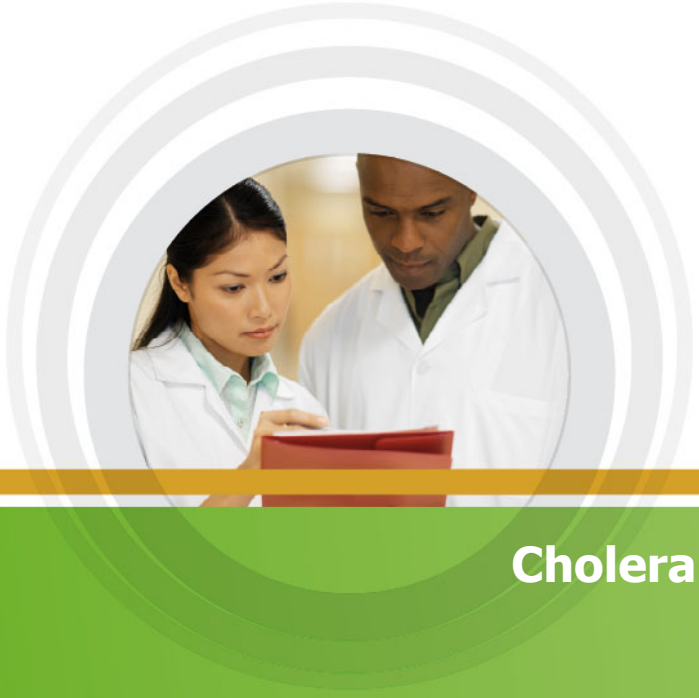


RAPID RISK ASSESSMENT

Cholera outbreak in Algeria, 2018

7 September 2018

Main conclusions and options for response

As of 30 August 2018, Algeria has reported 74 confirmed cholera cases from six northern and coastal areas of the country. This is the first cholera outbreak reported in Algeria in more than 20 years. Cases were reported both in rural and urban areas, including the capital Algiers. So far, the wilayah of Blida is reporting most of the cases. *Vibrio cholerae* O1 serotype Ogawa was confirmed in several cases [1]. A water source was found contaminated with *Vibrio cholerae* [2]. Due to the number of cases and the geographical extension of the outbreak, additional cases are expected to be reported.

The risk of infection is very low for European Union/European Economic Area (EU/EEA) travellers to and residents in Algeria who follow correct preventive hygiene measures.

The risk of importation into the EU/EEA is very low and the risk of spread within the EU is negligible because of the high sanitation and hygiene standards in the EU/EEA and the availability of appropriate healthcare.

Adhering to suitable preventive hygiene measures plays a key role in the prevention of infection. Visitors to cholera-affected areas should only drink bottled, boiled or chlorinated water, regularly wash their hands (especially before eating), carefully wash all fruits and vegetables with bottled, boiled or chlorinated water before consumption, eat well-cooked food and avoid consuming ice cubes, ice cream and raw or undercooked seafood products.

Travellers should seek advice from travel medicine clinics in order to assess their personal risk. According to World Health Organization (WHO), vaccination should be considered for travellers at higher risk such as emergency/relief workers who are likely to be directly exposed. Vaccination is generally not recommended for other travellers [3]. Cholera vaccination is not a substitute for the standard preventive measures outlined above.

Individuals with severe watery diarrhoea should seek immediate medical attention. Physicians in the EU/EEA should consider the diagnosis of cholera in travellers returning from affected areas in Algeria presenting with compatible symptoms. Physicians and clinical laboratories need to follow national public health guidance on the notification of cholera cases.

Suggested citation: European Centre for Disease Prevention and Control. Cholera outbreak in Algeria, 2018, 7 September 2018. Stockholm: ECDC; 2018.

Source and date of request

ECDC Internal Decision, 29 August 2018.

Public health issue

This document, in the context of the recent outbreak of cholera in Algeria, assesses the risk of infection for EU/EEA residents in Algeria and EU/EEA travellers to Algeria and the risk of cholera importation and spread within the EU/EEA.

Consulted experts

Internal experts (alphabetical order): Susana Barragan, Jordi Borrell Pique, Sergio Brusin, Thomas Mollet, Ettore Severi and Bertrand Sudre.

External consulted experts: Harold Noel, Santé publique France and WHO. It should be noted, however, that the views expressed in this document do not necessarily represent the views of WHO.

