigeria, the current outbreak is its largest, and the number of cases reported in January and February has already eclipsed the total for all of 2017.

Early investigation suggests that the circulating virus is similar to previous outbreaks and that the spread isn't being fueled by a more virulent strain. Chikwe Ihekweazu, MD, MPH, NCDC's chief executive officer said, however, that more studies are under way to see what led so many people to become infected. "Even with a downward trend, until we can better understand the causes behind its rapid spread, we must treat the outbreak as a priority," he said.

The NCDC update said that, for the week ending Mar 25, 18 new cases have been confirmed, raising the 2018 total to 394. Also, 118 more suspected cases were reported, lifting that total to 1,613.

Six more deaths were reported last week, putting the outbreak's fatality total at 134. The case-fatality rate is 24.1%, slightly lower than the previous week. The number of affected states remained at 19, and no new infections were reported in healthcare workers.

Mar 26 WHO statement
Mar 25 NCDC situation report

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News Scan for Apr 04, 2018

Lassa fever kills 2 more in Nigeria, including doctor

The Nigerian Centre for Disease Control (NCDC) reported six new confirmed cases of Lassa fever last week, including two deaths. One of those deaths, in Abia state, involved a doctor who was in close contact with at least 30 patients, according to Nigerian news sources.

From Jan 1 to Apr 1, the NCDC has confirmed 400 cases of Lassa fever, including 97 deaths. The case-fatality rate is 24.3%. Twenty-five healthcare workers have been infected since the onset of the outbreak, with five of them dying.

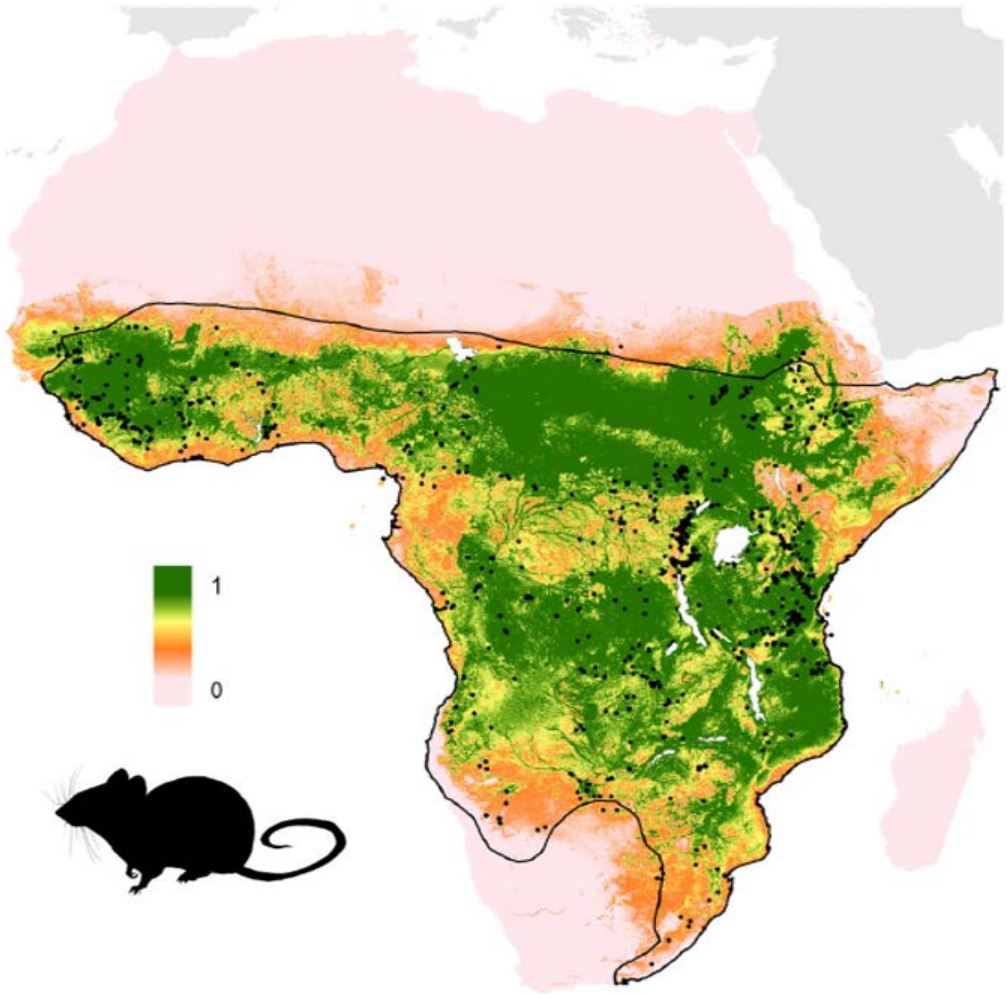
Lassa fever is endemic in Nigeria, but the current outbreak is one of the largest in history. The virus is transmitted mostly by rats, but human transmission can occur when a person comes into contact with infected bodily fluids.

The vast majority of cases are in the south central part of the county, with 81% of all confirmed cases from Edo (42%), Ondo (23%), and Ebonyi (16%) states.

Apr 1 NCDC update

Apr 4 All Africa story

Predicted geographical distribution of the rodent *Mastomys natalensis*



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News Scan for Mar 08, 2018

More yellow fever in Brazil as case totals top 800

The Brazilian MOH yesterday reported 123 new confirmed cases of yellow fever, including 23 deaths, last week.

The new cases brings the totals for the current season, which began on Jul 1, 2017, to 846, with 260 deaths. There have also been 3,234 suspected cases reported during this period.

The case count is a significant jump from the previous season. Between Jul 1, 2016, and Mar 6, 2017, there were 597 confirmed cases and 190 deaths from infection with the flavivirus.

The reason this year's outbreak is bigger, the ministry said, is because the virus is concentrated in Bahia, Sao Paulo and Rio de Janeiro states, home to Brazil's largest cities and unvaccinated populations. The government is continuing a yellow fever vaccine campaign it began in February to target citizens in those states.

As of Mar 6, 17.3 million inhabitants of those states have been vaccinated, representing 76% of the targeted populations. The ministry said 8.4 million (90%) of people were vaccinated in Sao Paulo and 7.1 million (71.5%) in Rio de Janeiro. In Bahia, 1.8 million people were vaccinated, which makes up 55% of the target population.

Mar 7 Brazilian MOH update

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News Scan for Mar 19, 2018

US and Europe warn of yellow fever threat in Brazil, urge vaccination

Both the US Centers for Disease Control and Prevention (CDC) and the European Centre for Disease Prevention and Control (ECDC) issued warnings late last week for travelers heading to Brazil.

Brazil is currently experiencing its largest yellow fever outbreak in decades, with an upsurge of cases recorded since January.

The CDC said Friday during media briefing that all travelers to Brazil should receive a yellow fever vaccination at least 10 days prior to their trip. If they are unable get the vaccine, the CDC said they should avoid traveling to areas of Brazil where vaccination is recommended.

The CDC said travelers who were vaccinated more than 10 years ago for yellow fever may consider getting a booster dose before their trip, and it warned that the vaccine is available at a limited number of clinics that that travelers should plan ahead to get the vaccine.

The ECDC released a similar warning, highlighting recent cases of yellow fever among unvaccinated Europeans.

"Five travel-associated cases of yellow fever have been reported among unvaccinated EU/EEA travellers returning from Brazil, since the beginning of January 2018," the ECDC said. "In Switzerland an unvaccinated traveler infected with yellow fever died. For comparison, there were six travel-related cases in EU/EEA travelers between 1999 and 2016."

Mar 16 CDC statement
Mar 16 ECDC statement

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Brazil calls for entire nation to get yellow fever vaccine

Filed Under: Yellow Fever

Stephanie Soucheray | News Reporter | CIDRAP News | Mar 21, 2018

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Brazil announced yesterday that all citizens should be vaccinated against yellow fever. The country is currently experiencing a spike in cases in what has shaped up to become the largest yellow fever outbreak to hit the country since the 1940s.

Albert Gonzalez Farran, UNAMID / Flickr cc

The Associated Press (AP) reported that Ricardo Barros, Brazil's health minister, said all 27 of Brazil's states will be targeted in a vaccination campaign that will aim to reach 78 million people by 2019. Before the announcement, the vaccine was recommended in all but four Brazilian states.

According to Barros, there have been 920 cases of yellow fever reported nationwide since July 2017, including 300 deaths. The same period in 2016-17 saw 610 cases and 196 deaths.

Many of these cases are occurring near Brazil's most populated urban regions along the country's eastern

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News Scan for Mar 29, 2018

More than 200 new yellow fever cases reported in Brazil

The Brazilian Ministry of Health yesterday noted 211 newly confirmed yellow fever cases, including 38 more deaths.

From Jul 1, 2017, to Mar 28, 2018, officials have confirmed 1,131 cases of yellow fever and 338 deaths. During the same period in 2016-17, the number was much lower, at 660 cases and 210 deaths.

The Ministry of Health said the increase correlates with the arrival of yellow fever in Brazil's biggest cities, where approximately 35.8 million Brazilians have not until recently been recommended to receive the yellow fever vaccine. In the previous season, only 9.8 million Brazilians were at risk for the virus.

An additional 77.5 million Brazilians should be vaccinated against yellow fever this year, as the government is now recommending that every citizen get vaccinated. The move to vaccinate all citizens is preventive and should be completed by April 2019, the ministry said.

