Epidemiological Alerts and Updates

Annual Report 2013

Pan American Health Organization

World Health Organization
REGIONAL OFFICE FOR THE Americas

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Introduction

This Annual Report is a compilation of the Epidemiological Alerts and Updates published by the Pan American Health Organization / World Health Organization (PAHO / WHO) in 2013. The Alerts and Updates address public health events that occurred within and outside the Region of the Americas, and that had or could have had an impact on international public health in the Americas.

The Alerts and Updates are generated to alert Member States of events that may constitute a threat to international public health so that they may adopt adequate preventive and control measures to mitigate the impact of such events. The main components of the Alerts and Updates include PAHO / WHO advice and reference to guidelines on how to appropriately respond to events. In addition, the Alerts and Updates contain situation summaries describing the concerned events.

All the Alerts and Updates published in 2013 addressed communicable diseases. Included among these diseases were some of the newest in the world, such human infection caused by the Middle East Respiratory Syndrome Coronavirus (MERS-CoV), and Influenza caused by the new Avian Influenza A subtype (H7N9). Other notable alerts concerned the autochthonous transmission of cholera in mainland Americas and the initial reports of chikungunya virus in the Caribbean marking the first time autochthonous chikungunya transmission was detected in the Americas.

The publication and dissemination of the Epidemiological Alerts and Updates is possible through the joint efforts of PAHO/WHO and Member States. Member States' ability to promptly detect, verify, assess, and communicate information on events that may constitute a public health emergency of international concern is key to ensuring that all countries in the Americas are alerted of events and informed of suitable measures to prepare for and mitigate their impact. The Annual Report 2013 is a testament to this close cooperation.

PAHO / WHO thanks Member States for their regional and global surveillance activities, and reiterates the importance of timely notification of public health events with potential international impact to the maintenance of health around the world.

Acronyms and Abbreviations

CDC	United States Centers for Disease Control and Prevention
CLSI	Clinical and Laboratory Standards Institute
ELISA	Enzyme-Linked Immunosorbent Assay
EW	Epidemiological Week
HPS	Hantavirus Pulmonary Syndrome
IHR	International Health Regulations
ILI	Influenza-like illness
MERS-CoV	Middle East respiratory syndrome-coronavirus
NFP	National Focal Point
PCR-RT	Reverse transcription - Polymerase chain reaction
PPE	Personal protection equipment
PRNT	Plaque reduction neutralization test
VRSA	Vancomycin-resistant *Staphylococcus aureus*
SARI	Severe acute respiratory infection

Cholera Outbreaks in the Americas, by country

2013

Given the occurrence of cholera outbreaks in the Region, the Pan American Health Organization/World Health Organization (PAHO/WHO) recommended Member States implement their preparedness and response plans, and strengthen cholera surveillance systems. PAHO/WHO also urged countries to speed up efforts to improve water and sanitation availability, quality and conditions.

Situation Summary

Cuba

In July 2012, the first cases of a cholera outbreak were reported in Cuba. By the end of 2012, the cumulative number of confirmed cholera cases was about 500. No further deaths were reported beyond the three reported in the Epidemiological Alert of 31 July 2012.

Following Hurricane Sandy's passage through Cuba's western provinces, in October 2012 isolated cases of cholera were reported in the provinces of Santiago de Cuba, Camagüey and Guantanamo. Thereafter, a total of 47 confirmed cases were reported in those three provinces. As of 15 December 2012, no further cases had been detected.

Control measures implemented by national authorities included: strengthening hygiene measures, improving environmental sanitation; ensuring the availability of drinking water; strict food control; and health education, with an emphasis on hand hygiene, and safe food and water consumption.

Following an outbreak detected in Manzanillo in 2012, in which 417 confirmed cholera cases and three deaths from the disease were reported, two other outbreaks were reported by the Ministry of Health: one, already mentioned, following Hurricane Sandy in October 2012, and another at the beginning of 2013, in Havana province. The latter outbreak involved 51 confirmed cases. Early 2013, the International Health Regulations (IHR) National Focal Point (NFP) reported that, as of 6 January 2013, there had been an increase in the number of cases of acute diarrheal disease in the Cerro municipality and other municipalities of Havana.[1] Stool samples were obtained from suspected cholera cases, and analyzed by the Pedro Kouri Institute of Tropical Medicine.[2] As of 14 January 2013, 51 cholera cases had been confirmed, all of which were identified as *Vibrio cholerae* toxigenic serogroup O:1, serotype Ogawa, biotype El Tor. The outbreak was related to errors in food handling.

Cuban authorities responded to the situation by strengthening public health education, emphasizing the need for hand hygiene and safe food and water consumption, while continuing to ensure a safe supply of drinkable water and strict control of food products. Active clinical-

epidemiological surveillance of acute diarrheal diseases was strictly maintained, and every suspected cholera case detected was investigated.

Between late July and early August 2013, five cases of cholera associated with a history of travel to Cuba were confirmed among foreigners, as follows:

- On 24 July 2013, Italy's IHR NFP informed WHO of a confirmed case of cholera (*V. cholerae* serogroup O:1 Ogawa) in a 47 year old male patient who had traveled to Havana from 23 June to 13 July 2013. Relevant details of the case, including a detailed travel history while in Cuba and laboratory test results, were shared with pertinent local authorities in Cuba and WHO.
- On 9 August 2013, Venezuela's IHR NFP confirmed two cases of cholera (*V. cholerae* serogroup O:1 Ogawa): a 51 year old male and 55 year old female, both with history of travel to Havana, Cuba.[3]
- Additionally, on 9 August 2013, Chile's IHR NFP reported two cases of cholera in persons returning from Cuba, one with laboratory confirmation (*V. cholerae* serogroup O:1 Ogawa), and the other confirmed epidemiologically.[4]

On 23 August 2013, Cuba's IHR NFP reported that following the outbreaks of 2012 and 2013, suspected cholera cases had been routinely investigated. The surveillance results had confirmed the occurrence of 163 cholera cases in Havana, Santiago de Cuba, and Camagüey provinces. According to the information provided, cases reported in Havana were linked to two food service centers where asymptomatic persons infected with cholera were found to be working as food handlers. Those food outlets had since adopted appropriate sanitary measures.

The confirmed cholera cases included 12 individuals (eight males and four females) who had travelled to Cuba from other countries (one from the Netherlands, two each from Chile, Germany, Spain and Venezuala, and three from Italy); their ages ranged between 30 and 74 years (median 53 years). The Pedro Kouri Institute of Tropical Medicine confirmed the detection of *V. cholerae* Ogawa serogroup O:1 in all said cases, who have all since recovered.[2]

Cuba's NFP reported that prompt and appropriate control actions were implemented in response to these outbreaks. Per the information provided, Cuba continued to develop and implement cholera prevention and control plans, to strengthen awareness of preventive measures among the public, to control food preparation sites, and to conduct epidemiological surveillance of acute diarrheal diseases. Public health awareness campaigns were intensified during the summer season, emphasizing the need for hand washing, drinking chlorinated water, safe food preparation, washing fruits and vegetables, and choosing processed foods.

According to the latest information provided by Cuba's NFP, the total number of cases reported between epidemiological week (EW) 27 of 2012 and EW 34 of 2013 was 678, including 3 deaths. The cases were reported in the provinces of Camaguey, Granma, Guantanamo, Havana and Santiago de Cuba.

As of 24 August 2013, no new cases had been reported.

Dominican Republic[5]

Since the beginning of the cholera epidemic in November 2010 through EW 51 of 2012, a total of 29,433 suspected cholera cases were reported, including 422 deaths. During its first year, the epidemic had greater activity, with increased number of cases reported during the rainy season. At the end of the first year, the cumulative case-fatality rate was 1.7%, and the cumulative attack rate, 0.2%. During the second year of the epidemic, there was a downward

trend in the number of cases, but deviations from that trend, related to outbreaks in certain municipalities, still occurred By the end of 2012, the case-fatality rate was 0.8%, and the cumulative attack rate, 0.3%.

The number of cholera cases reported in 2012 was lower than the number reported in 2011. Nonetheless, prevalence was still higher during the rainy season, particularly in the Tamboril and Moca municipalities. During EW 44, a cholera outbreak related to the contamination of drinking water occurred in Moca municipality, part of the province of Espaillat. In EW 51, cases were reported in the following provinces: Duarte, Espaillat, La Romana, La Vega, Puerto Plata, San Pedro de Macoris, Monte Plata, Santo Domingo, and the National District.

The cross sectional reports of select epidemiological weeks in 2013 are provided below:

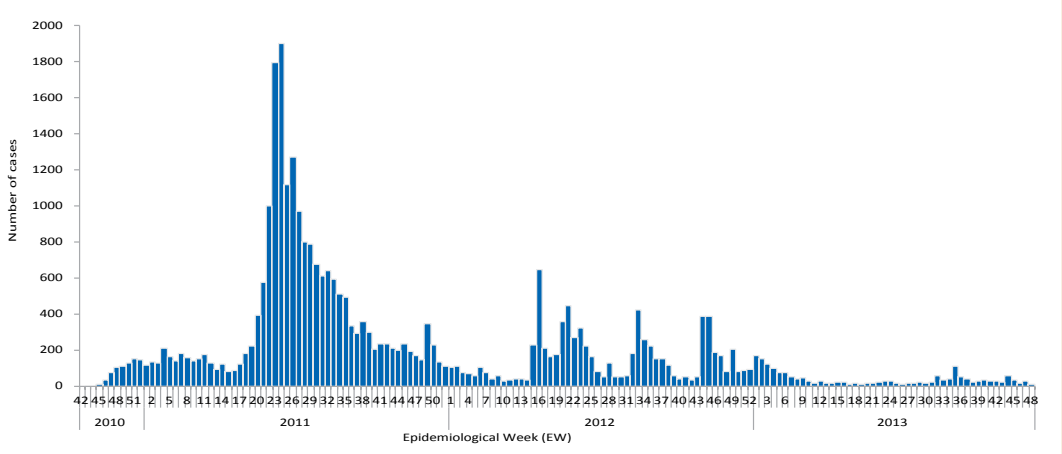
- **EW 1 –** The cumulative number of suspected cholera cases reported was 29,490, including 426 deaths. During this week, a cholera outbreak involving 37 cases and two deaths was reported in the prison of La Altagracia. The outbreak was linked to contaminated drinking water and overcrowding. National authorities several control measures, including the improvement of water and sanitation services, and the administration of a single doxycycline dose as chemoprophylaxis.
- **EW 30 –** The total number of suspected cholera cases reported was 30,671, including 454 deaths. For the first nine EWs of 2013, the number of suspected cholera cases and deaths recorded nationwide was higher than that for the same period of 2012. The increase was related to cholera outbreaks that occurred in different provinces and at the prison of La Altagracia.
- **EW 31 –** The total number of suspected cholera cases reported was 30,681, including 454 deaths. As was the case in Haiti, from EW 1 to EW 9 of 2013, the number of suspected cholera cases and deaths recorded nationwide was higher than the corresponding number in 2012, resulting from the outbreaks mentioned in the preceding paragraph.
- **EW 10 to 31 –** The number of cases and deaths recorded was lower than during the same period of 2012, with an average of 20 cases per week. Subsequently, between EW 32 and EW 36, the number of suspected cases increased, mainly due to outbreaks in the provinces of La Altagracia, Maria Trinidad Sanchez, San Cristobal, and Santiago.
- **EW 36 –** A total of 30,973 suspected cholera cases had been reported, including 455 deaths.
- **EW 38 –** The cumulative number of suspected cholera cases reported was 31,021, of which 456 had died. By EW 39 of 2013, those numbers were 31,045 and 457, respectively, and on EW 40, they were 31,070 and 458, respectively.
- **EW 41 –** A total of 31,090 suspected cholera cases had been recorded, including 458 deaths. During this epidemiological week, 20 suspected cholera cases were recorded with zero deaths. However, as of EW 41 of 2013, there was a downward trend in the number of suspected cholera cases (Figure 1). During EWs 42 and 43 of 2013, no suspected cholera cases in 17 of the country's provinces. The provinces of Puerto Plata, San Juan, Santiago and Santo Domingo accounted for 68% of all suspected cases were recorded reported between EWs 40 and 43.
- **EW 45 –** A total of 31,206 suspected cholera cases had been reported, including 462 deaths. Between EW 41 and EW 45, 116 additional suspected cholera cases were reported, with 4 deaths. Between EWs 45 and 46, 12 of 32 provinces had registered suspected cholera cases; the provinces of Azua, Puerto Plata, San Cristobal, Santiago, Santo Domingo, La Vega , and the National District accounted for 92 % of all suspected cases reported in the latter two-week period.

