

YEMEN

Diphtheria outbreak

312 suspected cases of diphtheria have been reported in Yemen between mid-August and 20 December. The outbreak has resulted in 35 deaths reported. At 11%, the case fatality rate (CFR) is high. 18 out of Yemen's 22 governorates are affected, with Ibb having the majority of cases. Children aged 5-14 account for around 50% of suspected cases. About 90% of fatalities were reported in children aged less than 15.

NEED FOR INTERNATIONAL ASSISTANCE



IMPACT



Diphtheria cases and demographic indicators for most affected governorates

Source: OCHA, WHO December 2017 For data on other affected governorates, see page 5

Governorate	Population	Men	Women	Children up to 15	Cases	Deaths
Ibb	2,837,000	622,051	717,952	1,188,480	175	12
Al Hudaydah	3,189,000	745,879	706,960	1,427,424	36	8
Aden	925,000	229,126	214,431	417,769	23	2
Dhamar	1,913,000	376,719	399,502	939,965	17	2
Amran	1,052,000	226,849	222,494	487,936	14	3
Sana'a	1,435,528	324,398	310,631	660,010	12	0
Hajjah	2,129,000	481,676	448,770	952,107	8	2
Taizz	3,182,000	653,586	825,149	1,401,738	8	2
Abyan	568,000	156,579	152,128	202,319	4	2
Lahj	983,000	246,446	250,732	387,656	3	0
Al Mahwit	695,000	163,448	164,654	289,278	2	0
Amanat Al-Asimah	2,948,472	691,702	517,897	1,543,065	2	0
Al Bayda	760,000	173,987	175,777	330,680	2	0

Anticipated scope and scale

Diphtheria is likely to spread within the affected governorates and across Yemen **given several years of low vaccination rates** and limited capacity **of the national health system**. **The onset of winter** may exacerbate the impact of diphtheria, as it tends to occur during colder months.

Key priorities



Health
Only 50% of facilities fully functioning



Nutrition
400,000 children with severe acute malnutrition



Food
8.4 million in IPC 3 or worse

Humanitarian constraints



Humanitarian actors are struggling to deliver medical supplies due to ongoing logistical difficulties. Conflict-affected districts and governorates face high access constraints, particularly in Sana'a, where many NGOs have warehouses.

Limitations

Yemen does not have laboratory capacity to confirm presence of *C. diphtheriae*, so cases remain suspected rather than confirmed.

Number of suspected cases varies depending on the source and cannot be independently verified by ACAPS.

Crisis impact

312 cases of suspected diphtheria were reported in Yemen between mid-August and 20 December. However, the exact number of cases might differ, as duplicate reporting can occur and many cases may go unreported as the disease continues to spread. 35 deaths were declared as of 20 December. Case fatality rate (CFR) has risen to 11.2% from 8.5% in November. (WHO December 2017 WHO 19/11/2017)

56% of all cases have been reported in Ibb governorate but the outbreak is widespread, with cases in 18 out of 22 governorates and 78 districts are affected in total. (For more detailed information, see map on page 5)

Children aged 5-14 account for around 50% of suspected cases. About 90% of fatalities were reported in children aged less than 15. (WHO December 2017)

Diphtheria is endemic in Yemen. However, this is the biggest outbreak since 1989. In recent years the cases have been sporadic, with 27 cases reported across the country in 2016. (WHO 19/11/2017)

Health: Yemen's health system is severely affected by conflict, import restrictions on medicines and supplies, collapsing infrastructure, and critical shortages of health staff. It is heavily dependent on foreign aid. The quality of health services in treatment facilities is poor: infection prevention and control is poor, and partners have exhausted their capacities. Most health facilities do not have laboratory capacity to confirm the presence of *C. diphtheriae*, and therefore the diagnosis and treatment of the disease is difficult. Low vaccination rates and lack of access to medical care exacerbate the crisis. (Reuters 13/12/2017)