Mar 28 Brazilian Ministry of Health update

World Health Organization

Media centre

Nearly one billion people in Africa to be protected against yellow fever by 2026

News release

10 APRIL 2018 | ABUJA, NIGERIA - Nearly one billion people will be vaccinated against yellow fever in 27 high-risk African countries by 2026 with support from WHO, Gavi – the Vaccine Alliance, UNICEF and more than 50 health partners.

The commitment is part of the Eliminate Yellow fever Epidemics (EYE) in Africa strategy, which was launched by Dr Tedros Adhanom Ghebreyesus, WHO Director-General, Professor Isaac Folorunso Adewole, Nigeria's Minister of Health and partners at a regional meeting in Abuja, Nigeria on Tuesday (10 April).

"The world is facing an increased risk of Yellow fever outbreaks and Africa is particularly vulnerable," said Dr Tedros. "With one injection we can protect a person for life against this dangerous pathogen. This unprecedented commitment by countries will ensure that by 2026 Africa is free of Yellow fever epidemics."

During the three-day EYE strategy regional launch meeting representatives from key African countries, WHO, UNICEF, Gavi, and other partners are developing a roadmap on how to roll-out the EYE strategy at national level. This implementation effort follows the endorsement of the strategy by African Ministers of Health at the 67th WHO regional committee in September 2017.

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European Centre for Disease Prevention and Control
An agency of the European Union

Facts about variant Creutzfeldt-Jakob disease

factsheet facts

Variant Creutzfeldt-Jakob disease (vCJD) is a relatively new and rare neurological disease, classified as a Transmissible Spongiform Encephalopathy (TSE). It was first identified in March 1996 in the UK, when 10 cases of a new disease with neurological symptoms were reported and soon associated with the Bovine Spongiform Encephalopathy (BSE), “mad cow”-disease.

Causative agents of vCJD are prions, composed of misfolded prion proteins (PrPSc), which form aggregates in neurological tissue leading to progressive brain damage and characteristic signs and symptoms of the disease. Prions are stable and relatively resistant to proteases, high temperatures, UV radiation, and commonly used disinfectants.

Patients with vCJD have prominent psychiatric (frequently depression, anxiety and withdrawal) or sensory symptoms and delayed onset of neurologic abnormalities, including ataxia within weeks or months, and dementia and myoclonus late in the illness. The disease always progresses to death. Disease duration is 14 months on average. vCJD tends to affect younger individuals, with an average age of onset of around 28 years, compared to sporadic CJD, which tends to affect middle-aged and elderly individuals.

The definite diagnosis of vCJD requires post-mortem examination of brain tissue.

The incubation period for vCJD after food borne exposure is thought to be around 10 years. No vaccine or treatment is available.

Most reported vCJD cases appear to have been infected through the consumption of bovine meat products contaminated with the agent of BSE. In three cases, reported by the UK, the mode of transmission is thought to be through receipt of blood from an asymptomatic, infected donor.

Table 1 - Worldwide total number of cases, as of January 2015 Source: EuroCJD

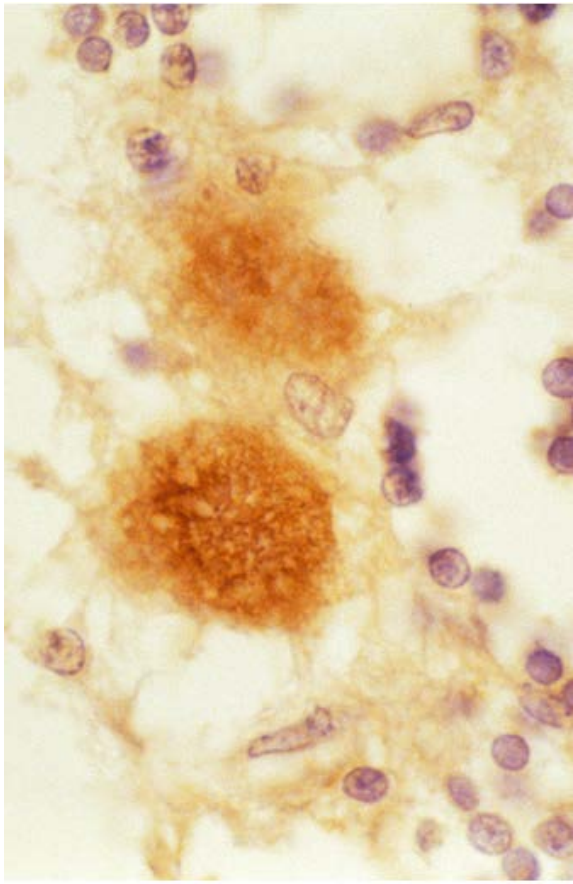
Country	Total number primary cases (Number alive)	Total number secondary cases: blood transfusion (Number alive)	Cumulative residence in UK 6 months during period 1980-1996
UK	174 (0)	3 (0)	177
France	26(0)	-	1
Republic of Ireland	4(0)	-	2
Italy	2 (0)	-	0
USA	4 † (0)	-	2
Canada	2 (0)	-	1
Saudi Arabia	1 (0)	-	0
Japan	1* (0)	-	0
Netherlands	3 (0)	-	0
Portugal	2 (0)	-	0
Spain	5 (0)	-	0
Taiwan	1 (0)	-	1
TOTAL	226 (0)	3 (0)	184

New Scientist

SHORT SHARP SCIENCE 18 January 2017

Many more people could still die from mad cow disease in the UK

By **Debora MacKenzie**



It's finally happened. Until now, vCJD – the deadly disease caused by infection with BSE, or "mad cow disease" – has struck only people with a certain genetic makeup. Now, for the first time, researchers have confirmed a case in someone with different genes – a finding that could mean we have been misdiagnosing a new wave of cases.

In late 2014, a 36-year-old man in the UK started developing aggressive personality changes, memory loss and problems walking. The symptoms and brain scans were typical of ordinary CJD, a rare disease of elderly people not linked to BSE. But because he was so young, his prions were double-checked after he died in February 2016. In fact he had vCJD, the kind caused by BSE.

The surprise was in his DNA. BSE is caused by a misshapen protein, called a prion. It spreads when prions in the blood interact with the normal version of the protein, and pass on the deformation. These prions build up in the brain, eventually causing neural disorders and death.

But the normal protein comes in two forms. Either it has the amino acid methionine (M) at position 129 in the amino acid chain that makes up the protein, or it has valine (V). We inherit a gene for this protein from each of our parents, and there are three possibilities – people whose bodies only make the M form, people who only have the V form, or people who make some of both.

Second wave

All 223 people previously diagnosed with vCJD worldwide, including 177 in the UK, made only the M type of the protein. But the 36-year-old man had a mix of both – the first such case, apart from one unconfirmed case in 2008.

The reason it has taken so long for such a case to appear is likely because people with both types of protein take longer to develop the symptoms of vCJD. Only the M form can be deformed by the BSE prion, and because these people have less M protein, it takes longer for the prion to build up in their body. Kuru, another human prion disease, is already known to take longer to develop in people with both forms of the protein.

Chronic Wasting Disease (CWD)

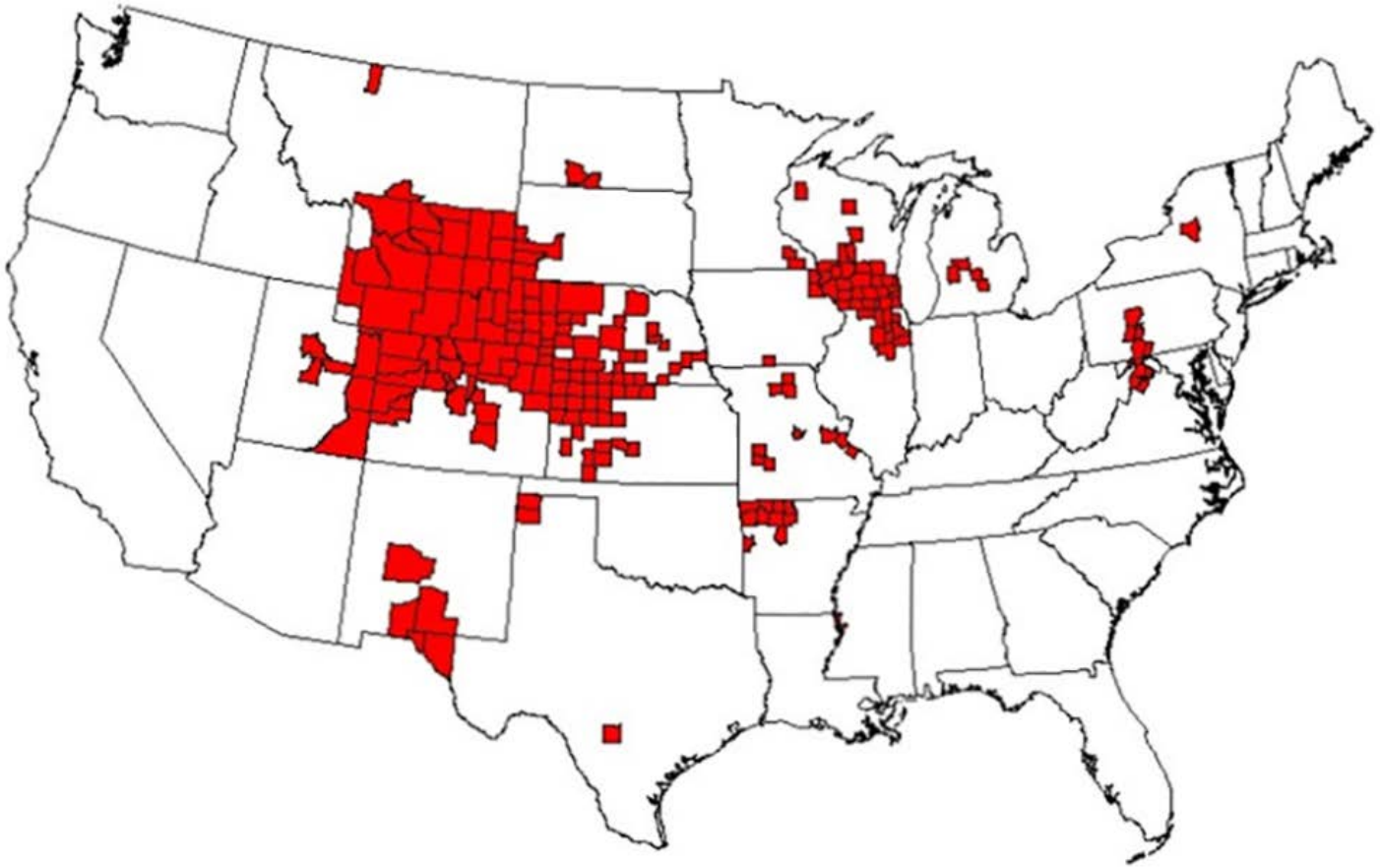
As of March 27 2018, CWD in free-ranging deer, elk and/or moose has been reported in at least 23 states in the continental United States, as well as two provinces in Canada. In addition, CWD has been reported in reindeer and moose in Norway, and a small number of imported cases have been reported in South Korea. The disease has also been found in farmed deer and elk.