- **EW 46 –** There had been a total of 31,220 suspected cholera cases reported, with 462 deaths. Between EWs 45 and 46 of 2013, 14 additional suspected cholera cases were reported, with no deaths. During that period, 12 of 32 provinces had reported suspected cholera cases. During the past four weeks, 88 % of suspected cases had been reported in the provinces of Azua, San Cristobal, Santiago, Santo Domingo La Vega, and the National District. As of **EW 49** of 2013, the cumulative number of suspected cases of cholera was 31,271, with 462 deaths.

In summary, between EW 1 and EW 49 of 2013, 1,907 suspected cases of cholera were reported at the national level, including 41 deaths. The monthly average was 173 cases and 4 deaths. Increases in the number of cases and deaths were recorded in three periods: the first between EWs 1 and; the second, between EW 32 and EW 39, and the third, from EWs 43 to 45; these peaks coincided with the rainy season in the island of Hispaniola.

Two provinces, Baoruco and Santiago, reported an average number of cases higher than the monthly national average. While 31 of the 32 provinces reported cases, 8 provinces accounted for 80% of all cases reported in 2013. Those provinces were Altagracia, Azua, Boaruco, La Vega, San Cristobal, San Pedro de Macoris, Santiago, and Santo Domingo. The number of cases reported in 2013 was 77% lower than that of the same period of 2012 (1,907 versus 7, 703 cases respectively); however, the 2013 case fatality rate was higher than that of 2012 (2.1% and 0.8%, respectively, and 2011 (1.7 %). Figure 1 illustrates the recent cholera outbreak in the Dominican Republic.

Figure 1
Suspected cholera cases by epidemiological week, Dominican Republic, epidemiological weeks 42 of 2010 through 45 of 2013



Source: Ministry of Public Health. Department of Epidemiology. Epidemiological Bulletin, Dominican Republic.

Haiti[6]

Since the beginning of the epidemic in October 2010 through 31 December 2012, a total of 635,980 cholera cases were reported, including 350,679 (55%) hospital admissions, and 7,912 deaths. Since November 2011, the cumulative case-fatality rate had remained at 1.2%, though there were significant significant geographic variations in the rate; for example, the cumulative case fatality rates in Grand Anse and Port-au-Prince were 4.0% and 0.7% respectively. In general, when compared by month and EW, a larger number of cases and deaths were recorded in 2011 than in 2012. However, the distribution of cases and deaths

followed similar trends in both years, with peaks coinciding with periods of heavy rain around the months of May-June-July, and September-October.

While there had been a downward trend in the national number of cases and deaths since October 2012, the first week of 2013 reported comparatively higher numbers of cases and deaths than the same period in 2012. The increase was associated with outbreaks in the departments of Artibonite, Centre and Nord. In terms of mortality, the highest increase occurred during the first five epidemiological weeks of 2013. From EW 12 to EW 32 of 2013, the number of cases and deaths was lower than those reported during the same period of 2012.

Following are cross sectional reports of selected epidemiological weeks in 2013:

- **EW 32** – The cumulative number of cholera cases was 669,645, including 371,099 hospitalizations, and 8,224 deaths. The cumulative case-fatality rate had remained at 1.2% since November 2011, with significant variations, though, as the rate was 4.5% in Sud-Est, and This number is different from what was cited above. What was mentioned above is 0.7% in Port-au-Prince. As of EW 33, the total number of cholera cases was 671,033, with 372,241 hospital admissions (55%), and 8,231 deaths. The cumulative case fatality rate remained stable, with similar geographical variations.
- **EW 38** – The total number of cholera cases reached 678,840, including 377,426 hospital admissions (55.5%), and 8,289 deaths. The cumulative case-fatality rate had remained at 1.2% since November 2011, ranging between this number is different from what was mentioned above, just checking that it is still right. In the department of Sud-Est and 0.6% in Port-au-Prince.
- **EW 39** – The total number of cholera cases reached 679,637, with 377,951 hospitalizations (55.6%), and 8,297 deaths. The cumulative case-fatality rate remained consistent with that of previous periods, with similar variations. The number of cases and deaths was lower than during the same period of 2012.
- **EW 41** – The total number of cholera cases reported thus far was 682,573; of those, 379,870 were hospitalized (55.6%) and 8,330 died. The cumulative case-fatality rate remained stable in magnitude and geographical variation. All 10 departments reported new cases. By 17 October 2013, the total number of reported cholera cases was 684,085, including 380,846 hospitalizations, and 8,361 deaths. All departments reported cases between EW 39 and EW 41.
- **EW 46** – A total of 689,448 cholera cases had been reported, of which 384,956 were hospitalized (55.8%); there had been 8,448 deaths. The cumulative case-fatality rate remained at 1.2%, with variations ranging from 4.4 % in the department of Sud Est to 0.6 % in Port-au-Prince. An upward trend was reported in EWs 44 and 45. Indeed, since the 26 October 2013 Epidemiological Update on cholera, there had been 5,363 additional cases and 87 deaths nationally. New cases were reported in all of the country's departments.
- **EW 47** – A total of 692,098 cases of cholera had been reported, including 386,652 hospitalizations (55.9%), and 8,470 deaths. The annual cumulative case fatality rate remained at 1.2%, but ranged from 4.4% in the department of Sud Est to 0.6% in Port au Prince.
- **EW 48** – A cumulative number of 693,875 cholera cases had been reported, with 387,820 hospitalizations (55.9%), and 8,482 deaths. As in the previous year, between EWs 45 and 48, an increasing trend in the number of cases was observed, coinciding with the rainy season.

In summary, between EW 1 and EW 48 of 2013, 55,736 cholera cases and 431 deaths had been reported; the monthly average was 5,066 cases and 36 deaths*, and the weekly average, 1,140 cases and 9 deaths. The monthly average in 2013 was lower than that of 2011 (29,167 cholera cases, with 243 deaths), and 2012 (8,429 cases, and 77 deaths). Four departments (Artibonite, Centre, Nord and Ouest) registered more cases than the average, and two (Artibonite and Ouest) accounted for 52% of all the cases reported in 2013. The cumulative case-fatality rate remained at 1.2 %, ranging from 4.4 %, in the department of Sud Est to 0.6 %, in Port-au-Prince.

Mexico[7]

Mexico's IHR NFP reported 10 confirmed autochthonous cases of infection with *V. cholerae* O:1 Ogawa toxigenic: 2 in Mexico City on 9 September 2013, and eight in the state of Hidalgo. Of the latter, 5 were notified on 22 September and 3, on 25 March 2013; 6 were women and 4, men; the age range was 2 to 73 years. Five cases were hospitalized and one died (61 year old patient).

This was the first case of local cholera transmission reported in Mexico since the 1991-2001 epidemic. The genetic profile of the isolated strain from Mexican patients was very similar to (>95%) the strain circulating in three Caribbean countries (Haiti, Dominican Republic and Cuba), and was different from the one identified over a decade ago.

On 30 September 2013, the NFP reported 36 new confirmed autochthonous cases of infection with *V. cholerae* O:1 Ogawa toxigenic in the state of Hidalgo, which brought the total number of confirmed cases to 46, including 1 death. Of the new cases, 2 occurred in the Federal District and 44 in the state of Hidalgo; 24 were female and 22 male, with ages ranging from 2 to 82 years.

From 9 September to 18 October 2013, Mexico's NFP had reported 171 confirmed cases *V. cholerae* O:1 Ogawa toxigenic infections, including 1 death. Between the epidemiological updates of 12 October and 19 October 2013, 12 new cases were reported, all of them in the state of Hidalgo.

Of the confirmed cases, 2 (1.2%) occurred in the Federal District, 157 (91.8%) in the state of Hidalgo, 9 (5.3%) in the state of Mexico, 1 (0.6%) in the state of San Luis Potosi, and 2 (1.2%) in the state of Veracruz (Figure 2).

Overall, 86 (50.2%) cases were female and 85 (49.8%) male, with ages ranging from 3 months to 88 years old. Thirty-nine (23%) of the cases were hospitalized. In the state of Hidalgo the investigation pointed to the river water as the source of contamination.

* Ranging from 188 cases in the Nippes department to 17,746 Ouest department.

Figure 2
Cumulative cases of cholera in Mexico, by federal entity, 12 October 2013

Source: Mexico IHR National Focal Point. Secretary of Health, Mexico.

During the week ending on 26 October, Mexican health authorities reported 5 new cases, 1 in the state of San Luis Potosi, and 4 in Veracruz. All five cases occurred in the same geographic area of La Huasteca, where urbanization, availability of drinking water, and basic sanitation services are limited.

From 9 September to 25 October 2013, Mexico´s NFP reported 176 confirmed cases of *V. cholerae* O:1 Ogawa toxigenic infection, including 1 death. These cases were detected from over 7,000 samples tested.

Of the cases confirmed, 2 (1.1%) were from the Federal District, 157 (89.2%) from the state of Hidalgo, 9 (5.1%) from the state of Mexico, 2 (1.1%) from the state of San Luis Potosi, and 6 (3.4%) from the state of Veracruz. In total, 89 (50.9%) cases were female, and 87 (49.1%) were male; the ages ranged from 3 months to 88 years. Fifty-seven cases (32.5%) required hospitalization.

Between 25 October and 8 November, Mexican authorities reported 4 new cases, 2 in the state of Hidalgo and 2 in the state of Veracruz.

By 15 November 2013, Mexico's NFP had reported a total of 180 confirmed cases of infection with *V. cholerae* O:1 Ogawa toxigenic, including one death, identified from more than 37,000 analyzed samples.

Tests conducted by the Institute of Epidemiological Diagnostics and Reference (InDRE) revealed the strains of *V. cholerae* O:1 isolates were susceptible to doxycycline and chloramphenicol, with reduced susceptibility to ciprofloxacin, and resistance to trimethoprim/sulfamethoxazole.

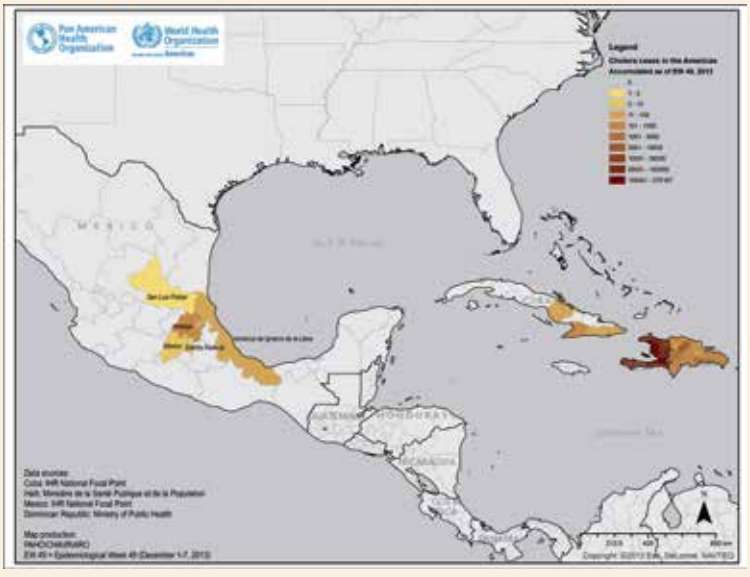
In summary, from EW 37 to EW 51 of 2013, a total of 187 confirmed cases of infection with *V. cholerae* O:1 Ogawa toxigenic were confirmed, as well as 1 death. Between EW 50 and EW 51 three additional cases were reported, 1 in the Federal District, and 2 in the state of Veracruz.

Of those, 3 were from the Federal District, 160 from the state of Hidalgo, 9 from the state of Mexico, 2 from the state of San Luis Potosi, and 13 from the state of Veracruz.

Mexico's health authorities implemented various measures as part of the national cholera prevention and response plan, including: strengthening national epidemiological activities; strengthening the capacity and improving the performance of the State's Public Health Laboratory; ensuring the availability of necessary inputs and quality of care in health care services; implementing measures to ensure access to drinking water and basic sanitation at the community level; and monitoring residual chlorine levels in drinking water.