All experts have submitted declarations of interest and a review of these declarations did not reveal any conflict of interest.

Disease background information

Cholera is an acute diarrhoeal infection caused by the bacterium *Vibrio cholerae*. There are two serogroups, O1 and O139, related to epidemic cholera. The O1 serogroup is divided into two biotypes: classical and El Tor. Each of the O1 biotypes is subdivided into three serotypes: Ogawa, Inaba and Hikojima [4].

Most individuals infected with *Vibrio cholerae* remain asymptomatic or experience only mild diarrhoea. About 20% of symptomatic cases present with a severe form of the disease, with massive and acute watery diarrhoea, severe dehydration and potential hypotensive shock, which can lead to death in up to 50% of cases if left untreated. Among people receiving appropriate treatment based on rehydration, the case fatality rate is below 1% [5]. Laboratory diagnosis is based on identification from stool specimens of toxigenic *Vibrio cholerae* serogroup O1 or O139 by culture and serologic identification or polymerase chain reaction (PCR) [6].

Cholera is usually transmitted through faecally contaminated water or food and less commonly through direct contact with contaminated vomitus from a patient. The incubation period ranges from a few hours to five days. In general, symptomatic patients can shed the bacterium for a period between two days and two weeks [7]. Outbreaks of cholera are associated with inadequate sanitation and lack of safe drinking water. Cholera is most common in south Asia, particularly in the Indian subcontinent, and is endemo-epidemic in several countries in Africa, especially in the Gulf of Aden, where Yemen has reported more than 1.1 million cholera cases as of 2 September 2018 since the beginning of the outbreak in 2017 [8]. Regarding the Americas, cholera outbreaks and sporadic cases have been reported in Cuba, the Dominican Republic, Haiti and Mexico in the past decade [5].

Providing access to adequate sanitation and safe drinking water and appropriate food hygiene are the most important preventive measures. Water should be boiled or disinfected with chlorine before consumption and food preparation if the safety of the main source of supply cannot be confirmed. There are a number of safe oral cholera vaccines prequalified by WHO [9]. According to WHO, vaccination should be considered for travellers at higher risk, such as emergency/relief workers who are likely to be directly exposed. Vaccination is generally not recommended for other travellers [3,9,10].

In Algeria, after years of epidemiological silence, the seventh cholera pandemic reached the country in the early 1970s. In the following two decades, cases were reported every year and epidemic periods occurred every three to four years, with seasonal peaks in summer and autumn. Circulation progressively declined in Algeria in the 1990s, with the last cases reported in 1994, according to WHO [11–13].

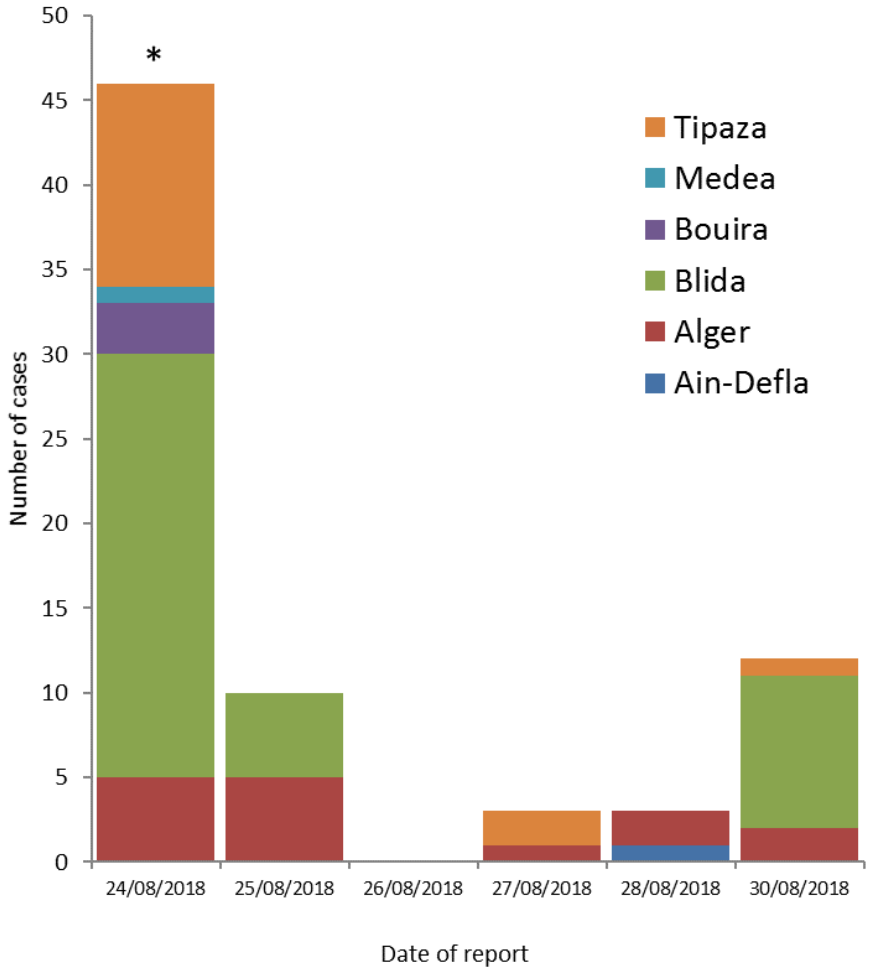
In the EU/EEA, cholera is primarily associated with travel to endemic countries. In 2015, seven EU/EEA countries reported 24 laboratory-confirmed cases of cholera, a similar number to previous years. All cases with known travel history were infected outside of Europe [14]. An analysis of cholera infections identified in France between 1973 and 2005 concluded that while most infections occurred among immigrants returning to France after visiting friends and families in Morocco and Algeria in the 1980s [15], the number of imported cases from those regions gradually disappeared as the countries progressively became cholera-free [15].