CWD was first identified in captive deer in the late 1960s in Colorado and in wild deer in 1981. By the 1990s, it had been reported in surrounding areas in northern Colorado and southern Wyoming. Since 2000, the area known to be affected by CWD in free-ranging animals has increased to at least 23 states, including states in the Midwest, Southwest, and limited areas on the East Coast. It is possible that CWD may also occur in other states without strong animal surveillance systems, but that cases haven't been detected yet. Once CWD is established in an area, the risk can remain for a long time in the environment. The affected areas are likely to continue to expand.

Nationwide, the overall occurrence of CWD in free-ranging deer and elk is relatively low. However, in several locations where the disease is established, infection rates may exceed 10 percent (1 in 10), and localized infection rates of more than 25 percent (1 in 4) have been reported. The infection rates among some captive deer can be much higher, with a rate of 79% (nearly 4 in 5) reported from at least one captive herd.

Chronic Wasting Disease (CWD)

Chronic Wasting Disease Among Free-Ranging Cervids by County, United States, March 27, 2018



As of March 2018, there were 215 counties in 23 states with reported CWD in free-ranging cervids. *This map is based on the best-available information from multiple sources, including state wildlife agencies and the United States Geological Survey (USGS).*

Omaha World-Herald

Sampling of deer results in 203 positives for chronic wasting disease

From staff reports Feb 5, 2018 0

LINCOLN — The presence of chronic wasting disease in deer has been detected for the first time in the southwestern Nebraska counties of Chase, Dundy, Hayes, Frontier and Franklin, according to the Nebraska Game and Parks Commission.

The Commission conducted a CWD sampling operation in its Northwest and Southwest District deer check stations during the 2017 November firearm deer season.

There were 203 positives from 1,807 deer sampled primarily in the Frenchman, Platte, Republican, Pine Ridge, Upper Platte and Plains management units. Both whitetails and mule deer were sampled.

The goal of this sampling effort is to assess the spread and prevalence of the disease through periodic testing in each region of the state, which in turn helps biologists predict when and if future effects on deer numbers may occur. Testing will take place in regional locations of the state in the next several years.

WISCONSIN PUBLIC RADIO
Wisconsin and the World. npr

2017 Was Near-Record Year For CWD From Deer Farming, Hunting Operations

60 Deer Tested Positive For Fatal Brain Disease At Hunting Ranches

Monday, March 12, 2018, 6:00am

Wisconsin's captive deer operations had a near-record rate of chronic wasting disease infections in 2017.

There were 60 deer from hunting ranches across the state that tested positive for CWD last year. The only year with a higher total of infected deer at captive operations was in 2006 when a total of 61 tested positive.

Darlene Konkle, assistant state veterinarian for the state Department of Agriculture, Trade and Consumer Protection, said the spike in 2006 came after a deer breeding facility was depopulated, whereas 2017's infected deer came from game farms already known to have CWD on the premises.

"We have not had a depopulation in 2017 but we do have several hunting ranches that are positive for CWD and some of those are increasing the rate in which they are taking out animals," Konkle said.

So far this year, nine deer have tested positive for CWD at deer breeding facilities and hunting ranches. The latest comes from a deer farm in Washington County, which has been quarantined. Konkle said the agency is working with the deer farming and hunting ranch industries to contain the spread of CWD.

Newsweek

WHAT IS CHRONIC WASTING DISEASE? COULD MYSTERIOUS 'ZOMBIE DEER' ILLNESS KILL PEOPLE?

BY **KRISTIN HUGO** ON 1/23/18 AT 11:40 AM

It may take up to 16 months for a deer to show signs that it's been infected with chronic wasting disease, a deadly prion-based illness that makes the animals act like "zombies." While there hasn't been a documented case of a human getting the disease, new research suggests it has the potential to evolve and jump to humans who interact with deer and eat their meat.

Researchers at the Canadian Food Inspection Agency studied macaques, monkeys that are known to be susceptible to the same prion diseases as humans. They fed the macaques venison, or deer meat, infected with chronic wasting disease. After three years of eating a total of 5 kilograms of infected venison each, three out of the five macaques were found to be infected with CWD. The human equivalent would be eating one 7-ounce steak per month.

"Macaques are susceptible to human prions, and that's why they're a good model for a species barrier jump," Mark Zabel of Colorado State University's Prion Research Center told *Newsweek*. "We know that they will develop a prion disease from human prions." Zabel was not involved in the macaque study.

Prions are contagious, misfolded proteins that cause other proteins in the brain to behave abnormally and misfold. The agents are also very versatile, as they have historically adapted to their respective hosts. Sheep with scrapie transferred their disease to cattle, where it became "mad cow disease," and people eating the infected beef became infected with variant Creutzfeldt-Jakob disease.

The fear that people could become infected with chronic wasting disease led the Canadian government to issue a warning to those eating deer meat. You can test meat for CWD, and once it's infected, there's nothing to do but destroy it.

Health Canada

Health Products and Food Branch (HPFB) Risk Advisory Opinion: Potential Human Health Risks from Chronic Wasting Disease

Prepared by:
Bureau of Microbial Hazards (BMH), Food Directorate, Health Products and Food Branch, Health Canada
Date: April 26, 2017

Issue:

Chronic Wasting Disease (CWD) is a progressive, fatal, transmissible neurological disease that naturally infects cervids, and has been identified in deer, elk, moose, and reindeer. To date there is no direct evidence that CWD has been or can be transmitted from animals to humans. However, initial findings from a laboratory research project funded by the Alberta Prion Research Institute (APRI) and Alberta Livestock Meat Agency (ALMA), and led by a Canadian Food Inspection Agency (CFIA) scientist indicate that CWD has been transmitted to cynomolgus macaques (the non-human primate species most closely related to humans that may be used in research), through both the intracranial and oral routes of exposure. Both infected brain and muscle tissues were found to transmit disease.

Health Canada's Health Products and Food Branch (HPFB) was asked to consider the impact of these findings on the Branch's current position on CWD in health products and foods.

Summary and Recommendation:

Health Canada's Health Products and Food Branch (HPFB) is responsible for assessing risks to human health from diseases of animal origin that may be transmitted through health products and food, and for developing regulations and policies to mitigate risks from products regulated under the *Food and Drug Act* as well as various associated regulations. While extensive disease surveillance in Canada and elsewhere has not provided any direct evidence that CWD has infected humans, the potential for CWD to be transmitted to humans cannot be excluded. In exercising precaution, HPFB continues to advocate that the most prudent approach is to consider that CWD has the potential to infect humans. This position has been aligned with that of the World Health Organization (WHO) since the late 1990s, and remains consistent with the WHO's 2012 position that "No tissue that is likely to contain the bovine spongiform encephalopathy (BSE) agent, nor part or product of any animal which has shown signs of a TSE should enter the (human or animal) food chain." This precautionary position on TSEs is also consistent with the conclusions documented by the Transmissible Spongiform Encephalopathy (TSE) Secretariat in 2003, and a systematic literature review conducted by the Public Health Agency of Canada (PHAC) in 2017. The findings of the macaque experiment do not change HPFB's current position with respect to the safety of food and health products and CWD, which considers that a precautionary approach to the management of the potential risks of exposure through food and health products is warranted.

THE TYEE
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New Research Sparks Health Canada Warning Deer Plague Might Infect Humans

Chronic wasting disease long thought not to affect human health.

By Andrew Nikiforuk, 24 Jun 2017 | TheTyee.ca

The federal government has quietly issued a warning that a progressive and fatal neurological disease affecting deer, elk, and moose populations in western Canada and the United States for decades might infect humans.

Symptoms of chronic wasting disease are horrific. Infected animals often tremble and have trouble standing. They drool and eat continuously but still waste away. Wyoming Game and Fish Department.

For years scientists thought that it highly unlikely that chronic wasting disease (CWD), a prion-caused disease related to Mad Cow, could be transferred to humans who eat venison. Prions are infectious, misfolded proteins.