Health professionals at different levels of the health care system were trained in cholera prevention, treatment, and control. Public awareness campaigns on water and food safety were carried out in Spanish, as well as indigenous languages (Nahuatl and Otomi). The campaign included national radio spots on the prevention of diarrheal disease.[8] Authorities in the state of Mexico also distributed flyers.

Figure 3
Cumulative number of cholera cases in the Region of the Americas, as of epidemiological week 49 of 2013



Map produced by: Pan American Health Organization. Data sources provided in the figure.

Recommendations

The Pan American Health Organization/World Health Organization did not recommend any travel or trade restrictions related to this event. PAHO/WHO reiterated that recommendations published in Epidemiological Alert of November 2, 2012 remained applicable.

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Other Sources of Information

- Information on WHO's statement relating to international travel and trade to and from countries experiencing outbreaks of cholera: http://www.who.int/cholera/technical/prevention/choleratravelandtradeadvice231110.pdf
- World Health Organization, Cholera Information: http://www.who.int/mediacentre/factsheets/fs107/en/index.html
- PAHO Health Topics, Cholera: http://www.paho.org/cholera
- Mexico. Secretaría de Salud. Normas oficiales mexicanas y manuales en torno a la vigilancia, prevención y control del cólera: http://www.epidemiologia.salud.gob.mx/dgae/lineamientos/index.html

Chikungunya Fever

9 December 2013

Following the identification of the first cases of autochthonous transmission of chikungunya fever in the Americas,[1,2] The Pan American Health Organization/World Health Organization (PAHO/WHO) advised Member States to develop and maintain the capacity to detect and confirm cases, and provide case management, and to implement an effective public communication strategy to reduce vector density, particularly in areas where the vector mosquito is present.

Chikungunya Fever (ICD-10 A92.0)

The disease is caused by the chikungunya virus (CHIKV), an alphavirus (Togoyiridae family). The virus is transmitted by mosquitos of the genus *Aedes*, particularly *Aedes aegypti* and *Aedes albopictus*.

Humans bitten by an infected mosquito usually develop symptoms of the disease after an incubation period of 3 to 7 days, ranging from 1 to 12 days. CHIKV can cause acute, sub-acute, and chronic disease.

In acute disease, symptoms develop abruptly and include high fever, headache, myalgia and arthralgia (predominantly in limbs and large joints). A maculopapular rash is also frequent. Severe forms of the disease are rare. Symptoms usually resolve in 7-10 days, although arthralgia and joint stiffness may persist intermittently for several months. Severe forms of the disease are rare.

The attack rate in communities affected by recent outbreaks ranged from 38% to 63%.

Situation Summary

On 6 December 2013, PAHO/WHO received confirmation of two cases of autochthonous transmission of chikungunya virus transmission on the island of Saint Martin/ Sint Maarten.

Previously, in the Americas, imported cases had been reported in Brazil*, Canada, French Guiana, Guadeloupe, Martinique and the United States of America.

The disease was first described in Tanzania in 1952. Since 2004, intense outbreaks have been reported in Africa, the islands of the Indian Ocean, and the Pacific region, including Australia and Asia (India, Indonesia, the Maldives, Myanmar, Sri Lanka and Thailand). In 2007, the virus was detected in Italy, where it produced an outbreak transmitted by the mosquito *Aedes albopictus* in the Emilia-Romagna region. Recent chikungunya fever outbreaks have had important impact on public health, especially, health services.

Recommendations

The broad distribution of *Ae. aegypti* and the presence of *Ae. albopictus* in the Americas, coupled with high human mobility in the Americas and worldwide, places the region at risk for the spread of chikungunya virus.

Consequently, PAHO/WHO emphasized its recommendations published in the "Guidelines for Preparedness and Response for Chikungunya Virus, Introduction in the Americas"[3], and urged Member States where the vector mosquito circulates to develop and maintain the capacity to detect, confirm, and manage cases, and implement an effective public communication strategy to reduce vector density.

Key recommendations related to surveillance, case management, and prevention and control measures, as contained in the aforementioned guidelines, are detailed below.

Surveillance

Chikungunya surveillance should be set up within existing dengue surveillance systems, while taking into account differences in the clinical presentation of both diseases. As appropriate to the epidemiological situation, surveillance should aim to (i) determine whether the chikungunya virus may have been introduced in a given area; (ii) track the disease once introduced and/or (iii) monitor the disease once established.

In countries without autochthonous transmission of the chikungunya virus, it is recommended that:

- Tests for chikungunya infection be conducted in a fraction of patients with fever and arthralgia or fever and arthritis of unknown etiology (e.g., negative test for malaria or dengue). Early detection will allow a proper response and characterization of the outbreak, and the identification of circulating viral strains.

In countries with autochthonous transmission of chikungunya, it is recommended that:

- the epidemiology of cases be described by time, place and person, as well as key clinical features;
- the spread of the virus be monitored to determine its introduction into new areas;
- an assessment of clinical severity and impact on society be conducted (e.g., workplace absenteeism, school closures, etc.);
- risk factors for infection or severe disease be determined; and
- circulating chikungunya virus lineages be identified, as capacity allows.

The above efforts are the basis for developing and sustaining effective control measures.

Once the introduction of the virus is documented, ongoing surveillance should be continued to monitor epidemiological or vector changes. Any change detected by surveillance should be promptly notified to national prevention and control authorities to ensure timely implementation of appropriate measures.

Laboratory Detection

Laboratory diagnostic tests to confirm chikungunya virus infection are: virus isolation; viral RNA detection through reverse transcriptase-polymerase chain reaction (RT-PCR); and/or serological evidence of recent infection (serology tests).

Virus isolation may be performed on acute viral infection serum specimens (≤ 8 days). Serum obtained from whole blood collected during the first week of illness and transported cold (2°-8° C or dry ice), as soon as possible (≤ 48 hours) to the laboratory can be inoculated into a susceptible cell line or suckling mouse. It is important to keep in mind that chikungunya virus isolation must only be done in biosafety level 3 laboratories.

For chikungunya virus RNA detection in real time, closed system assays should be utilized, —due to their increased sensitivity—, and reduced contamination risk. The protocol published by the United States Centers for Disease Control and Prevention (US-CDC) is recommended.[4]

For serological diagnosis, it is recommended that serum from whole blood be used for enzyme-linked immunosorbent assay (ELISA) and plaque reduction neutralization testing (PRNT). PRNT testing, whether used to confirm MAC-ELISA or demonstrate an increase in antibody titer in acute/convalescent specimens, should always include other viruses of the same serogroup (e.g., Mayaro virus)— in order to validate the specificity of the reaction. When PRNT is not available, other serological tests (e.g., hemagglutination inhibition [HI]) may be used to identify a recent alphavirus infection; however, PRNT is required to confirm a recent chikungunya virus infection.

Case Management

No specific antiviral drug treatment for chikungunya is available. Following the exclusion of more severe diagnosis, such as malaria, dengue or bacterial infections, symptomatic treatment is recommended.

It is important to differentiate chikungunya virus infection from dengue, due to the severe clinical outcomes of the latter infection (including death). A single patient may have both infections simultaneously. Compared with dengue, the pain in chikungunya cases is more intense, and localized in joints and tendons; the onset of fever is more acute and shorter in duration, and shock or severe bleeding is rare.

Because chikungunya outbreaks could create an additional burden on all levels of the health care system, it is necessary to develop and implement institutional plans and protocols for patient triage, care and rehabilitation.

Acute Disease

Treatment of the infection is symptomatic or supportive; it includes rest and administration of acetaminophen for fever, and ibuprofen, naproxen or other non-steroidal anti-inflammatory agents (NSAID) to relieve the arthritic component of the disease. The use of Aspirin is not advised, as there are risks of bleeding and Reye syndrome among children younger than 12 years of age. In patients with severe joint pain not relieved by NSAID, narcotics (e.g., morphine) or short-term corticosteroids can be used following a risk-benefit evaluation of such treatments. Patients should be advised to drink plenty of fluids in order to replenish fluid loss from sweating, vomiting, etc.

Sub-Acute and Chronic Disease

While recovery is the expected outcome of chikungunya infection, convalescence could be prolonged (sometimes a year or longer), and persistent joint pain may require pain management—, as well as long-term anti-inflammatory therapy. Disabling peripheral arthritis, which may persist for months, if refractory to other agents, may occasionally respond to short-term corticosteroids. To limit the use of oral corticosteroids, local corticosteroid injections (intra-articular) or topical NSAID therapy may be used. Physiotherapy may be beneficial in these cases.

Patient Isolation

To prevent infection of others at home, the community, or hospital, a chikungunya virus-infected patient must be protected against *Ae. aegypti* and *Ae. albopictus* mosquito bites during the

first week of illness (viremic phase). Protection by insecticide-treated bednets or remaining in a screened environment is highly recommended. In addition, physicians or health care workers who visit chikungunya virus-infected patients should avoid mosquito bites by applying insect repellent, and wearing long sleeves and pants.

Prevention and Control Measures

Prevention and control measures should be aimed at reducing vector density, with the acceptance and collaboration of the local population. It is important to provide transparent and high quality information on this disease through local media.

An effective operational dengue control program provides the basis for adequate preparation against chikungunya, as the biology and control measures for *Ae. aegypti* are similar to those of *Ae. albopictus*. In response to the introduction of the chikungunya virus, prevention and control recommendations developed for dengue management as part of the Integrated Strategy for the Prevention and Control of Dengue (EGI -Dengue) may be used and intensified. The Integrated Vector Management (IVM) program should be part of said approach as an independent quality control program.

To succeed, the chikungunya IVM program must include intersectoral participation and collaboration at all levels of government, in addition to health, education, environment, social development and tourism agencies. IVM programs also benefit from the participation of non-governmental and private institutions. The chikungunya virus control program must keep open communications, and seek the participation of the whole community.

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Dengue

21 June 2013

The Pan American Health Organization/World Health Organization (PAHO/WHO) recommended that Member States, especially those entering the rainy season (when dengue transmission is at its highest), such as Mexico and those in Central America and the Caribbean, continue preparation and response efforts based on lessons learned, and the Integrated Dengue Management Strategy (IDS-Dengue) for prevention and control, with an emphasis on reducing mortality from the disease.

Situation Summary

As of EW 21 of 2013, 868,653 cases of dengue had been reported in the Americas; of those, 8,406 were cases of severe dengue, with 346 deaths (0.04% case fatality rate). The fact that four dengue serotypes were in circulation in the region increased the risk of occurrence of severe forms of dengue. A breakdown of the number of cases, severe cases, deaths and circulating serotypes are available at http://www.paho.org/dengue

During the first semester of 2013, dengue outbreaks were reported in Brazil, Costa Rica, Colombia, Dominican Republic, and Paraguay. In some places, like Peru, outbreaks occurred in areas where autochthonous cases had not previously been reported.

At the time of this report, given the usual pattern of dengue in the region, an increase in the number of cases was expected for the coming months in Central America, Mexico and the Caribbean. These months coincided with the rainy season.

The purpose of the alert was to advise Member States entering the period of increased dengue transmission to continue coordinating with other sectors, as indicated in the activities of the Integrated Dengue Management Strategies (IDS-Dengue), and comprehensive outbreak response plans. Member States were also encouraged to adapt health services to care for an increased number of patients, as well as to strengthen and update health personnel regarding detection of dengue warning signs, and clinical case management.

Recommendations

PAHO/WHO reiterated the recommendations published in the 2012 Epidemiological Alerts, which emphasize inter-sectoral coordination, and approaches aimed at reducing morbidity and mortality. The main recommendations, including additional measures for decreasing mortality from dengue, are highlighted below.

Case Management

1. Refer to the new PAHO/WHO dengue case management guidelines distributed throughout the Region, which have been the subject of training workshops in all countries.

2. Strengthen health communication strategies, and provide patients and relatives the information necessary to identify warning signs, so medical care may be sought at the nearest health facility upon the onset of symptoms.

3. Continuously train health personnel in charge of patient care at the primary care level as well as at other levels of care, to ensure early detection and identification of warning signs, and adequate and timely treatment.

4. Organize the health care services network to achieve the highest degree of efficacy at the primary, and other levels of care. Additional measures are detailed below:

    - Training different types of health care personnel on duty at each healthcare unit in the diagnosis and treatment of dengue cases presenting warning signs and severe cases of dengue, as well as in the procedural flow for dengue case management. A specialist should always evaluate whether a dengue patient requires hospitalization.