For more information, consult the ECDC and WHO fact sheets on cholera at: https://ecdc.europa.eu/en/cholera/facts and http://www.who.int/news-room/fact-sheets/detail/cholera.

Event background information

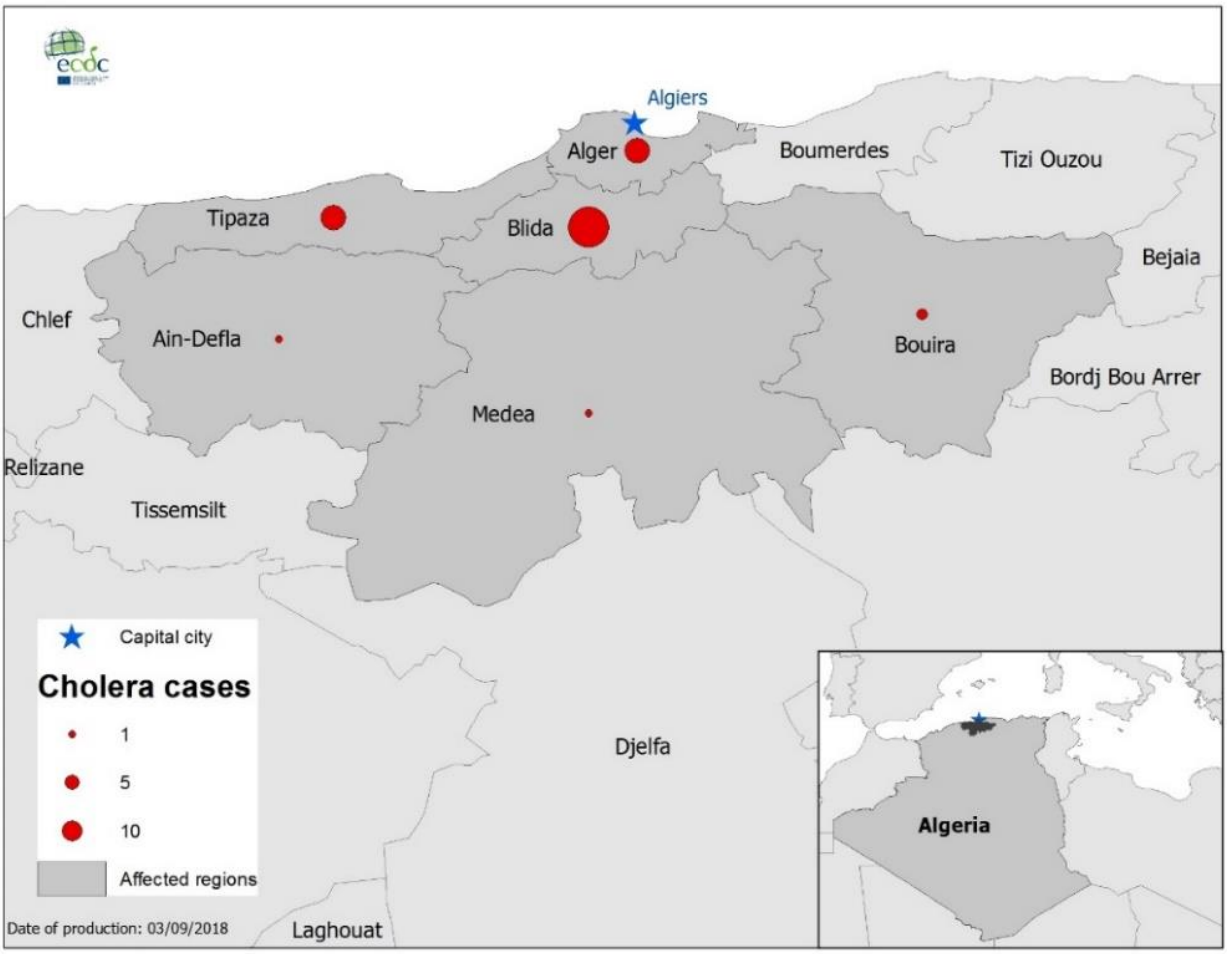
On 23 August 2018, the Algerian Ministry of Health reported a cholera outbreak in the northern part of the country. According to this report, the first cases identified had onset of symptoms on 7 August 2018 [16]. As of 28 August 2018, the Algerian Ministry of Health has reported 173 cholera cases**,** including two deaths (CFR: 1.2%). On 30 August 2018, the Algerian Ministry of Health confirmed 74 cholera cases. Six areas are affected and have reported confirmed cases: Blida (39, including two deaths), Algiers (15 cases), Tipaza (15), Bouira (3), Ain Defla (1) and Medea (1) (Figures 1–2). The Ministry of Health also reported that a water source in the area of Tipaza, not part of the public water system, tested positive for *Vibrio cholerae*. Health authorities took corrective measures and closed down this source.