But dramatic new research has challenged that thinking.

The Health Products and Food Branch of Health Canada now warns that the potential for CWD "to be transmitted to humans cannot be excluded."

StarTribune

As options dwindle, venison lovers must hunt for processors

Chronic wasting disease spurred a shift away from the whole-carcass trade.

By Tony Kennedy Star Tribune | NOVEMBER 21, 2015 — 9:24PM

LEILA NAVIDI • LEILA.NAVIDI@STARTRIBUNE.COM

Increasingly, hunters are having difficulty finding butchers to process their deer. Many meat markets are too busy with other parts of their business, and processing deer requires more work and manpower that sometimes doesn't pay

Tucked away in the bluffs of Pierce County 40 miles east of the St. Croix River, Sailer's Meats in tiny Elmwood, Wis., is an unlikely place to find Minnesota deer.

On Mondays during hunting season, the field-dressed carcasses arrive in bunches for owner Jake Sailer and his crews to process into steaks, chops, jerky and sausage. The 92-year-old family business has a reputation for award-winning meats, but they're gaining deer business in part because a growing number of other artisan butcher shops are getting out of the whole-carcass venison trade.

WISCONSIN STATE JOURNAL

New urgency for hunters to test deer for CWD, lab says

STEVEN VERBURG sverburg@madison.com Sep 12, 2017

The UW-Madison lab that checks deer carcasses for a deadly brain disease said Monday there may be increased urgency for hunters to test for chronic wasting disease this year based on new scientific research.

Preliminary results of studies released earlier this year in Canada found for the first time CWD could be transmitted to primates.

There still have been no known instances of humans contracting CWD, but hunters should know the new study demonstrates the risk isn't nonexistent, said Keith Poulsen, diagnostic case and outreach coordinator at the Wisconsin Veterinary Diagnostic Laboratory.

"We're sure the risk is pretty low, but it's not zero," Poulsen said. "It would be a mistake to ignore it."

SIERRA The national magazine of the Sierra Club

Chronic Wasting Disease: Coming to a Deer Population Near You

Without more federal dollars, the fatal disease will spread unabated

PHOTO BY ZORANDIMZR/ISTOCK

BY ANDY MCGLASHEN | MAR 11 2018

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In 1967, at a research facility in Fort Collins, Colorado, scientists began to notice strange symptoms in a herd of captive mule deer. The deer guzzled water, ground their teeth, and drooled. They stopped eating and stared at nothing. Eventually—ribs protruding, heads drooping—they died.

By the time researchers formally described the condition and named it chronic wasting disease, or CWD, in a 1980 paper, it had spread to other facilities in Colorado and Wyoming. Since then, the disease has turned up in captive and free-ranging deer, elk, and moose in 25 states—Mississippi reported its first CWD-positive deer in February—as well as Canada, Norway, and South Korea.

No one knows when or how CWD arose. It belongs to a family of diseases called transmissible spongiform encephalopathies, or TSEs, along with mad cow disease, the sheep disease scrapie, and Creutzfeldt-Jakob disease, a very rare illness in humans. They are caused by prions, a type of protein that can become misshapen and cause other proteins to deform, eventually carving tiny holes in the brain. Like other TSEs, CWD is always fatal.

Unlike those diseases, however, CWD is not contained to domestic herds—it is the first known prion disease loose on the landscape, and wildlife managers are scrambling to stop it. Eradicating the disease seems unlikely. Stopping its spread may be the best we can hope for, experts say, and unless it's backed by major new funding from Washington, hoping won't get us far.

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STAT

CDC: Drug-resistant 'nightmare bacteria' pose growing threat

By ASSOCIATED PRESS / APRIL 3, 2018

"Nightmare bacteria" with unusual resistance to antibiotics of last resort were found more than 200 times in the United States last year in a first-of-a-kind hunt to see how much of a threat these rare cases are becoming, health officials said Tuesday.

That's more than they had expected to find, and the true number is probably higher because the effort involved only certain labs in each state, officials say.

The problem mostly strikes people in hospitals and nursing homes who need IVs and other tubes that can get infected. In many cases, others in close contact with these patients also harbored the superbugs even though they weren't sick — a risk for further spread.

> Some of the sick patients had traveled for surgery or other health care to another country where drug-resistant germs are more common, and the superbug infections were discovered after they returned to the U.S.

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UK seeing outbreak of highly azithromycin-resistant gonorrhea

Filed Under: Gonorrhea; Antimicrobial Stewardship

Chris Dall | News Reporter | CIDRAP News | Mar 07, 2018

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designer491 / iStock

Researchers with Public Health England (PHE) are reporting sustained transmission of high-level azithromycin-resistant (HL-AziR) *Neisseria gonorrhoeae* infections across England, and a separate paper notes ceftriaxone-resistant gonorrhea in Australia.

In a study yesterday in *The Lancet Infectious Diseases,* the PHE researchers report that 37 of 60 HL-AziR *N gonorrhoeae* isolates collected in England from November 2014 through February 2017 belonged to a single multi-antigen sequence type (ST9768). This is the same sequence type that was initially identified in seven *N gonorrhoeae* isolates tested when the outbreak was first identified in Leeds in 2015.

When compared with 110 *N gonorrhoeae* isolates from the United Kingdom and Ireland with ranges of azithromycin resistance, the isolates from ST9768 clustered into three phylogenetic clades and were all found to be genetically similar, with a mean distance of 4.3 single nucleotide polymorphisms (SNPs). All of the ST9768 isolates shared a recent common ancestor indicative of recent transmission.

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In world first, UK reports high-level gonorrhea resistance

Filed Under: Gonorrhea; Antimicrobial Stewardship

Lisa Schnirring | News Editor | CIDRAP News | Mar 28, 2018

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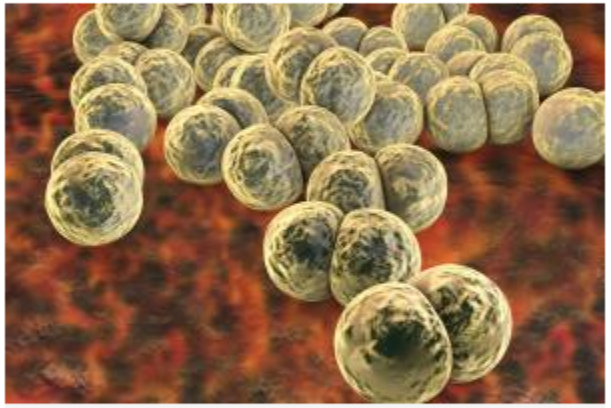

Dr_Microbe / iStock

Health officials in the United Kingdom announced today that they are investigating a gonorrhea infection contracted abroad that marks the first global detection of high-level resistance to recommended dual-antibiotic treatment as well as to other commonly used drugs.

Gwenda Hughes, PhD, consultant scientist at Public Health England (PHE) and head of its sexually transmitted infection section said in a statement that the patient's *Neisseria gonorrhoeae* infection is very resistant to first-line treatment, a combination of two antibiotics—azithromycin and ceftriaxone.

"We are following up this case to ensure that the infection was effectively treated with other options and the risk of any onward transmission is minimised," she said, adding that the PHE actively monitors the spread of antibiotic resistance in gonorrhea and potential treatment failures.

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Global antibiotic use rises, fueled by economic growth

Filed Under: Antimicrobial Stewardship

Chris Dall | News Reporter | CIDRAP News | Mar 26, 2018

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Editor's note: *This story was updated late on Mar 26 with comments from Debbie Goff, PharmD.*

Orbis / Flickr cc

A large new study of antibiotic use in humans shows an alarming rise in consumption around the world, driven predominantly by rising living standards in low- and middle-income countries (LMICs).

The study, published today in the *Proceedings of the National Academy of Sciences,* found that overall global antibiotic use rose by 65% from 2000 through 2015, while the antibiotic consumption rate increased by 39%. Over that period, antibiotic consumption in LMICs more than doubled, with some LMICs having consumption rates that surpassed those of high-income countries (HICs). The increase was correlated with growth in per capita gross domestic product (GDP).

The rise in consumption comes despite an increasing international focus on the threat of antibiotic resistance, which is driven by antibiotic use. Even though antibiotic consumption levels in many LMICs remain far below those of wealthier nations, the concern is that the pattern will continue as living standards rise around the globe and more people have access to antibiotics. And that could have a profound impact on public health.

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Needle hasn't moved on US outpatient antibiotic prescribing

Filed Under: Antimicrobial Stewardship

Chris Dall | News Reporter | CIDRAP News | Mar 08, 2018

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Despite an increasing focus on reducing unnecessary antibiotic use in recent years, national outpatient prescribing practices remain unchanged, according to a study today in *Infection Control and Hospital Epidemiology*.

Michael Jung / iStock

Analyzing administrative claims data for the years 2013 through 2105, researchers from the Washington University School of Medicine in St. Louis and Boston University School of Medicine found no significant changes in overall annual antibiotic prescribing rates or prescribing rates for individual drugs over the 3-year period. But they did find significant seasonal variation, with antibiotics much more likely to be prescribed in the winter than in the summer.

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Too many hospitalized kids get preventive antibiotics

Filed Under: Antimicrobial Stewardship
Chris Dall | News Reporter | CIDRAP News | Mar 23, 2018
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A large new international study indicates that nearly a third of hospitalized children are receiving antibiotics to prevent bacterial infections rather than to treat them, and in many cases are receiving broad-spectrum antibiotics or combinations of antibiotics.

napatcha / iStock

The authors of the study say this high rate of prophylactic prescribing in pediatric patients and frequent use of broad-spectrum agents suggests a clear overuse of antibiotics in this population and underscores the need for pediatric-specific antibiotic stewardship programs.