    - Where the demand for assistance exceeds service capacity, executives or managers should assign a *dengue room* with dengue-specific medical and nursing staff. Said personnel will be responsible for consultation in emergency rooms and throughout the hospital, in order to identify hospitalized patients in other areas who might be experiencing warning signs.

    - Address dengue treatment holistically, as a single disease that can present with mild clinical stages, and develop severe clinical complications that can be fatal.

    - Ensure that all patients with a severe dengue diagnosis, either admitted to the intensive care unit or elsewhere in the hospital, be evaluated and managed by a team of specialists, ideally with dengue experience, as this is a disease that requires multidisciplinary assessment.

    - Training primary care level personnel in outpatient management of dengue, emphasizing: (i) the importance of early detection of warning signs to prevent shock and death; (ii) the need to stabilize the patient in an equipped ambulance prior to transportation to the nearest hospital; and (iii) that transference to a hospital should be accompanied by a written clinical summary, and preceded by a telephone call to the receiving hospital.

5. In those countries entering the rainy season, the designation of 300 squared meters of sanitary protective zone surrounding health care units is advised. Full sanitation should be ensured in those areas, including the removal of all types of mosquito breeding sites (e.g. scraps, waste, accumulated water and unused tires). In outbreak situations with a greater influx of patients with active dengue infection at medical care institutions, the concomitant presence of the vector increases the risk of transmission to other patients or companions.

Social Communication

In this area, the recommendations are to:

1. Develop, adjust, and implement plans for risk communication at national and local levels.

2. Conduct advocacy activities with policymakers and the organized civil society (e.g. mayors, churches, NGOs, private enterprise) to raise awareness of the problem and promote a coordinated inter-sectoral response.

3. Implement plans to modify the social determinants of dengue in areas at risk of disease, including:

   - The elimination of usual vector breeding sites, by

     a) Environmental cleaning of each home and common areas of neighborhoods and cities.

     b) Organizing intensive sanitation campaigns (elimination of breeding sites), especially in areas where garbage collection is frequently interrupted for long periods of time.

     c) Implementing breeding site control measures through physical, biological and chemical methods that actively involve the community.

   - Provide a sustainable response to environmental problems that arise in every home and community by implementing the Primary Environmental Care Strategy. This includes further work to achieve sustained changes in community awareness, public participation, and State environmental policies.

Additional information may be obtained through:

- Patient care guide in the Region of the Americas (in Spanish): http://new.paho.org/hq/index.php?option=com_content&task=view&id=264&Itemid=363&lang=es
- Diagnostic, treatment, prevention and control guide (in Spanish): http://new.paho.org/hq/dmdocuments/2011/ndeng31570.pdf

Hantavirus Pulmonary Syndrome

17 October 2013

Following increases in the number of hantavirus pulmonary syndrome (HPS) cases, in some countries of the Region in 2012 and part of 2013, the Pan American Health Organization/World Health Organization (PAHO/WHO) recommended that Member States continue efforts in detection, investigation, reporting, and case management for the prevention and control of hantavirus infections.

Hantavirus Pulmonary Syndrome (ICD -10 B33.4)

Hantavirus pulmonary syndrome (HPS) is a zoonotic viral disease characterized by symptoms of fever, myalgia, and gastrointestinal complaints, followed by the abrupt onset of respiratory distress and hypotension. The causative agent belongs to the genus Hantavirus, family Bunyaviridae. The infection is acquired primarily through inhalation of aerosols or contact with infected rodent excreta. Rodents of the Muridae and Cricetidae families have traditionally been considered reservoirs of hantaviruses, although some studies describe the presence of the virus in a wide variety of rodents and bats.

The incubation period varies from a few days up to six weeks. The case-fatality rate can reach up to 35-50%.

Situation Summary

In recent years in the Americas, cases of hantavirus pulmonary syndrome have been reported in Argentina, Bolivia, Brazil, Canada, Chile, Ecuador, Panama, Paraguay, the United States of America, Uruguay, and Venezuela.

In Argentina,[1,2] since the first HPS cases were detected in 1997, an average of 83 cases have occurred annually. In 2011, the annual number of cases doubled the previously recorded annual average. In contrast, the cases in 2012, and up to epidemiological week 35 of 2013, have remained below the annual average.

In Canada, according to information provided on 17 October 2013, while HPS remains very rare there, a few cases are reported annually. The detection of these cases follows a seasonal pattern, with increases occurring primarily in spring and autumn (March-May and September-November). As of 2000, when HPS became a disease subject to mandatory reporting, a total of 64 cases have been confirmed, ranging from zero cases in 2009 to 12 in 2013 (as of 11 October). The number of confirmed cases in 2013, surpassed the baseline of the past 14 years. Geographically, most cases have

occurred in the western provinces of Canada, including Alberta, British Columbia, Manitoba and Saskatchewan.

In Chile[3,4,5], an average of 67 cases have been reported annually since 1995. The disease occurs mainly during the spring and summer months (September to March). However, in 2011, the number of cases increased between June and October, mainly in the regions of Los Lagos and Aysen. This increase in case number coincided with an increased rodent population. Wildfires in central and southern Chile in early 2012 led to the migration of rodents to other areas of the country. A health alert on hantavirus was issued in 2012 for the Biobío region and the province of Malleco. As of EW 40 of 2013, 33 cases of cardiopulmonary syndrome and 3 mild cases had been confirmed, a lower number of confirmed cases than in 2011 and 2012.

In Panama[6], the IHR NFP NFP reported that confirmed cases of HPS have occurred since 1999, with an annual average of 12 cases. However, in 2012, 16 cases were reported, and in 2013, 14 confirmed cases had been reported as of 21 August.

In Paraguay[7], HPS was first detected in 1995 in the Chaco region. In 2011 and 2012, 56 and 18 cases were reported in those regions, respectively. As of EW 40 of 2013, 2 cases had been reported.

Since 1993, in the United States of America[8] 34 states have reported confirmed cases of HPS, with a yearly national average of 29 cases. In 2012, 30 cases were reported, and, as of 21 September 2013, 7 cases had been reported for the year. In 2008, the first locally acquired case of hemorrhagic fever with renal syndrome caused by the Seoul virus was confirmed.[9]

In Uruguay[10], cases of HPS have been confirmed since 1997, with an annual average of 9 cases. The Canelones and Montevideo departments have reported the greatest number of cases. The first case recorded in northern Uruguay was in 2010.

Recommendations

Given the increase in the number of cases of hantavirus infection in some countries of the region in 2012 and early 2013, PAHO/WHO recommended that Member States continue their efforts in case detection, investigation, reporting, and management, as well as in the implementation of prevention and control measures applicable to HPS. The Organization published guidelines on the diagnosis, treatment, prevention, and control of hantavirus infections[11], which are available to countries. Following, are specific recommendations on the matter.

Surveillance and Outbreak Investigation

HPS surveillance should be part of a comprehensive national surveillance system, and should encompass clinical, laboratory and environmental components. An excessive number of cases in any area where hantavirus transmission is known to occur should trigger an investigation, and may provide an opportunity to expand knowledge about the virus.

Occurrence of a single case in an area not previously known to have had hantavirus infection should trigger a comprehensive medical and epidemiological assessment, individual risk factor/exposure analysis, and an ecological/environmental evaluation to develop future prevention and control strategies.

Criteria for Laboratory diagnosis

- Presence of specific hantavirus IgM antibodies, or an increase of four times or more in IgG antibody titers; or

- Positive RT-PCR results for hantavirus RNA; or
- Positive immunohistochemical results for hantavirus antigens.

Case Management

Early identification and timely medical care improves clinical outcome. To raise the suspicion of impending HPS, clinicians must use a combination of the following three factors: epidemiological data for guidance of the possible exposure, manifestations of fever and myalgia, and thrombocytopenia. Altered platelet counts are an initial sign in tested samples; if a low or decreasing count is detected, patients should be hospitalized for observation.

Care during the initial stages of the illness should include antipyretics and analgesics, as needed. In some situations, patients should receive broad-spectrum antibiotics, while the etiologic agent is confirmed.

Effective clinical treatment depends largely on careful administration of intravenous solutions, hemodynamic monitoring, and ventilation support. Given the rapid progression of HPS, clinical management should focus on the patient's hemodynamic monitoring, fluid management and ventilation support. Severe cases should be immediately transferred to intensive care units.

Prevention and Control

Health awareness campaigns must aim to increase detection and timely treatment of the illness, and prevent its occurrence by reducing human contact with rodents. Health awareness campaigns should be directed as much towards health personnel as to the general public.

The implementation of integrated environmental management, with the purpose of reducing rodent populations, is recommended. The measures should be adapted to local realities.

Preventive measures should cover occupational and ecotourism related hazards. Most usual tourism activities carry little or no risk of exposure of travelers to rodents or their excreta. However, individuals who engage in outdoor activities, such as camping or hiking, should take precautions to reduce possible exposure to potentially infectious materials. Accordingly, it is important that authorities keep them informed of the risks and preventative measures.

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Influenza in North America

14 January 2013

Situation Summary

Towards the end of 2012 and into 2013, influenza circulation in North America began to increase. Based on historical data, this increase in influenza activity in the United States occurred earlier than expected.

The early onset of influenza activity may have increased the number of hospital admissions and outbreaks in health care services, as well as generated a larger number of antiviral prescriptions. It may also have increased the number of outpatient visits due to influenza-like illness (ILI) resulting from a higher intensity of influenza virus circulation.

As with North America, several countries in Europe, North Africa, and the Eastern Mediterranean reported an increase in influenza activity during the first weeks of 2013.

Canada

In Canada[1], increase in influenza activity started in EW 48 of 2012. By EW 1 of 2013, the ILI rate was slightly above that expected for that time of year; the highest rate rates were reported among children and youth 5-19 years of age.

The predominant circulating virus in Canada was influenza A(H3N2) (A/Victoria/361/2011), followed by influenza B (Yamagata and Victoria lineages), and influenza A(H1N1)pdm09 (A/California/07/09). Three of the four strains were included in the 2012-2013 influenza vaccine for the northern hemisphere. In terms of antiviral resistance, all the influenza cases analyzed this season were susceptible to oseltamivir and zanamivir.

Mexico

In Mexico, influenza activity began in EW 41 of 2012, and gradually increased thereafter.[2] As of EW 51 of 2012, the percentage of outpatient visits due to ILI and severe acute respiratory infection (SARI) had remained below 1% nationwide. However, between 20% and 40% of respiratory samples analyzed for influenza between EWs 44 and 51 were positive. At the national level, the endemic channel for SARI remained slightly above the 50th percentile.

The predominant virus was influenza B (Victoria and Yamagata lineage), followed by influenza A(H3N2). These strains were included in the 2012-2013 influenza vaccine for the northern hemisphere. The types and subtypes of influenza strains identified were susceptible to oseltamivir.

United States of America

By EW 49 of 2012, the proportion of outpatient consultations for influenza-like illness in the United States had begun to exceed the national baseline.[3] Mortality due to pneumonia and

influenza remained within the expected numbers for the last two weeks of 2012. However, by EW 1 of 2013, the epidemic threshold had been exceeded. With regard to influenza-associated hospital admissions, the age group most affected included those over 65 years, followed by 0-4 year olds.

The season's predominant virus was influenza A(H3N2) (characterized as A/Victoria/361/2011-like), followed by influenza B (Yamagata and Victoria lineages) and influenza A(H1N1)pdm09 (A/California/7/2009-like). Three of the four strains were included in the 2012-2013 influenza vaccine for the northern hemisphere. As in Canada, all the influenza cases analyzed this season were susceptible to oseltamivir and zanamivir.

25 January 2013

On 25 January 2013, PAHO/WHO reported that the increased influenza circulation that began in EW 48 of 2012 in North America continued into 2013. The intensity of influenza activity, both in the United States and Canada, continued during the second and third epidemiological weeks of 2013. Outpatient visits due to influenza like illness had been above the expected average in both countries, likely due to the co-circulation of other respiratory viruses. In the United States, hospital admissions associated with influenza and mortality from pneumonia and influenza continued to rise. Adults 65 years of age and older were the most affected population group in both countries.

In light of a possible increase in influenza virus circulation, PAHO/WHO reiterated a series of recommendations to Member States in preparation for the upcoming influenza season.