Figure 1. Distribution of confirmed cholera cases in Algeria, 7 to 30 August 2018



** Cases since the beginning of August*

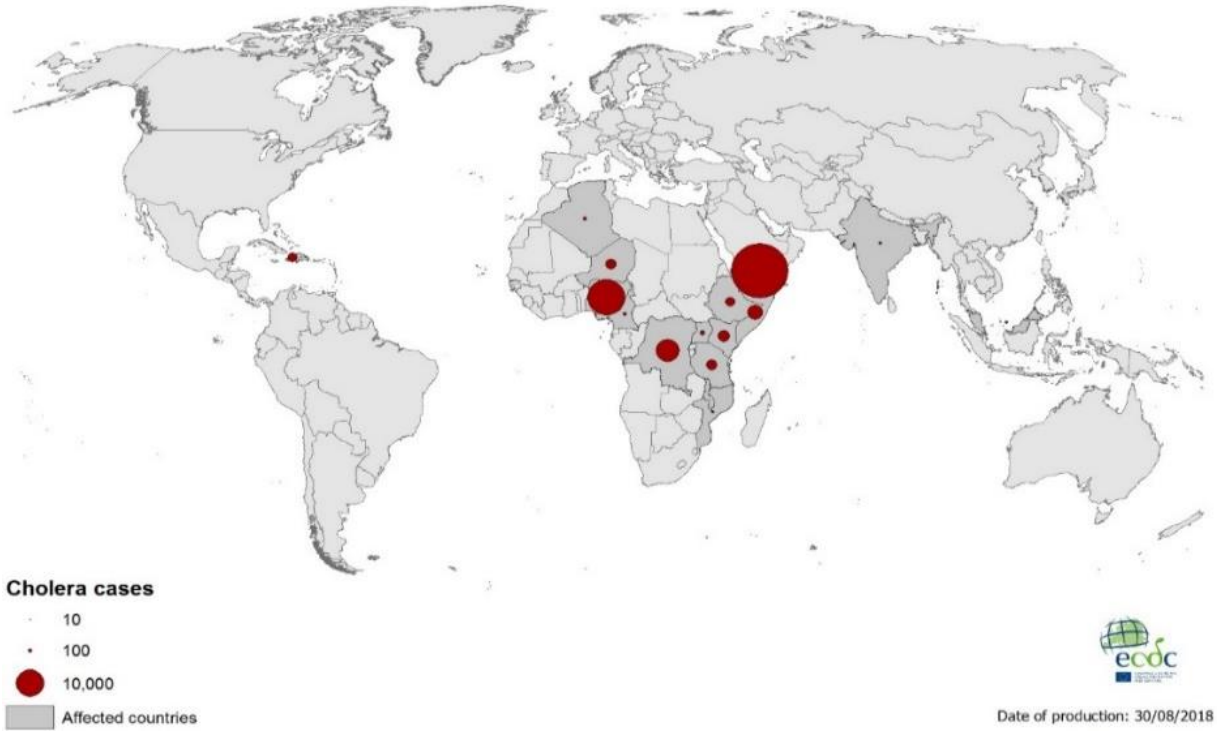
Figure 2. Geographical distribution of confirmed cholera cases in Algeria, 7 to 30 August 2018