"In pediatrics, there is far too much unnecessary—as well as too much inappropriate—antibiotic prescribing," lead study author Markus Hufnagel, MD, PhD, a pediatric infectious disease (ID) specialist and professor at University Children's Hospital in Freiburg, Germany, told CIDRAP News. "It is critical for us to preserve the antibiotics that we use, especially since at least to date, there has been little interest in investing in the development of new antibiotics."

Antibiotics for surgical, medical prophylaxis

The study, published yesterday in the *Journal of Pediatric Infectious Diseases Society,* evaluated preventive, or prophylactic, antibiotic prescribing practices in 17,693 children at 226 pediatric hospitals in 41 countries, including the United States. The participating hospitals were asked to conduct a 1-day point-prevalence survey (PPS) from October 2012 through November 2012, and investigators then identified children who received at least one antibiotic for prophylactic indications on the day of the survey.

University of Minnesota

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Experts lay out universal framework for stewardship programs

Filed Under: Antimicrobial Stewardship

Chris Dall | News Reporter | CIDRAP News | Apr 04, 2018

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piccaya / iStock

An international team of experts has developed a list of core elements and checklist items to help hospitals around the world use antimicrobial drugs more responsibly.

The core elements, published yesterday in *Clinical Microbiology and Infection*, aim to define the essential and minimum standards for hospital antimicrobial stewardship programs (ASPs) in both high- and low-to-middle-income countries. While groups in the United States and other high-income nations have developed such standards, this is the first effort to develop a universal ASP framework "that could be relevant across both resource-rich and resource-limited contexts," the authors of the paper write.

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Price to pay: Antibiotic-resistant infections cost $2 billion a year

Filed Under: Antimicrobial Stewardship

Chris Dall | News Reporter | CIDRAP News | Mar 22, 2018

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Antibiotic resistance adds nearly $1,400 to the bill for treating a bacterial infection and costs the nation more than $2 billion annually, according to a study yesterday in *Health Affairs*.

The study, which is the first national estimate of the incremental costs for treating antibiotic-resistant infections, also found that the share of bacterial infections in the United States that were antibiotic resistant more than doubled over 13 years, rising from 5.2% in 2002 to 11% in 2014.

The authors of the study say the troubling numbers, on top of the human toll of antibiotic resistance, highlight the need for increased funding from both public and private sources for efforts to develop new antibiotics, diagnostics, and infection prevention strategies.

"The direct costs of these infections, in addition to the morbidity and mortality attributable to them noted in previous studies, make a compelling case for urgent action by national and international policy makers," they write.

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University of Minnesota

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MERS infects 7 in Saudi Arabia, including 3 in health settings

Filed Under: MERS-CoV

Lisa Schnirring | News Editor | CIDRAP News | Mar 05, 2018

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In updates posted over the past few days, Saudi Arabia reported seven more MERS-CoV infections and two deaths from the disease. Three of the patients are Riyadh residents infected while they were hospitalized, hinting at a possible healthcare-related outbreak.

sudok1/iStock

Three of the other patients had been exposed to camels, another well-known risk factor for contracting MERS-CoV (Middle East respiratory syndrome coronavirus), before they became ill.

Secondary infections in 3 patients

Saudi Arabia's Ministry of Health (MOH) reported details about the cases in six daily statement dated from Feb 26 through Mar 3.

The patients infected while hospitalized in Riyadh include two men, 23 and 59, both of whom are listed in stable condition. Their infections were noted in a Feb 26 update, which said neither of the men are healthcare workers.

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News Scan for Mar 08, 2018

MERS hospital outbreak grows in Riyadh

Yesterday the Saudi Arabian Ministry of Health (MOH) confirmed another case of MERS-CoV acquired during the patient's stay at a Riyadh hospital.

A 60-year-old Saudi man from Riyadh is in stable condition after being diagnosed as having a MERS-CoV (Middle East respiratory syndrome coronavirus) infection. This is the fifth case in a presumed hospital-based outbreak that has included three other patients and one healthcare provider. All of the recent cases have involved men.

The MOH also announced the death of a previously reported patient, an 82-year-old Saudi man from Riyadh. It does not appear that the man was part of the current hospital-related cluster.

Saudi Arabia's MERS-CoV total cases since 2012 have now reached 1,814, including 736 deaths. Ten people are still being treated for their infections.

Mar 7 Saudi MOH report

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News Scan for Mar 26, 2018

Saudi Arabia records four new MERS cases

The Saudi Arabian Ministry of Health (MOH) released four new reports of MERS-CoV cases over the weekend, including two cases that had direct contact with camels.

On Mar 21, a 67-year-old Saudi man from Najran was diagnosed as having MERS-CoV (Middle East respiratory syndrome coronavirus). He is in stable condition and had contact with camels.

The MOH recorded the case of another patient with camel contact on Mar 24. The patient is a 44-year-old expatriate from Hofuf who is in critical condition.

On Mar 24, the MOH also said a 41-year-old Saudi woman from Jeddah was in stable condition with MERS. She is described as a household contact of a previously noted case, the third such case recorded in Jeddah this month.

Finally, on Mar 23 the MOH said a 64-year-old expatriate man from Riyadh had MERS. He is in critical condition, and the source of his infection is listed as "primary," meaning it's unlikely he contracted the virus from another person.

Saudi Arabia's MERS-CoV total cases since 2012 are 1,825, including 738 deaths. Fifteen people are still being treated for their infections.

Mar 21 MOH update
Mar 23 MOH update
Mar 24 MOH update

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News Scan for Apr 02, 2018

Saudi Arabia records 3 new MERS cases

The Saudi Arabian Ministry of Health (MOH) released details of three new cases of MERS-CoV over the weekend, including two cases in Hofuf.

Both a 54-year-old Saudi man and a 5-year-old Saudi boy in Hofuf were diagnosed as having MERS-CoV (Middle East respiratory syndrome coronavirus), the MOH said on Mar 30. They are in stable condition and were described as having direct contact with camels, a known risk factor for contracting the virus.

Yesterday, the MOH said a 50-year-old man from Ahad Rafidah was in critical condition with MERS. The source of his infection is listed as "primary," meaning it's unlikely he contracted the virus from another person.

Saudi Arabia's MERS-CoV total cases since 2012 have now reached 1,828, including 739 deaths. Eleven people are still being treated for their infections.

Mar 30 MOH update

Apr 1 MOH update

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News Scan for Apr 04, 2018

Saudi Arabia records 2 new MERS cases

The Saudi Arabian Ministry of Health (MOH) has confirmed two new cases of MERS-CoV, including a household contact in Riyadh.

On Apr 2, a 58-year-old Saudi man from Najran was diagnosed as having an asymptomatic MERS-CoV (Middle East respiratory syndrome coronavirus) infection. He is in stable condition, and the source of his infection is listed as "primary," meaning it's unlikely he contracted the disease from another person.

Today the MOH recorded the case of a 57-year-old female expatriate from Riyadh, who is listed as a household contact of a previously recorded patient. She is in stable condition. On Mar 23, the MOH said a male expatriate in Riyadh had been diagnosed as having MERS. Neither of the two newly reported patients is a healthcare worker.

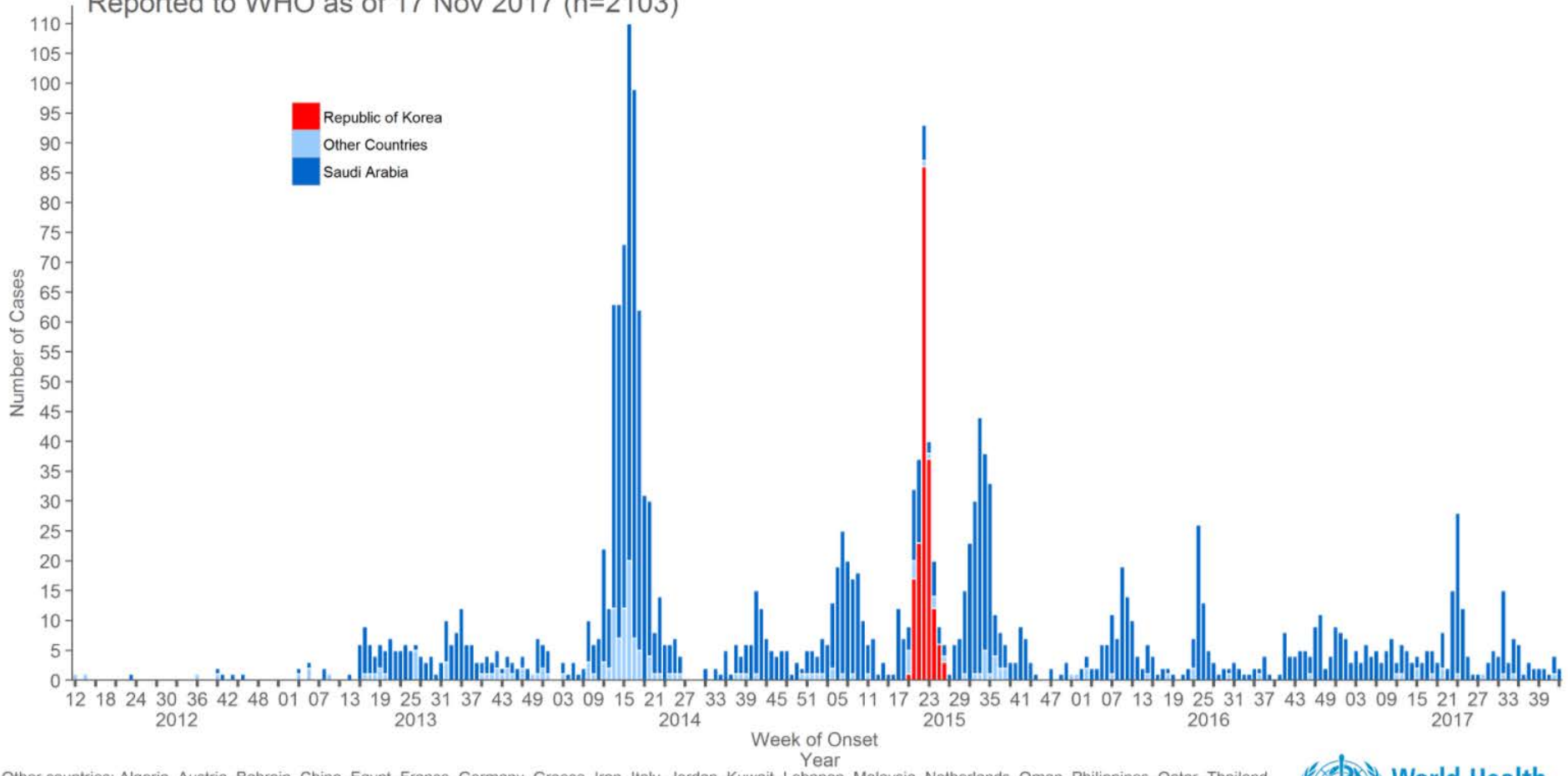
Saudi Arabia's MERS-CoV total cases since 2012 have now reached 1,830, including 739 deaths. Nine people are still being treated for their infections.