Canada

From EW 48 of 2012, influenza activity began to increase.[1] From EW 1 to EW 3 of 2013, the ILI rate was slightly above that expected for this time of year, due in part to the early onset of the influenza season and the co-circulation of other respiratory viruses, such as respiratory syncytial virus. During EW 3, the highest rate of ILI was among children and youth 5 to 19 years of age.

The predominant virus circulating in Canada was influenza A(H3N2) (A/Victoria/361/2011), followed by influenza B (Yamagata and Victoria lineages), and influenza A(H1N1)pdm09 (A/California/07/09). Three of the four strains were included in the 2012-2013 influenza vaccine for the northern hemisphere. As for antiviral resistance, all the cases in the subset analyzed this season were susceptible to oseltamivir and zanamivir.

Mexico

In Mexico, influenza activity began in EW 41 of 2012, and by 25 January 2013, it remained low and localized.[2] The proportion of outpatient consultations due to ILI and SARI remained below 1%. However, during the season, cases of acute respiratory infection had increased by 2.6%, when compared to the previous influenza season.

Based on laboratory data, and weekly sample analyses, the proportion of positive influenza samples was above 10% in EW 40, and continued to increase, peaking at 37.5% in EW 50 of 2012. This proportion declined to 23% by EW 3 of 2013. The predominant circulating virus in Mexico was influenza type B (Yamagata and Victoria lineage), followed by influenza A (H3N2). These strains were part of the 2012-2013 influenza vaccine for the northern hemisphere. The types and subtypes of influenza strains identified were susceptible to oseltamivir.

United States of America

While available information pointed to a widespread geographical distribution of influenza[3], with 47 of 50 states reporting cases, influenza activity was greater in northeastern areas than in the rest of the country. National experts classified this influenza season as moderate to severe, i.e., above the expected average, however not reaching a severe level.

The proportion of outpatient visits due to ILI began to exceed the national baseline (2.2%) in EW 49 of 2012. Although in EW 3 of 2013 said proportion remained above the expected level (4.3%), a downward trend was observed. The increase could be related to the co-circulation of other respiratory viruses, such as respiratory syncytial virus, whose signs and symptoms are indistinguishable from those of influenza. Mortality due to pneumonia and influenza exceeded the epidemic threshold (7.3%) in EW 1 of 2013, and continued to increase during EW 3, when the proportion of deaths due to pneumonia and influenza was 9.8%. The highest influenza-associated hospitalization rates were among adults aged 65 years and older, followed by children 0-4 years of age.

Predominant viruses circulating during the season were influenza A(H3N2) (characterized as A/Victoria/361/2011-like), followed by influenza B (Yamagata and Victoria lineages), and, to a lesser extent, influenza A(H1N1)pdm09 (A/California/7/2009-like). Three of these four strains were included in the 2012-2013 influenza vaccine for the northern hemisphere. As for resistance to antiviral drugs, of the subset of influenza cases analyzed, most (99.9%) were susceptible to oseltamivir, and all were susceptible to zanamivir.

Recommendations

In light of the above situation, PAHO/WHO recommended that those Member States that might face increased circulation of influenza viruses ensure adequate clinical management of patients, and implement prevention and control measures, while enhancing health services preparedness to cope with a potential influx of patients. PAHO/WHO does not recommend any travel restrictions, including screening at points of entry.

PAHO/WHO reiterated the following recommendations published in the Epidemiological Alert of 3 March 2012:

Epidemiological and Laboratory Surveillance

Routine influenza surveillance activities should be continued, and should include both epidemiologic and laboratory surveillance. Epidemiological surveillance should include outpatient ILI cases and hospital admissions for SARI. For the latter, samples of clinical and epidemiological significance should be taken and analyzed, within the capacity of the national laboratory system.

To understand, identify and characterize influenza virus circulation, PAHO/WHO recommends following SARI surveillance guidelines, as indicated in PAHO's SARI Surveillance Protocol.[27]

All specimens that cannot be subtyped, as well as those with inconclusive or unexpected subtyping results, should be forwarded, as soon as possible, to the WHO Collaborating Center for influenza, the United States Centers for Disease Control and Prevention (CDC) for additional testing.

Health Services Response and Organization

Health services should prepare for a potential increase in the number of patients with respiratory symptoms. PAHO/WHO developed detailed guidelines to assist countries in preparing for the 2009 influenza pandemic.*

One very important element of health services organization is the availability of a proper triage system aimed at identifying suspected cases in a timely manner, in order to reduce the risk of viral transmission in outpatient and other clinical care environments (patients and health workers).

General triage measures in primary care include: a) the identification of an adequate area to care for cases of respiratory infection; b) making available personal protection equipment to health personnel, as required by the complexity of care; and c) the rigorous implementation of standard and droplet precautions in clinical care.

Patient Management

Influenza should be suspected in any febrile patient hospitalized with respiratory symptoms.

Some population groups are more susceptible to complications from influenza infection, and require special attention. Such groups include children less than 2 years of age, adults over 65 years of age, pregnant women, and individuals with underlying clinical conditions. In these cases, antiviral treatment (e.g. oseltamivir) at the onset of symptoms should be considered.

Treatment should be initiated even in the absence of influenza laboratory confirmation. Treatment success rates are highest when treatment is administered early.**

Infection Control

Adequate measures must be implemented to prevent and control infections in all situations (standard and droplet precautions). During aerosol-generating procedures (such as bronchoscopy or any other procedure that produces respiratory tract aspiration), health care personnel should wear a particulate respirator (N95, FFP2 or equivalent), eye protection, gown and gloves. Such procedures should take place in a naturally or mechanically ventilated room, according to WHO Guidelines.[5]

Public Information

The public should be made aware of the fact that the primary form of influenza transmission is through interpersonal contact. The following should be highlighted:

- Hand washing is the most effective way to reduce transmission.
- Knowledge of “respiratory etiquette” should be disseminated, as helps prevent transmission of the virus.
- Individuals with fever should avoid leaving their homes for work or to go to other public places until the fever has subsided.

* http://new.paho.org/hq/index.php?option=com_content&view=article&id=3353&Itemid=2470&to=2256&lang=en

** http://new.paho.org/hq/index.php?option=com_docman&task=doc_view&gid=8223&Itemid=

Vaccination

For countries considering initiating or expanding seasonal influenza vaccination programs, WHO recommends that pregnant women be given the highest priority.[6]

Additional risk groups to be considered for vaccination, in no particular order of priority, are children aged 6–59 months, the elderly, individuals with specific chronic medical conditions, and health-care workers. Countries with existing influenza vaccination programs targeting any of the aforementioned groups should continue to do so, and should incorporate immunization of pregnant women into such programs.

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Influenza in the Caribbean and South America

31 May 2013

At the onset of the southern hemisphere's influenza season, several countries were experiencing an increase in outpatient care due to influenza-like illness, as well in influenza-associated hospital admissions, as expected for this time of the year.

At the beginning of the flu season in the southernmost part of the Region, the Pan American Health Organization/ World Health Organization (PAHO/WHO) recommended that Member States ensure adequate patient clinical management, and strict implementation of prevention and control measures in health care settings, while simultaneously strengthening health services preparedness to cope with a potential influx of patients; reinforcing public communications regarding preventative measures was also advised.

Situation Summary

In Argentina, as of EW 18 of 2013, the number of outpatient visits due to ILI at the national level was lower than in previous years. However, provinces, like Buenos Aires, San Luis, Corrientes, Formosa, Catamarca, Jujuy and Tucumán, outpatient consultation rates due to ILI were higher than previously recorded. Hospitalization rates due to SARI in Santa Fe, La Rioja San Luis, Chaco, Salta, Santiago del Estero and Río Negro were higher than in the previous year. In some provinces, such as in Misiones, Santiago del Estero, Catamarca, Chaco and Rio Negro, hospitalization rates were twice as high as the overall national (18.4 per 100,000 population).

Laboratory data indicated that influenza A(H1N1)pdm09 was the predominant virus, followed by influenza A(H3); both viruses were included in the southern hemisphere's vaccine for 2013. Since the end of the influenza A(H1N1)pdm09 pandemic was declared in August 2010, influenza A(H1N1)pdm09 has been considered a seasonal strain, i.e., it will continue to circulate like other viruses; clinical management and outbreak response are the same as for any other seasonal influenza virus.

In Brazil[1], as of EW15 of 2013, a higher influenza activity than in previous weeks was recorded coinciding with the onset of the flu season in the southern hemisphere. Indeed, as of EW 15, an increase in SARI cases and influenza-associated deaths was reported. The southeastern region of the country recorded the highest number of SARI cases and influenza-associated deaths. About 52.9% of deaths from SARI had at least one underlying clinical condition. Influenza A(H1N1)pdm09 was the predominant virus.[1]

In Colombia[2], an increase in out-patient patient visits due to ILI, influenza-associated hospitalizations and admissions to intensive care units was reported. Regarding hospitalizations, children 0-5 years of age were the most affected. According to available historical data, this distribution was expected.

Among respiratory viruses circulating between January and May, the respiratory syncytial virus was predominant, followed by influenza A (H1N1)pdm09, and adenovirus.

In Cuba[3], as of EW 17 of 2013, 27 acute respiratory infection outbreaks were recorded, 6 more than in 2012; however, the number of cases of acute respiratory infection for the country as a whole was similar to that of the previous year. The predominant circulating viruses were influenza A(H1N1)pdm09 and rhinovirus.

In the Dominican Republic, there is no seasonal variation in influenza activity. The number of SARI cases recorded was lower than expected, but the number of deaths increased slightly.

Results of all the laboratory samples analyzed indicated that the proportion of positive samples of influenza was above 20% in EW 3 of 2013, and increased to 80% in EW 19. Among the circulating influenza viruses, A(H1N1)pdm09 predominated, followed by influenza A(H3N2).

In Venezuela[4], an increase in acute respiratory infections was reported between EW 1 and EW 13 of 2013. As of then, the incidence trend was downwards, but remained within the maximum expected. The incidence rate was highest in the departments of Zulia, Miranda, Carabobo, Lara, Capital District, Anzoategui, Aragua and Bolivar, which account for 60% of reported cases.

The predominant virus circulating in this season was influenza A(H1N1)pdm09, followed by influenza A(H3N2), rhinovirus, RSV and adenovirus. In children under the age of 1 year, the predominant viruses were rhinovirus, RSV, and adenovirus. In adults over 60 years of age, adenovirus and influenza A(H3N2) virus predominated.

More detailed information on the status of influenza and other respiratory viruses can be obtained from the Influenza and Other Respiratory Viruses page published weekly in PAHO's web page: http://www.paho.org/hq/index.php?option=com_content&view=article&id=3154&Itemid=2498

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Human Infection with Avian Influenza Virus A(H7N9) in China

3 April 2013

On 3 April 2013, the Pan American Health Organization/World Health Organization (PAHO/WHO) recommended that Member States maintain the capacity to detect any unusual health event, including the ones that may be associated with a new subtype of influenza. The Organization also urged Member States to update and implement the relevant components of their multi hazards plans for preparedness and response to public health events.

The Organization does not advise the implementation of screening at points of entry in relation to this event, nor does it recommend that any travel or trade restrictions be applied.

Situation Summary

On 31 March 2013, China's health authorities notified three laboratory confirmed human cases of avian influenza A(H7N9) virus infection to the WHO.

As of 3 April 2013, a total of 7 laboratory confirmed cases of human infection with influenza A(H7N9) had been reported. Of the 7 cases, 2 died, and the remaining 5 were in critical condition. Four cases were female and three were male; their age ranged from 27 to 87 years old (median = 45 years). The onset of symptoms occurred between 19 February and 21 March 2013. The cases originated in the provinces of Shanghai (n=2), Anhui (n=1), and Jiangsu (n=4). No apparent epidemiological link had been found among these cases.

As of the date of this report, a retrospective investigation of two contacts of one confirmed case from Shanghai province was being conducted. Both contacts had developed symptoms of respiratory illness; one died, but the second recovered. No laboratory confirmation was available for these two contacts. At that time, there was no evidence of ongoing human-to-human transmission.[1] China's health authorities were investigating the event, and strengthening disease surveillance for early detection, diagnosis and treatment.