The Institut Pasteur of Algeria confirmed the identification of *Vibrio cholerae* O1 serotype Ogawa in 59 human samples. The Institut Pasteur also confirmed the presence of *Vibrio cholerae* in samples from the above-mentioned natural water source in Sidi el Kebir, located in the village of Hamr Al Ain in the wilayah of Tipaza [1].

The latest developments on cholera case distribution worldwide can be found in ECDC's communicable disease threats report published on 24 August 2018 at: https://ecdc.europa.eu/publications-data/communicable-disease-threats-report-19-25-august-2018-week-34 (Figure 3).

Figure 3. Geographical distribution of the cholera cases reported worldwide, June to August 2018



Travel patterns

According to the International Air Transport Association (IATA) database, nearly 3 million people travelled from EU/EEA countries to Algeria in 2016. Among EU/EEA travellers, 75.5% had France as the origin point, 8.8% had Spain and 3.9% had Italy. These three countries accounted for around 90% of total EU/EEA travellers to Algeria in 2016 (Figure 4).

Figure 4. EU/EEA travellers to Algeria in 2016 by month of travel

France, Spain and Italy also reported that nearly 44 000 of their nationals were registered residents in Algeria, most of whom are from France (41 780), followed by Italy (1 000) and Spain (835) [17-19]. Most of these residents live in the northern part of Algeria.

ECDC threat assessment for the EU

This is the first cholera outbreak reported in Algeria in more than 20 years. Cases were reported both in rural and urban areas, including the capital Algiers. Additional cases may be expected. Waterborne transmission has been implicated in this outbreak; a drinking water source, not part of the public water system, has been reported as contaminated. Since certain affected areas are involved in intensive agriculture activities, the contamination of fruit and vegetables cannot be ruled out and food-borne transmission may also occur. An investigation into how the water source became contaminated could support rapid control of the outbreak and avoid new occurrences of cholera cases in affected areas.

Risk for EU/EEA residents in and EU/EEA travellers to Algeria

The risk of *Vibrio cholerae* infections in EU/EEA citizens visiting or residing in Algeria is very low provided that preventive measures are applied. The risk may be increased for EU/EEA travellers visiting friends and relatives in the affected areas. Travellers visiting friends and relatives are generally more likely to stay in less touristic areas, consume high-risk food and beverages and travel for longer duration than tourists to Algeria [20,21].

EU/EEA citizens in close contact with cholera patients may also be at increased risk of cholera infection. According to WHO, vaccination should be considered for travellers at higher risk, such as emergency/relief workers who are likely to be directly exposed. Vaccination is generally not recommended for other travellers [3]. If infected, the risk of experiencing a severe outcome may be higher for those staying in areas with poor access to healthcare facilities or seeking care with delay.

Risk of importation to and spread in the EU/EEA

The likelihood of introduction of cholera into the EU/EEA countries through an infected traveller returning from Algeria is very low. The probability of secondary transmission around imported cases in families or among healthcare workers in the EU/EEA countries is very low. *Vibrio cholerae* is not easily transmissible when basic hygiene rules are applied and water is suitably chlorinated [15]. Considering the hygiene standards and access to healthcare in the EU/EEA, the risk of further spread and large outbreaks in the EU/EEA is negligible.

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