Apr 2 MOH update
Apr 4 MOH update

World Health Organization

Confirmed global cases of MERS-CoV

Reported to WHO as of 17 Nov 2017 (n=2103)



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

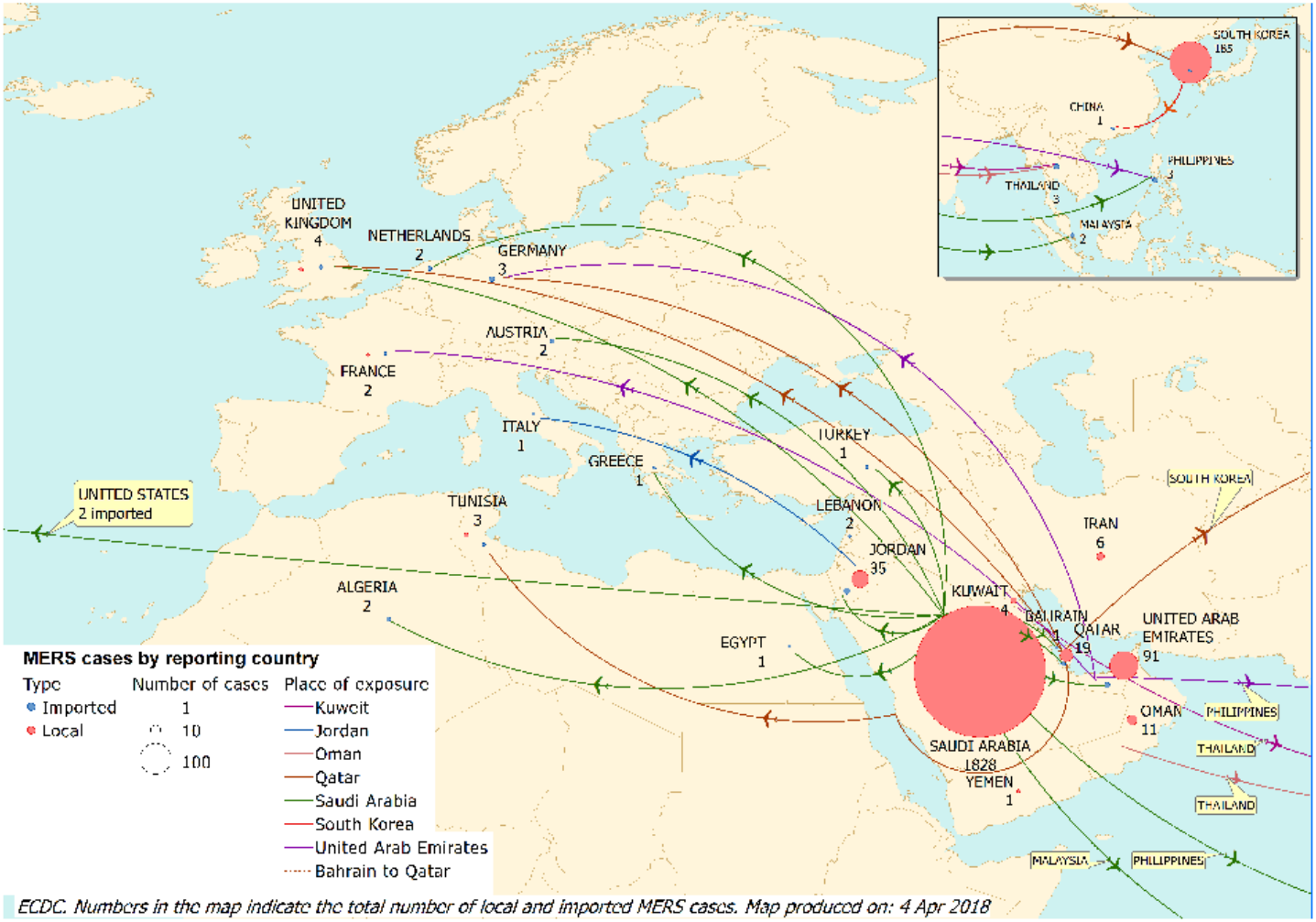
Please note that the underlying data is subject to change as the investigations around cases are ongoing. Onset date estimated if not available.

World Health Organization

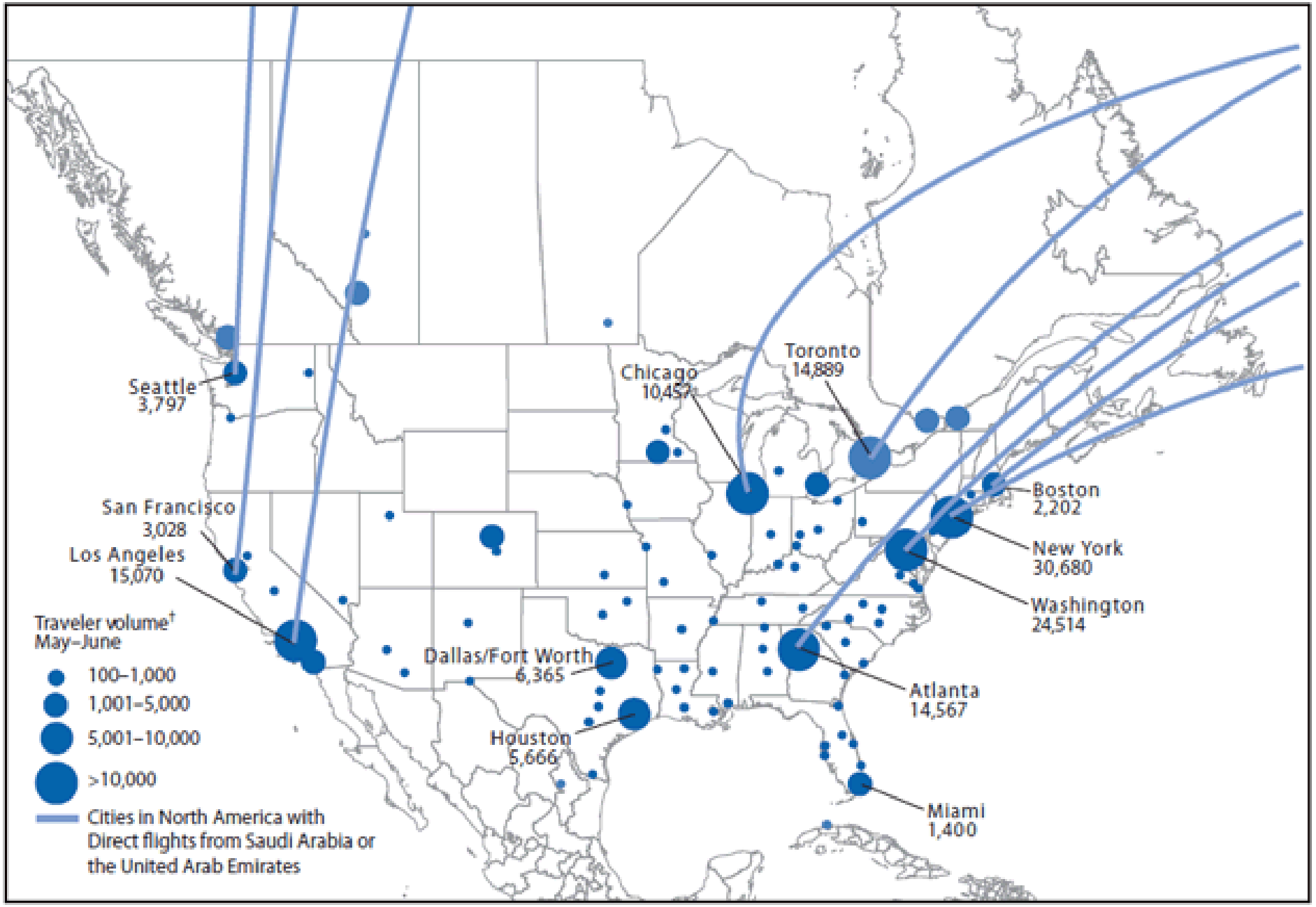
European Centre for Disease Prevention and Control