WHO was closely monitoring the evolution of this event, and was working with WHO's Collaborating Centers for Reference and Research on Influenza and other partners to ensure that information was shared as it became available, as well as to support the development of diagnostic and treatment methods and vaccines. No vaccine is currently available for this subtype of influenza virus. Preliminary test results provided by the WHO Collaborating Centre in China suggested that the virus is susceptible to neuraminidase inhibitors (oseltamivir and zanamivir).

Recommendations

At that time, PAHO/WHO reemphasized the need for Members States to maintain the capacity to detect any unusual health event, including the ones that may be associated with a new subtype of influenza.

Epidemiological and laboratory surveillance

As per previous PAHO/WHO recommendations in these types of events, launching an investigation was recommended in the following situations: a) detection of a case of SARI of unknown etiology in a health care facility; b) detection of a SARI cluster of unexplained etiology; or c) an unusual or unexpected SARI case of unknown etiology in the community or health care worker.

In such situations, it was recommended that samples of clinical and epidemiological significance should be obtained and analyzed as allowed by the national laboratory system's capacity. All specimens that could not be subtyped for influenza A, as well as those with inconclusive or unexpected subtyping results, were to be forwarded immediately to the WHO Collaborating Center for influenza, at the US CDC* for additional testing.

PAHO/WHO reiterated the need to maintain close and systematic interactions between the human health and animal health sectors ensuring timely exchange of information, to conduct joint risk assessments, and to prevent and control zoonotic diseases as necessary.

PAHO/WHO urged Member States to update and implement the relevant components of their multi hazards plans for preparedness and response to public health events.

In relation to this event, the Organization did not advise the implementation of screening at points of entry, nor did it recommend that any travel or trade restrictions be applied.

5 April 2013

Following the confirmation of the first human cases of avian influenza A(H7N9) virus infection on 31 March 2013, Chinese health authorities continued to notify WHO of additional laboratory-confirmed cases of the disease. As of 5 April, the total number of confirmed cases was 16, including 6 deaths. Six cases were female, and ten were male. The age range was 4 to 87 years (median = 50). The cases occurred in the following Chinese provinces: Anhui (n=1), Zhejiang (n=3), Shanghai (n=5), and Jiangsu (n=7), all of them located in the eastern part of the country. The onset of symptoms occurred between 19 February and 31 March 2013. Of the total number of cases, 15 had severe symptoms and 1 was mild (a 4 year old child).[1]

Over 520 contacts of confirmed cases were being closely monitored; 1 contact who developed symptoms was under follow-up. As of 5 April, there was no evidence of human-to-human transmission.[1]

National health authorities continued to investigate the event to identify the source of the outbreak, and strengthened disease surveillance for timely detection, diagnosis and treatment.

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In addition to the above recommendations regarding clinical samples and testing, as part of the investigation in these types of events, complete epidemiological and clinical information must be collected, including: clinical signs and symptoms; date of onset of symptoms; underlying clinical conditions; history of influenza vaccination; history of treatment with oseltamivir or zanamivir, contact with animals, and history of travel, among others.

10 April 2013

Chinese health authorities reported additional laboratory-confirmed cases of human infection with influenza A(H7N9) virus to WHO. As of 10 April 2013, the total number of confirmed cases was 28, including 9 deaths, 14 severe cases, and 5 mild cases. The age range was 4 to 87 years (median = 62 years). Of the total, 9 cases were female, and 19, male. The affected provinces included Anhui (2 cases), Zhejiang (5 cases), Shanghai (13 cases) and Jiangsu (8 cases), all located in the eastern part of China. The onset of symptoms was between 19 February and 3 April 2013.[1]

According to WHO's Disease Outbreak News (DON), as of 10 April 2013, the information available was not enough to determine whether the reported number of cases represented some or all of the cases actually occurring. As some relatively mild cases of illness had by then been reported, it was possible that additional such cases had neither been identified nor reported.

Over 600 close contacts of confirmed cases were closely followed-up. The investigation of a contact that developed symptoms of respiratory illness in Jiangsu continued. At the time of this update, there was no evidence of ongoing human-to-human transmission.[1]

Chinese health authorities continued to investigate the event to identify the source of the outbreak, and to strengthen disease surveillance for early detection, diagnosis and treatment. WHO was closely monitoring the evolution of the event, and was working with WHO Collaborating Centers for Reference and Research on Influenza and other partners to ensure that information was shared as it became available, as well as to support the development of diagnostic and treatment methods, and vaccines.

PAHO/WHO took this opportunity to remind Member States that the adoption of health measures in response to specific public health risks, pursuant to paragraph 1, Article 43 of the International Health Regulations[2], should be based on scientific principles, available scientific evidence, and the guidance and advice of WHO. According to paragraph 3 of Article 43, any measure adopted pursuant to paragraph 1 and significantly interfering with international traffic should be notified to PAHO/WHO. In compliance with Recommendation 3 of the IHR Review Committee[3], endorsed by Member States through Resolution WHA64.1[4], PAHO/WHO is actively monitoring health measures adopted by Member States, and, when justified by the assessment of the public health rationale of such measures, the Organization will share relevant information with other States Parties.

The RT-PCR Protocol for the Detection of A(H7N9) Influenza Virus was published by WHO on 8 April 2012 on the Global Influenza Programme website.[5]

Recommendations

The following recommendations complement those of previous sections on this outbreak.

Public Information

Although there is no evidence of human-to-human transmission of this virus, it is always relevant to comply with transmission prevention measures for respiratory viruses, in particular:

- Hand washing is the most effective way of reducing transmission.
- Disseminating information on “respiratory etiquette” to help prevent transmission of the virus.
- Individuals with fever should avoid leaving their homes to go to work or other public places.

Information on transmission prevention measures should be provided in multiple languages to reach all population groups.

17 April 2013

As of 17 April 2013, China’s health authorities had reported to WHO 82 confirmed cases of human infection caused by avian influenza A(H7N9) virus, including 17 deaths. The cases occurred in the provinces of Anhui (n=3), Henan (n=2), Jiangsu (n=20), Zhejiang (n=25), and the municipalities of Beijing (n=1), and Shanghai (n=31). Based on 63 cases with information available on age and sex, the age range was between 4 and 87 years (median = 64), with 19 female and 45 male cases. The onset of symptoms occurred between 19 February and 11 April 2013.[1]

Up to 17 April 2013, the source of infection and the mode of transmission remained unknown, and there was no evidence of human-to-human transmission.[1] Preliminary test results provided by the WHO Collaborating Centre in China suggested the virus is susceptible to neuraminidase inhibitors (oseltamivir and zanamivir).

The spectrum of clinical illness remains to be determined. It is possible that severely ill patients represent the tip of the iceberg, and that there are many more as-yet-undetected mild and asymptomatic infections. It should be noted that surveillance systems might preferentially capture severe cases.

The virus has been found in poultry (ducks, chickens) and pigeons in markets in Anhui, Jiangsu, Shanghai and Zhejiang. Other potential reservoirs of the virus were still under investigation.

Surveillance in Animals

As animal surveillance for influenza viruses can provide an early warning system for identifying viruses with the potential for causing human disease, it is important to maintain close and systematic interactions between the human health and animal health sectors, for timely exchange of information, to conduct joint risk assessments, and to prevent and control zoonotic diseases, as necessary.

Surveillance in animals should be intensified and take into consideration not only high pathogenic influenza viruses, as the risk to human health is independent of the level of pathogenicity in chickens. Also, influenza surveillance in avian species must include surveillance of wild and domestic animals. Recommendations issued in prior sections of this report on avian influenza in China remain in effect.[6]

25 April 2013

As of 25 April 2013, WHO had been notified of 109 confirmed cases of human infection by the avian influenza A(H7N9) virus, including 22 deaths (case fatality rate 20%). Cases have been reported from the provinces of Anhui (n=4), Henan (n=3), Jiangsu (n=23), Shandong

(n=1), Zhejiang (n=42), and the municipalities of Beijing (n=1), and Shanghai (n=34); 1 case was reported by the Taipei Centers for Disease Control.

Out of 85 cases with available information on age and sex, the age range was between 4 and 91 years (median = 64); 49/85 (58%) cases were among individuals 60 years of age or older. Of these cases, 24 (28%) were female, and 61 (72%), male. The onset of symptoms occurred between 19 February and 18 April 2013. Updated information is available on the WHO Disease Outbreak News.[1]

At the time of this report, the spectrum of clinical illness had not yet been determined, although most cases were severe. The possibility remains that these severely ill patients represent the tip of the iceberg, as these are the cases preferentially captured by surveillance systems, meaning that a greater number of cases of mild and asymptomatic infections remained undetected.

In addition to the markets mentioned in the previous section, the virus was also found in markets in Henan. Other potential reservoirs of the virus were still under investigation. Investigations to identify the source of infection and the mode of transmission continued, as well. As of 25 April, there was no evidence of ongoing human-to-human transmission.[1] Preliminary test results provided by the WHO Collaborating Centre in China continued to suggest that the virus is susceptible to neuraminidase inhibitors (e.g. oseltamivir and zanamivir).

Recommendations

PAHO/WHO reiterated previous recommendations on epidemiological surveillance.

Laboratory diagnosis

PAHO/WHO urged Member States to consider developing diagnostic capabilities for detecting infection by avian influenza A(H7N9). The Real-time RT-PCR Protocol for the Detection of A(H7N9) Influenza Virus, updated by WHO on 15 April 2013, is available for that purpose.[5]

The Protocol published by the US CDC also uses the real-time RT-PCR technique. Diagnostic kits prepared by the US CDC may be accessed through the Influenza Reagent Resource website.**

Clinical Management and Prevention of Health Care-Associated Infections

At the time of this update, PAHO/WHO considered that the clinical management of avian influenza A(H7N9) infections should be the same as for infections caused by avian influenza A(H5N1).[7]

Given the situation as of 25 April 2013 and available evidence, recommendations for prevention and control of health care-associated infections caused by avian influenza A(H7N9) remained the same as those for the prevention and control of avian influenza A(H5N1). A guide for prevention and control is available at http://www.who.int/csr/resources/publications/swineflu/WHO_CDS_EPR_2007_6/en/index.html. An aide memoire on the subject, in Spanish, is available at: http://new.paho.org/hq/index.php?option=com_docman&task=doc_view&gid=7801&Itemid=

** Available at: https://www.influenzareagentresource.org/

As of 8 May 2013, 131 laboratory confirmed cases of human infection caused by avian influenza A(H7N9) virus had been notified to WHO, including 32 deaths (case fatality rate 24%). Cases occurred in the provinces of Anhui (n=4), Fujian (n=5), Henan (n=4), Hunan (n=3), Jiangsu (n=26), Jiangxi (n=5), Shandong (n=2), Zhejiang (n=46), and the municipalities of Beijing (n=1) and Shanghai (n=34); one case was reported by the Taipei Centers for Disease Control. The onset of symptoms occurred between 19 February and 7 May 2013.

Out of 127 cases with age information available, the age range was 2 to 91 years (median = 61); 68 cases were 60 years of age or older. The age distribution affecting persons 60 years of age or older was predominantly observed in Shanghai, where 20 out of 30 cases (67%) were in said population age group. Of the total number of cases with information available, 38 (30%) were female and 88 (70%) were male.

As a strategy to reduce potential transmission, the provinces of Guangdong, Jiangsu and Zhejiang had proceeded to eliminate poultry and close live bird markets. There had been no new cases of human avian influenza A (H7N9) infection in Anhui, Beijing and Shanghai, in the past 15, 17 and 19 days respectively. Since the 25 April 2013 Epidemiological Update, new cases had been reported in Fujian, Henan, Hunan, Jiangsu, Jiangxi, Shandong, and Zhejiang.

Most cases have been severe; however it is possible that there could be more mild and asymptomatic infections as-yet-undetected, because surveillance systems tend to be better at detecting severe cases.

The virus has been found in poultry (ducks, chickens) and pigeons in live bird markets in Anhui, Guangdong, Henan, Jiangsu, Jiangxi, Shanghai and Zhejiang, and in environmental samples taken from a live poultry market in Shandong. Other potential reservoirs of the virus were still under investigation. Investigations to identify the source of infection and the mode of transmission continued. At the time of this report there was no evidence of ongoing human-to-human transmission.[1] Preliminary test results provided by the WHO Collaborating Centre in China suggest that the virus is susceptible to neuraminidase inhibitors (e.g. oseltamivir and zanamivir).

Recommendations

Recommendations of previous sections on the same event still apply.

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Measles and Rubella Risk for International Travelers

1 July 2013

The Pan American Health Organization/World Health Organization (PAHO/WHO) urged all Member States to strengthen their advice to international travelers to obtain protection from measles and rubella prior to departure. This recommendation applies to both incoming and outbound travelers from this Region.

Due to upcoming cultural and sporting events to be hosted by countries of the Americas, PAHO/WHO urges Member States to recommend vaccination against measles and rubella for all travelers to and from countries of the Region, in order to decrease the risk of reintroducing these diseases that have already been eliminated in the Americas.

Travelers who are not vaccinated against measles and rubella are at risk of contracting these diseases when visiting countries where such viruses are circulating. Member States should aim at ensuring vaccination, especially among women of childbearing age, to prevent any infection caused by the rubella virus during pregnancy.

Evidence of immunity to measles and rubella for travelers includes:

- Written documentation of having received the measles and rubella vaccines;
- Laboratory confirmation of rubella and measles immunity (a positive serologic test for measles and rubella-specific IgG antibodies).

Travelers over 6 years of age who are unable to provide the above documentation should be advised by Member States to obtain vaccination for measles and rubella or preferably the MMR (measles, mumps, and rubella) vaccine. Ideally, the vaccine should be administered at least two weeks **before** departure.

Travelers with medical contraindications related to measles and rubella vaccination are an exception to the instructions above. In addition, infants under 6 months of age should not be vaccinated. Infants who receive the MMR vaccine before their first birthday must be revaccinated according to the corresponding national vaccination schedule in their country.

Recommendations

PAHO/WHO recommends that Member States emphasize the following recommendations for travelers (at points of entry, places of tourism, medical centers):

- For the duration of the trip and upon returning to the point of origin, travelers should pay attention to symptoms such as fever, rash, cough, runny nose, or conjunctivitis (pink eye), and

- If travelers believe they may have measles or rubella, they should:
  - remain at their place of lodging (hotel or home, etc.), except for doctors´ visits. They should not travel nor visit any public place;
  - avoid close contact with other persons for 7 days following onset of rash.

PAHO/WHO also advises that personnel in the tourism and transportation sectors (e.g. hospitality, taxi, and airport staff) be immunized against measles and rubella. Member States should coordinate with the appropriate institutions to strengthen vaccination of these population groups.

In addition, it is necessary to continue efforts to include private healthcare sector institutions and healthcare facilities that provide medical services to tourists in surveillance systems, as it is more likely that international travelers will seek medical attention in private healthcare facilities. PAHO/WHO recommends reminding healthcare workers in both the private and public sectors of the possible presence of both diseases, as well of the importance of immediately notifying such findings, in accordance with national surveillance guidelines, in order to ensure a rapid response.

It is also important to carry out educational campaigns that target the tourism industry (e.g. hospitality staff, taxi drivers, airport staff); such information should include the diseases´ symptoms, in order to facilitate providing symptomatic travelers with directions to the nearest health facility.

In addition to the aforementioned measures, PAHO/WHO encourages the practice of requiring proof of measles and rubella immunity as a pre-requisite for employment in the health care sector (medical, administrative and security).

Regarding public information communications, the recommendations are to:

- Work with the private sector (travel agencies, hotels) to advise travelers of the importance of obtaining immunizations in advance of their journey.
- Inform travelers returning to their country of origin of the symptoms of measles and rubella, and the need to seek professional health care if such symptoms develop.
- Use national points of entry and exit to disseminate information on the importance of preventing both diseases through immunization.

Middle East Respiratory Syndrome - Coronavirus (MERS-CoV)

10 May 2013

The Pan American Health Organization/World Health Organization (PAHO/WHO) recommended that Member States strengthen surveillance activities to detect any unusual health event, including those that might be associated with Middle East respiratory syndrome coronavirus (MERS-CoV).

Member States were also urged to implement and follow infection control procedures to reduce or minimize the occurrence of infections in health care settings, including those associated with MERS-CoV. Clinicians should be alerted to the possibility of occurrence of MERS-CoV infection, and should have information available on the clinical management of the disease.

PAHO/WHO did not advise health screening at points of entry with regard to this event, nor did it recommend the application of any travel or trade restrictions.

Situation Summary

As of 9 May 2013, a total of 33 laboratory-confirmed cases of human infection with Middle East respiratory syndrome coronavirus (MERS-CoV), including 18 deaths (case fatality rate 55%) had been reported to WHO. Cases were reported from France (1), Jordan (2), Qatar (2), Saudi Arabia (25), the United Arab Emirates (1), and the United Kingdom (2). The onset of symptoms occurred in late March and early April 2012, and on 1 May 2013.

Out of 33 cases, 31 had information by sex; of those, 25 (81%) were male and 6 (19%), female. The age range was 24 to 94 years (median = 56) for the 29 cases for which age information was available. Most patients presented with severe acute respiratory disease requiring hospitalization, and eventually required mechanical ventilation or other advanced respiratory support.

Of the confirmed cases, 3 clusters were observed: 1 in Jordan, 1 in the United Kingdom, and 1 in Saudi Arabia. The cluster in Jordan occurred in April 2012 in a health care facility (including 2 confirmed and 11 probable cases; 10 were health care workers). The cluster in the United Kingdom occurred among family members of an infected patient who had recently arrived from Saudi Arabia. The third cluster was reported in Saudi Arabia in May 2013 (15 cases, including 7 deaths). There was no transmission to the community in any of the aforementioned clusters.[1]

Due to the small number of cases reported so far globally, there is very limited information on transmission and other characteristics of MERS-CoV. Currently, there is evidence of limited human-to-human transmission.[2] The MERS-CoV has not yet been detected in animals; however, field work investigation is ongoing to determine the presumed animal reservoir of the virus.

Recommendations

PAHO/WHO recommended that Member States strengthen surveillance activities to detect any unusual health event, including those that might be associated with MERS-CoV. Clinicians should be alert to the possibility of MERS-CoV infection, and should have access to information on clinical management of patients who have acute respiratory failure and septic shock as a consequence of severe infection due to MERS-CoV.

PAHO/WHO urged Member states to implement and follow infection control procedures to reduce or minimize the occurrence of infections in health care settings including those associated with MERS-CoV.

Epidemiological Surveillance

PAHO/WHO advised Member States to strengthen surveillance for severe acute respiratory illness (SARI), and to carefully review any unusual patterns.

Based on the WHO interim surveillance recommendations for human infection with MERS-CoV[3], an epidemiological investigation and laboratory testing for MERS-CoV should be undertaken for persons meeting the following criteria:

a) A person with an acute respiratory infection, which may include history of fever and cough and indications of pulmonary parenchymal disease (e.g. pneumonia or acute respiratory distress syndrome [ARDS]), based on clinical or radiological evidence of consolidation, who requires hospitalization, and meets any of the following criteria:

- The disease is in a cluster that occurs within a 10-day period, without regard to place of residence or history of travel, unless another etiology has been identified.

  To this effect, a cluster is defined as two or more persons with onset of symptoms within the same 10-day period, who are associated with a specific setting, such as a classroom, workplace, household, extended family, hospital, other residential institution, military barracks or recreational camp.

  Testing should be according to local guidance for management of community-acquired pneumonia. Examples of other etiologies include *Streptococcus pneumoniae*, *Haemophilus influenzae* type B, *Legionella pneumophila*, other recognized primary bacterial pneumonia, influenza, and respiratory syncytial virus.

- The disease occurs in a health care worker who has been working in an environment where patients with SARI are being cared for, particularly patients requiring intensive care, without regard to place of residence or history of travel, unless another etiology has been identified. (See above paragraph on etiology identification).

- The patient develops an unexpectedly severe clinical course despite appropriate treatment, without regard to place of residence or history of travel, even if another etiology has been identified, if that alternate etiology does not fully explain the presentation or clinical course of the patient.

b) A person with an acute respiratory illness of any degree of severity who, within 10 days before onset of illness, had close contact with a confirmed or probable case of MERS-CoV infection, while the case was ill. Close contact is defined as:

- Anyone who provided care for the patient, including a health care worker or family member, or who had other similarly close physical contact;

- Anyone who stayed at the same place (e.g. lived with, visited) as a probable or confirmed case while the case was ill.

c) In countries where the novel coronavirus has already been detected, the minimum standard for surveillance should be testing of patients with severe respiratory disease requiring mechanical ventilation. The minimum standard should include all those in the three categories listed above, i.e., patients with unexplained pneumonia or ARDS occurring in clusters; health care workers requiring admission for respiratory disease, and patients with unusual presentation or clinical course.

The newest cases identified, re-emphasize the need for surveillance among recent travelers presenting with symptoms compatible with novel coronavirus who are returning from areas where the virus has been circulating, and the need to use lower respiratory tract specimens for diagnosis when they can be obtained.

Case Reporting

The Organization requested that Member States report all probable and confirmed cases within 24 hours of classification, through the Regional Contact Point for the International Health Regulations at the appropriate WHO Regional Office. Current definitions for probable and confirmed cases are available at: http://www.who.int/csr/disease/coronavirus_infections/case_definition/en/index.html

Laboratory Testing for Infection Caused by MERS-CoV

PAHO/WHO encouraged Member States to follow the WHO interim recommendations for laboratory testing for MERS-CoV.[4]

Any laboratory testing for the presence of this virus should be performed within the capacity of the national laboratory system, in appropriately equipped laboratories, by staff trained in relevant technical and biosafety procedures.

Member States considering the development of diagnostic capabilities for detecting novel coronavirus, should consider real-time RT-PCR assays specific for the MERS-CoV.[5]

If diagnostic capability is not available at the national level, PAHO/WHO recommends that samples of any unusual or unexpected SARI case or SARI cluster of unexplained etiology should be forwarded immediately for additional testing to the CDC, WHO Collaborating Center for influenza and other respiratory virus.

Clinical Management, and Infection Prevention and Control in Health Care

As of May 2013, knowledge of the clinical features of MERS-CoV infection was limited, and no virus-specific prevention or treatment (e.g. vaccine or antiviral drugs) is available. An international network of clinical experts has been convened to discuss therapeutic options. WHO and the International Severe Acute Respiratory and Emerging Infection Consortium have developed and shared a set of research protocols and case report forms to help clinical investigators set up pathogenesis and pharmacology studies.

Nonetheless, infection prevention and control measures for healthcare associated infections should be strictly applied for probable or confirmed cases of MERS-CoV infection.[6]

International Travel and Trade

PAHO/WHO does not advise the implementation of health screening at points of entry related to this event, or that any travel or trade restrictions be applied.

17 May 2013

As of 17 May 2013, a total of 40 laboratory-confirmed cases of human infection by MERS-CoV had been reported to the WHO, including 20 deaths (case fatality rate 50%). The cases were reported by Germany (1 fatal case), Saudi Arabia (29 cases, including 16 fatalities), France (2 cases), Jordan (2 fatal cases), the United Kingdom (4 cases, including 1 fatality) and Qatar (2 cases). The case reported in Germany was a man from the United Arab Emirates who had been transferred from a hospital in Abu Dabi to Munich by air ambulance. One case reported by France had history of travel to the United Arab Emirates in the days preceding the onset of symptoms. Of the cases reported by the United Kingdom, one had a history of travel to Saudi Arabia and Qatar, and another had history of travel to Pakistan and Saudi Arabia in the days preceding the onset of symptoms. The onset of symptoms occurred in late March 2012 and on 8 May 2013. Of the total number of cases, 31 (78%) were male and 9 (22%), female. The age range was 24 to 94 years (median = 56) for the 39 cases for which this information was available.

Most patients presented with severe acute respiratory disease requiring hospitalization, and eventually required mechanical ventilation or other advanced respiratory support.

As of 17 May 2013, five clusters of the disease had been identified: 2 in Saudi Arabia and 1 each in France, Jordan and the United Kingdom.