Distribution of confirmed cases of MERS-CoV by country of probable infection and country of report from March 2012 and as of 31 March 2018

Source: ECDC



ECDC. Numbers in the map indicate the total number of local and imported MERS cases. Map produced on: 4 Apr 2018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San Francisco
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Los Angeles
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Chicago
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Toronto
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Boston
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New York
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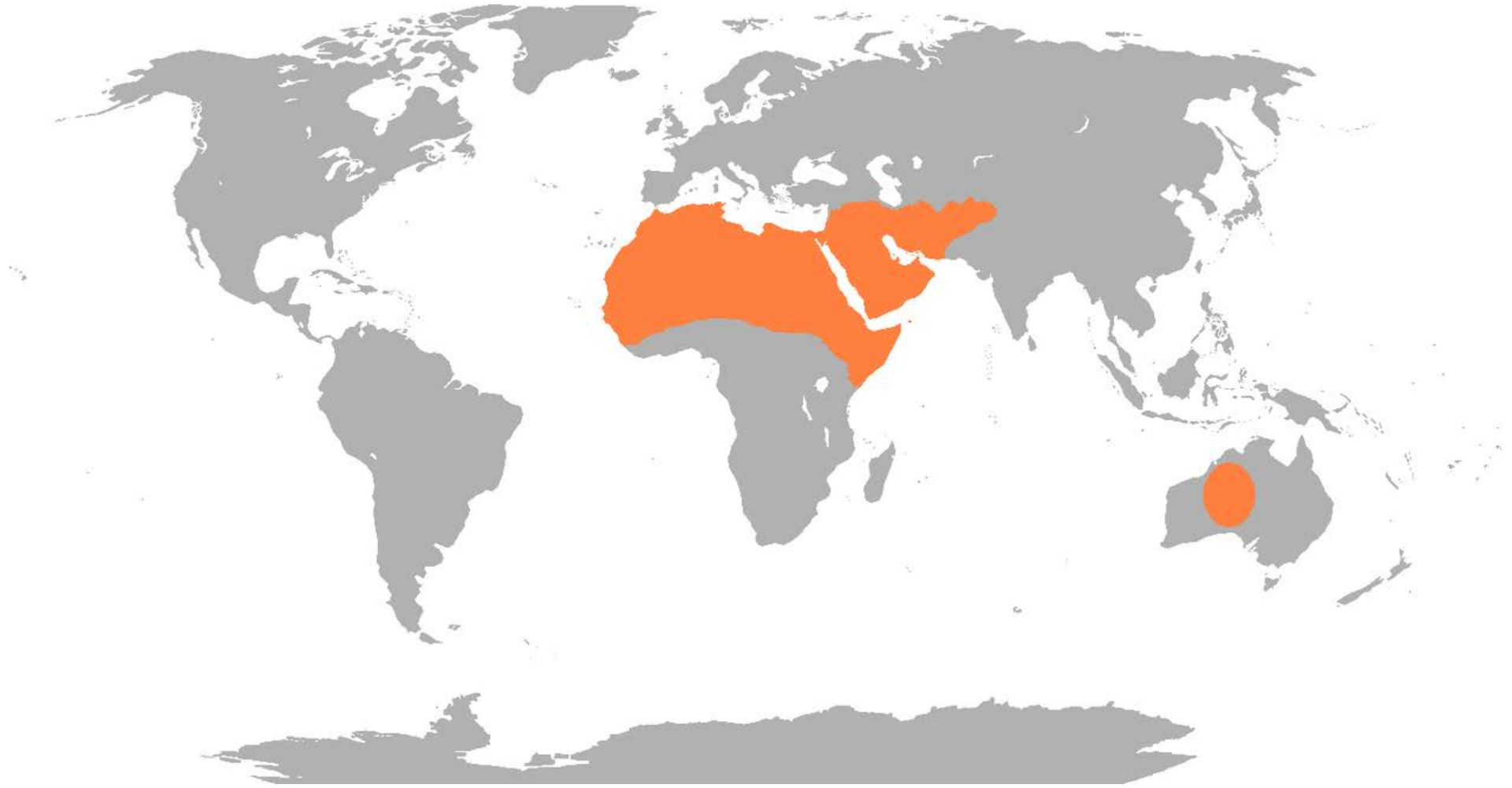
Washington
24,514
Atlanta
14,567
Dallas/Fort Worth
6,365
Houston
5,666
Miami
1,400
Traveler volume†
May–June
100–1,000
1,001–5,000
5,001–10,000
>10,000
Cities in North America with
Direct flights from Saudi Arabia or
the United Arab Emirates



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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.

Adam Zdebel / Flickr cc

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*.

University of Minnesota

CIDRAP Center for Infectious Disease Research and Policy

New SARS-like virus from bats implicated in China pig die-off

Filed Under: SARS

Lisa Schnirring | News Editor | CIDRAP News | Apr 05, 2018

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A novel coronavirus that killed nearly 25,000 piglets at four farms in Guangdong province in 2016 and 2017 came from horseshoe bats and bears other striking similarities to the emergence of SARS, researchers reported yesterday in a letter to *Nature*.

Waltzing Van / Flickr cc

The outbreaks in piglets occurred only about 62 miles from where the SARS (severe acute respiratory syndrome) index case-patient lived. The SARS epidemic—also caused by a novel coronavirus (CoV) thought to have originated in the same bat species—began in southern China in 2002, sickening nearly 8,100 people, 774 of them fatally, in 37 countries.

The new findings are the result of an investigation into a fatal outbreak that got worse, even after porcine epidemic diarrhea virus (PEDV), involved in the initial phase of the event, was no longer turning up in samples from dead piglets. Researchers from China, EcoHealth Alliance, and Duke-NUS Medical School collaborated on the study, which was supported by the National Institute of Allergy and Infectious Diseases (NIAID), part of the National Institutes of Health.

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Step-by-step horsepox study stokes dual-use controversy

Filed Under: Orthopoxvirus; Smallpox; Dual-Use Research

Stephanie Soucheray | News Reporter | CIDRAP News | Jan 23, 2018

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"We haven't described anything that isn't well-known in the field."

That's how David Evans, PhD, professor of medical microbiology and immunology at the University of Alberta, defends his latest study involving potentially dangerous research published recently in *PLoS One*.

gorodenkoff / iStock

The study, titled, "Construction of an infectious horsepox virus vaccine from chemically synthesized DNA fragments," has caused a stir because it offers a step-by-step account of how Evans and his team recreated the horsepox virus (HPX) using synthesized DNA fragments based on HPX and vaccinia virus genomes. The virus was then used to develop a novel vaccinia vaccine tested in mice.

Pathway to smallpox?

The work generated criticism from global biosecurity experts who say that offering a manual for re-creating an orthopoxvirus is an inherently dangerous proposition. They fear being that Evans and his team have offered rogue states, terrorists, or others a how-to guide to recreating the world's most dangerous orthopoxvirus—smallpox.

DAILY BEAST

This Eradicated Disease Could Come Back as a Terrifying Biological Weapon

Smallpox has been eradicated since 1989, but scientists worry that that's a false sense of security.

TANYA BASU 04.01.18 1:44 PM ET

A Discovery series released Thursday produced by Steve Rivo, *Invisible Killers*, explores in one episode how smallpox—eradicated in 1980—could make a surprising, deadly comeback.

That might seem inherently at odds with what we think about smallpox, a disease that starts as a fever with red bumps that become painful blisters within and outside the body, ultimately causing up to half of people afflicted with it to die. There is no cure, and smallpox permanently scars not only the body but a person's organs.

But thanks to a staggering effort fronted by the World Health Organization, the disease was eradicated in 1980.

The disease isn't dead, however. There are at least two labs—one in Moscow, the other with the CDC—that hold vials of smallpox in the event of an emergency, stockpiles that were supposed to be destroyed by 2002 but weren't after 9/11 and the subsequent anthrax attacks made bioterror a real, looming threat. The CDC still holds reserves, in addition to enough vaccinations and treatments in the event of a surprise eruption of smallpox.

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AN R&D BLUEPRINT FOR ACTION TO PREVENT EPIDEMICS

PLAN OF ACTION

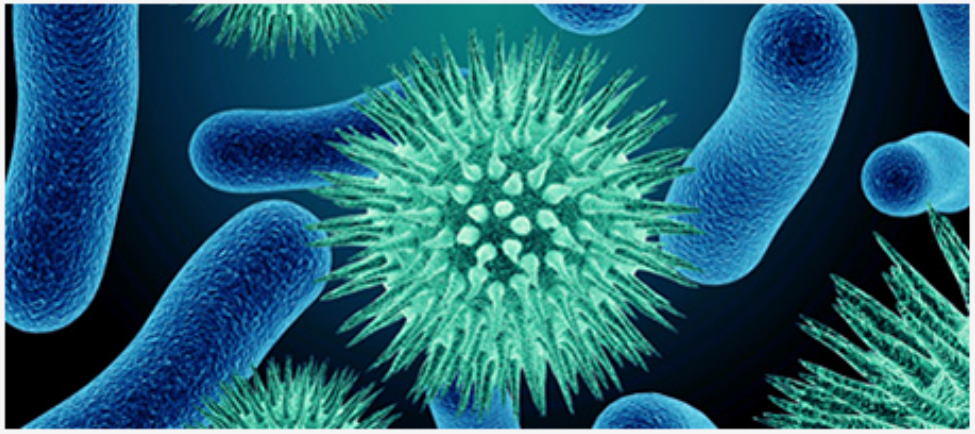
MAY 2016

World Health Organization

World Health Organization

R&D Blueprint

List of Blueprint priority diseases



For the purposes of the R&D Blueprint, WHO has developed a special tool for determining which diseases and pathogens to prioritize for research and development in public health emergency contexts. This tool attempts to identify those diseases that pose a public health risk because of their epidemic potential and for which there are no, or insufficient, countermeasures. The diseases selected through this process are the focus of the work of R& D Blueprint. This is not an exhaustive list, nor does it indicate the most likely causes of the next epidemic. It should be noted that diseases such as influenza, yellow-fever, cholera etc., which present significant health risks, are absent from this list because medical countermeasures are available for them or they are already the focus of dedicated R&D activities.