Chronologically, the first cluster was recorded in April 2012 in a health care service in Jordan (including 2 confirmed, and 11 probable cases; 10 were health care workers). The second cluster of three cases was identified in October 2012, in Saudi Arabia, among members of the same household. The third cluster occurred in the United Kingdom, in February 2013, among family members of an infected patient who had recently arrived from Saudi Arabia. The fourth cluster was reported in Saudi Arabia in May 2013 (21 cases, including 9 deaths) in a health care facility. The fifth cluster was registered in France, in May 2013, when a patient acquired the infection from a confirmed case with whom he had shared a room during their hospital stay. There was no transmission to the community in any of the aforementioned instances.[7]

Because only a few cases have been reported globally so far, there is scarce information on transmission and other features of this virus. There is evidence of limited human-to-human transmission.[2] The virus has not yet been detected in animals; however, field work investigation to determine the presumed animal reservoir of the virus was ongoing.[1]

Recommendations

In light of this situation, PAHO/WHO reiterated the recommendations of 10 May 2013 regarding the need for Member States to strengthen surveillance activities to detect any unusual health event, including those that might be associated with MERS-CoV. Health professionals should be kept informed of the possibility of infection caused by this virus, and of the measures to be implemented if a suspected case is detected. Clinicians should have access to information on clinical management of patients with acute respiratory failure and septic shock as a result of severe infection caused by MERS-CoV.

PAHO/WHO urged Member states to implement and maintain procedures to ensure strict compliance with infection control measures to reduce or minimize the occurrence of infections

in health care settings, including those associated with MERS-CoV. Recommendations of 10 May remain unchanged, with the exceptions listed below.

Infection Prevention and Control in Health Care

PAHO/WHO recommended strict application of health care associated infection prevention and control measures. While providing health care to probable or confirmed cases of MERS-CoV infection, further measures should be applied, in addition to standard precautions.

As much as possible, it was recommended that the number of health workers, family members and visitors in contact with a probable or confirmed case of MERS-CoV infection be limited. Additional measures emphasize the need for all visitors and health care personal in contact (within 1 meter) or entering the room or cubicle of a probable or confirmed case of MERS-CoV infection should always: a) wear surgical mask, eye protection (i.e. goggles or face shield), clean, non-sterile, long-sleeved gown, and gloves (some of these procedures require sterile gloves); b) perform hand hygiene before and after contact with the patient and his or her surroundings, and immediately after removing personal protection equipment.

Regarding the movement of patients (probable or confirmed case of MERS-CoV infection) it is necessary to:

- Avoid the movement and transport of patients out of the isolation room or area, unless medically necessary. If transport is required, routes that minimize exposures of staff, other patients and visitors should be used. The utilization of portable equipment (X-ray, sonogram, etc.) should be considered.
- Advise the receiving area or institution of the patient's probable or confirmed diagnosis and of the necessary precautions for clinical management (standard precautions and additional measures).
- Clean and disinfect all patient-contact surfaces (e.g. bed) after use.

More details on these recommendations are available at: http://www.who.int/csr/disease/coronavirus_infections/IPCnCoVguidance_06May13.pdf

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Norovirus

8 January 2013

The Pan American Health Organization/World Health Organization (PAHO/WHO) recommended that Member States implement prevention and control measures in health services and enclosed communities to reduce the impact of norovirus outbreaks.

Norovirus

Norovirus is a genus of single-stranded RNA, non-enveloped viruses of the *Caliciviridae* family, which causes viral gastroenteritis in humans.

Norovirus gastroenteritis can be mild to moderate, and frequently causes outbreaks. Clinical symptoms include nausea, vomiting, diarrhea, abdominal pain, myalgia, headache, malaise, low-grade fever, or a combination of these manifestations. Symptoms generally last from 24 to 48 hours.

Norovirus infection can be a serious disease, especially among the elderly, young children, and immunologically compromised individuals.

The incubation period is from 24 to 48 hours. The mode of transmission is fecal-oral; transmission through aerosols has also been suggested from the fomites of infected persons. Water and food- born transmission (including shellfish) has been documented.

The virus is relatively stable in the environment and can survive freezing temperatures as well as heat (up to 60 ºC).

There is no norovirus vaccine, therefore, preventive measures depend on strict compliance with personal and community hygiene measures.

Situation Summary

Norovirus gastroenteritis is a common disease worldwide affecting all age groups and often causing outbreaks.

Molecular epidemiological studies have documented a high genetic diversity of norovirus, with a regular emergence of new variants. It has been suggested that the latter phenomenon causes an increase in the number of cases.

In the Americas, outbreaks of norovirus have occurred in institutional and community care settings (such as boarding schools, day care, nursing homes, prisons, military camps), in restaurants, at social events, on cruise ships, and on other means of mass transportation.

A recently published article by the European Centre for Disease Prevention and Control (ECDC) indicated that the norovirus epidemiological and laboratory surveillance system in Japan, the Netherlands, and the United Kingdom detected increased levels of activity in late 2012. A similar increase was detected in Australia, France and New Zealand.

From the data available as of January 2013, it is not possible to conclude whether the increase observed in those countries represents an early onset of the seasonal spread or whether the increase is due to the emergence of a new variant.

In light of this situation, and in order to prepare institutional health care and community care services staff to handle potential norovirus outbreaks, PAHO/WHO provided the recommendations that follow.

Recommendations

Surveillance and Outbreak and Investigation

It is recommended that countries

1. Implement and maintain an early warning system at the hospital and enclosed community levels for early detection of gastroenteritis outbreaks.
2. Involve laboratories to determine the causal agent.
3. Conduct rapid outbreak investigation to identify the mode of transmission and potential sources to guide the implementation of response measures.

Laboratory Detection

Norovirus infection is detected both through molecular techniques (conventional polymerase chain reaction (PCR) or real time reversed PCR), and through serological techniques (enzyme immune-assay).

Patient Management

There is no specific antiviral therapy; therefore, treatment consists exclusively of supportive measures. The treatment goal is to maintain proper fluid levels and avoid dehydration. For patients who tolerate oral fluid intake, the administration of oral rehydration salts is recommended. Intravenous rehydration fluids should be administered, as appropriate, for patients who do not tolerate oral fluids. In most cases, oral delivery of isotonic fluids is enough to replace lost fluids.

Particular attention should be paid to children, the elderly, and patients with underlying clinical conditions, as they are more vulnerable to the effects of dehydration.

Antibiotic administration is not advised.

Patient cohorting and isolation

Upon detection of an outbreak in institutional health care and/or community care services, the strict adherence to administrative and preventive measures is recommended.

Prevention and Control Methods

Upon detection of an outbreak in institutional health care and/or community care services, strict compliance with administrative and preventive measures is recommended. If at all possible, patients with norovirus infection should be placed in individual rooms, isolation which should be maintained for at least 48 hours after the end of symptoms, in order to prevent the exposure of susceptible patients. Patients with special conditions (immunosuppression or kidney disease) and children under 2 years of age may require longer isolation.

Hand Hygiene

Promoting the adherence of proper hand washing hygiene with soap and water by health personnel, patients and visitors is important. The WHO guidelines on hand hygiene in health care provide a detailed explanation of the proper technique.[1]

Visitors

During norovirus outbreaks, visiting restrictions should for non-essential visitors to affected areas. For areas where visitation policies must remain unchanged, visitors should be screened to exclude those with symptoms consistent with norovirus infection. Visitors should comply with proper hand hygiene and contact precautions.

Use of Personal Protective Equipment (PPE)

Personnel entering norovirus affected areas should use personal protective equipment (PPE) in accordance with standard precautions, as detailed in the PAHO/WHO Infection Control Guide.*

Environmental Cleaning

Inadequate disinfection of surfaces contaminated by vomit or stool of infected patients is considered to affect the spread of norovirus. Therefore, the frequency of surface and equipment cleaning, and disinfection of areas of norovirus patient or cohort isolation should be increased. It is recommended that cleaning and disinfection take place at least 2-3 times a day, especially for frequently touched surfaces, such as tables, beds, armrests of chairs next to patient beds, call buttons, door handles, and telephones.

To maximize the effect of disinfection, effective cleaning is essential, as is the removal of organic debris before applying disinfectants. A 0.1% sodium hypochlorite solution is recommended for disinfection, as well as adherence to recommended guidelines for its preparation, use, contact time, storage and disposal of unused solution.

Vomit and feces of norovirus symptomatic patients are highly infectious. To prevent exposure to the virus, and minimize the likelihood of transmission, any vomit and feces environmental contamination should be cleaned immediately, for which appropriate PPE is required.

Cleaning of patient sheets and other bed clothes should follow standard precautions, including the appropriate use of PPE; waving of materials should be avoided to minimize the spread of the virus. Washing temperatures between 65° C (for at least 10 minutes) to 71 ° C (3 minutes) are recommended.

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Vancomycin-resistant *Staphylococcus aureus*

27 June 2013

In light of the first the isolation of a vancomycin-resistant *Staphylococcus aureus* strain in Latin America, the Pan American Health Organization/World Health Organization (PAHO/WHO) recommended that Member States continue to implement and maintain their capacity for rapid detection and reporting of this resistance mechanism to antibiotics, for the implementation of prevention and control measures for health care associated infections.

Situation Summary

In 2002, the first two isolates of vancomycin-resistant *Staphylococcus aureus* (VRSA) were reported in the United States.[1,2] Isolates with vancomycin resistance mechanisms were associated with the conjugation of vanA vancomycin resistant genes from *Enterococcus faecalis*. By 2012, 11 isolates of VRSA had been reported, 9 of which were isolated in the United States, 1 in Iran, and 1 in India.[3,4,5] Of the nine isolates in the United States, most were identified in the state of Michigan. In general, they caused skin and soft tissue infections in patients with underlying chronic diseases.

The first finding of VRSA in Latin America was reported in Brazil by the Microbiology Laboratory of the Hospital de Clinicas, Medical School, University of São Paulo. The information reported to PAHO/WHO, indicated that a methicillin and vancomycin resistant strain had been isolated from a hospitalized patient's blood culture in the aforementioned hospital in December 2012. The presence of the resistance mechanism was confirmed with the collaboration of microbiologists in Bogota, Colombia, and the United States.

This is the first isolation from a blood culture sample. The patient concerned was a 35 year-old male, who had been diagnosed with Sezary syndrome, diabetes, and other associated infections, for which he had previously been treated with vancomycin and teicoplanin. The bacteremia was controlled with daptomycin. However, the patient continued to have different episodes of infection, and died three months after the isolation of VRSA.

Molecular studies of the isolation revealed the presence of the vanA gene, which was also detected in *Enterococcus faecalis* isolates from the patient as part of routine surveillance, suggesting the latter as the genetic donor mechanism. Further molecular studies are underway. No secondary cases were reported.

Recommendations

Surveillance Measures and Epidemiological Investigation

1. Increase national laboratories' participation in health care services surveillance systems for early detection of this resistance mechanism, and for reporting to appropriate authorities to implement early control measures.

2. Ensure the application of the Clinical and Laboratory Standards Institute (CLSI) guidelines among laboratories participating in national antimicrobial resistance surveillance networks, for proper detection of this resistance mechanism; implement necessary testing, including minimum inhibitory concentration, and molecular methods for confirmation.

3. Refer vancomycin resistant isolates detected by standardized methods to national or regional reference laboratories for confirmation and molecular typing.

4. Disseminate information obtained through national surveillance activities, in order to provide appropriate antimicrobial treatment, and to implement infection control measures in health care facilities.

Laboratory Detection

These isolates are characterized as methicillin-resistant *Staphylococcus aureus* (MRSA). Therefore, the first line of detection is performed with cefoxitin as per the CLSI (2013), followed by the determination of the minimum vancomycin inhibitory concentration.[6] The results are interpreted according to the CLSI's Performance standards for antimicrobial susceptibility testing M100 S23.[7]

Isolates with confirmed vancomycin resistance based on the abovementioned methods must be submitted to a national or regional reference laboratory for molecular characterization.

Antimicrobial Treatment

Given that clinical experience is limited, antimicrobial treatment decisions should be made on a case-by-case basis, taking into consideration the clinical situation, site of infection, and antimicrobial resistance profile. Options for treatment could include linezolid and daptomycin.

Infection Prevention and Control Measures

In addition to standard precautions, the following measures are recommended once a patient has been identified as being colonized or infected with VRSA:

- strict implementation of hand hygiene measures using soap and water or glycerin alcohol, both before and after contact with the patient, their environment, and contaminated objects;[8]
- implementation of contact precautions, as recommended for containment of other multiresistant bacteria;[8]
- mandatory use of gloves and robe when caring for VRSA infected patients;
- isolation in single room or by cohort (separation between beds should be > 1 meter);
- environmental cleaning with diluted chlorine (bleach) (1:100).

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