Revised list of priority diseases, January 2017

- Arenaviral hemorrhagic fevers (including Lassa Fever)
- Crimean Congo Haemorrhagic Fever (CCHF)
- Filoviral diseases (including Ebola and Marburg)
- Middle East Respiratory Syndrome Coronavirus (MERS-CoV)
- Other highly pathogenic coronaviral diseases (such as Severe Acute Respiratory Syndrome, (SARS))
- Nipah and related henipaviral diseases
- Rift Valley Fever (RVF)
- Severe Fever with Thrombocytopenia Syndrome (SFTS)
- Zika
- Disease X *

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WHO Roadmap Development

Development of Roadmaps for Priority Pathogens of Concern

At the request of its 194 Member States, following the Ebola epidemic in West Africa, the World Health Organization (WHO) developed A Research and Development (R&D) Blueprint for Action to Prevent Epidemics. A key component of the blueprint is the creation of R&D roadmaps for priority pathogens of concern. Each roadmap will provide a framework that identifies the vision, strategic goals, and priority areas for accelerated R&D needed for disease prevention and control. The goal of each roadmap is to promote development and evaluation of medical countermeasures (diagnostics, therapeutics, and vaccines) for the pathogen.

CIDRAP has been selected to work closely with the WHO to develop R&D roadmaps for Ebola/Marburg, Nipah, and Lassa viruses. This work is being funded through support from Wellcome, a key partner in this undertaking.

Key steps for the development of each roadmap include the following:

- Conduct background research regarding the current status of medical countermeasure development for the pathogen.
- Conduct a gap analysis to determine where additional research and development are needed.
- Develop a roadmap draft, with input and support from a core group of selected subject matter experts (SMEs).
- Convene an in-person consultation with a larger group of diverse international SMEs, including representation from affected countries, to obtain input on the draft document.
- Revise the roadmap (again with support from a small group of key SMEs) and then complete a vetting and review process involving the primary partners and stakeholders.
- Finalize the roadmap for joint publication by CIDRAP and the WHO (anticipated to be in late summer 2018).

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Zika Cases in the United States

Starting April 5, 2018, CDC will begin reporting of provisional Zika virus disease case counts reported to ArboNET in the United States and its territories on the first Thursday of each month.

Cumulative Zika Virus Disease Case Counts in the United States, 2015-2018

Provisional Data* as of March 21, 2018

Zika virus disease became a nationally notifiable condition in 2016. Cases are reported to CDC by state, territorial, and local health departments using standard case definitions. This web page contains cumulative provisional data reported to ArboNET for **January 1, 2015 – March 21, 2018**.

US States

- 5,672 symptomatic Zika virus disease cases reported†
  - 5,388 cases in travelers returning from affected areas
  - 229 cases acquired through presumed local mosquito-borne transmission
  - 55 cases acquired through other routes, including sexual transmission (N=52), laboratory transmission (N=2), and person-to-person through an unknown route (N=1)

US Territories

- 37,195 symptomatic Zika virus disease cases reported†
  - 147 cases in travelers returning from affected areas
  - 37,048 cases acquired through presumed local mosquito-borne transmission
  - 0 cases acquired through other routes‡

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Study: 7% risk of birth defects in Zika pregnancies

Filed Under: Zika

Stephanie Soucheray | News Reporter | CIDRAP News | Mar 14, 2018

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Since Zika virus (ZIKV) infections erupted in Brazil in 2015, several studies have attempted to quantify the likelihood of birth defects, including microcephaly, in Zika-affected pregnancies. A prospective cohort study published today in the *New England Journal of Medicine* (*NEJM*)shows that 7% of all pregnancies with laboratory confirmed Zika infections had evidence of a Zika-related birth defect.

andemandaci / iStock

The study's findings are similar to results from a study of birth outcomes in US territories published by the Centers for Disease Control and Prevention (CDC) last June. That study found 5% of babies born to women with confirmed Zika had birth defects.

The current study is based on data collected from French territories (Guadeloupe, French Guiana, and Martinique) in the Americas. Researchers followed 546 pregnancies from March through November of 2016. All mothers had confirmation of Zika infection in pregnancy and were symptomatic. The 546 pregnancies produced 527 live births and 28 that were not carried to term or were stillborn.

STAT

Monkey study suggests Zika infection in infancy could cause brain damage

By HELEN BRANSWELL @HelenBranswell / APRIL 4, 2018

A new study in primates raises the possibility that children infected with the Zika virus during infancy could be at risk of experiencing brain damage.

Zika is known to destroy developing brain tissue when it infects a fetus in the womb. Scientists know less — next to nothing, essentially — about how the virus might affect the brain of an infant infected after birth.

In the new study, scientists infected rhesus macaques with Zika virus at the age of about 1 month — which corresponds to about 3 months of age in a child. The macaques showed troubling brain and behavioral changes.

The findings, published Wednesday in the journal Science Translational Medicine, are worrisome, admitted Dr. Karin Nielsen-Saines, who was not involved in the research.

Nielsen-Saines, a pediatric infectious diseases specialist at the University of California, Los Angeles, who studies the Zika virus, said during the height of the Zika outbreak in 2016 she and colleagues were often asked if it was safe to take a baby to areas where Zika was transmitting.

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Parents less likely to vaccinate autistic kids, siblings

Filed Under: Anti-science; Childhood Vaccines
Lisa Schnirring | News Editor | CIDRAP News | Mar 26, 2018
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An autism diagnosis seems to make parents less likely to continue with childhood vaccination, not only for the child who was diagnosed, but also for their younger siblings, making both groups vulnerable to a host of preventable infectious diseases, researchers reported today.

Katarzyna Bialasiewicz / iStock

Though scientists have strongly ruled out vaccines as a cause of autism, misperceptions and suspicions persist, creating pockets of undervaccinated children that give preventable diseases such as measles a foothold to start spreading again. The findings from a large retrospective cohort study appeared today in an early online edition of *JAMA Pediatrics*.

Uptake markedly lower in ASD families

The study took place at six sites that participate in the US Centers for Disease Control and Prevention's (CDC's) Vaccine Safety Datalink: five Kaiser Permanente locations in four states and the Marshfield Clinic in Wisconsin. Its main goals were to see if children with autism spectrum disorder (ASD) and their siblings received the rest of the vaccines recommended by the CDC Advisory Committee on Immunization Practices (ACIP), compared with children without ASD and their siblings.

University of Minnesota

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Kratom-linked Salmonella outbreak sickens 45 more

Filed Under: Salmonella; Foodborne Disease

Stephanie Soucheray | News Reporter | CIDRAP News | Apr 06, 2018

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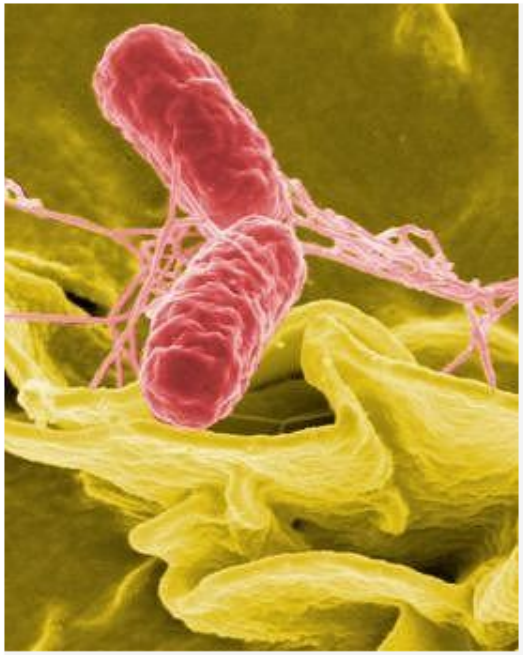
The Centers for Disease Control and Prevention (CDC) today reported that 45 more people in 19 states have fallen ill with *Salmonella* poisoning since the CDC's last update on Mar 15.



NIAID

The agency has now confirmed 132 cases in 32 states tied to the use of kratom, an herbal alternative to opioids. Thirteen states have reported their first infections, bringing the number of affected states to 38.

Forty percent of patients (38 of 96 with available information) have required hospitalization, but no deaths have been reported in this outbreak, the CDC said.

The update comes just days after the US Food and Drug Administration (FDA) issued a mandatory recall for all powdered kratom products from Triangle Pharmanaturals, the first-ever mandatory recalled issued by the FDA for a food product. The FDA issued the recall after the Las Vegas–based company failed to voluntarily recall kratom products.

Questions, Comments and Discussion

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