Food: Most of the governorates affected by the outbreak currently face at least IPC 3 (Crisis) food security outcomes with Sa'ada, Hajjah, Taizz, and Abyan at risk of IPC 4 (Emergency) in 2018. (FEWSNET)

Nutrition: Areas affected by the outbreak – including Abyan, Al Hudaydah, Lahj, Hadramaut, and Taizz – face global acute malnutrition (GAM) rates above 15% (Nutrition Cluster 3/09/2017). 400,000 children in Yemen are suffering from severe acute malnutrition, particularly in Al Hudaydah. Children who are malnourished are nine times more likely to die. (UN 14/12/2017; UNICEF 2017)

About diphtheria

Diphtheria is a respiratory tract illness, which spreads through air droplets (i.e., sneezing or coughing), or hand-to-hand and hand-to-mouth contact (WHO). First symptoms include a sore throat, fever, and a loss of appetite. Membrane may form on the throat and tonsils. The case fatality rate (CFR) is generally 5-10%, but it can go up to 20% among children under five and adults over 40 years old (CDC; WHO). Without access to regular treatment, diphtheria can spread in the body and be fatal in up to 40% of the cases (MSF 12/12/2017).

Vaccination coverage: High level of immunisation in the community can prevent transmission. Diphtheria vaccines have to be given repeatedly to ensure immunity, as immunity fades over time. A booster vaccine should ideally be given every ten years (CDC). The war and blockade in Yemen, ongoing since 2015, have severely impacted on Yemen's healthcare system and availability of the vaccinations. The vaccination rates have dropped as a result with about 65% children up to 15 and 85% of people older than 15 years old unvaccinated. About 80% of children less than one year old have not been vaccinated as of December 2017. This has reduced herd immunity among the population. (NPR 8/12/2017 UNICEF WHO December 2017)

Treatment: patients require isolation, antibiotics and anti-toxins. These were difficult to access in Yemen prior to the outbreak. Availability of and access to medicines has been further restricted due to the blockade. (MSF 12/12/2017)

Humanitarian and operational constraints

Humanitarian actors are struggling to deliver vaccinations and medical supplies due to ongoing logistical difficulties. In the beginning of December there were no vaccinations available out of around 8.5 million doses needed for three rounds of the vaccination campaign. The districts with high access constraints primarily fall within the conflict-affected governorates of Sana'a, Al Hudaydah, Hajjah, Ibb, Amran, Al Jawf, Marib, Sa'ada, and Taizz. (Critical Threats December 2017, MSF 12/12/2017, US Aid 22/09/2017)

Active frontlines and ongoing fighting in affected governorates have been restricting the humanitarian operations in December. As of 7 December, some humanitarian organisations have temporarily reduced their staff presence in Sana'a until the security situation stabilises. The United Nations Humanitarian Air Service (UNHAS) has transported 121 passengers out of the city, where heavy airstrikes were ongoing. (OCHA 7/12/2017)

Following heavy fighting between Houthi and Saleh forces in the capital Sana'a, no humanitarian flights to Sana'a airport were authorised in the beginning of December. However, the airport was reported to be open with restricted access as of 20 December. Ambulances and health facilities have been attacked and damaged during the conflict, including a hospital in Hajjah city recently damaged in an airstrike. (MSF 6/12/2017) The situation in Sana'a significantly impacts the access to neighbouring governorates as many warehouses managed by humanitarian partners to support the operations in northern Yemen are located in the capital. (OCHA 4/12/2017)

The temporary air, land, and sea embargo imposed by Saudi Arabia which had severely restricted humanitarian access to Yemen was partially lifted in late November. On 20 December the government of Saudi Arabia announced that the Hudaydah port will remain open for humanitarian and relief supplies, as well as commercial ships, for a period of 30 days. However, the inspections have reportedly delayed both humanitarian and commercial shipments, including of anti-diphtheria vaccines and other medical supplies. (Government of Saudi Arabia 20/12/2017; VOA 3/12/2017)

The blockade and access restrictions significantly hamper the operational capacities to respond to the outbreak, as the vaccination for diphtheria must be stored at low temperatures. Prolonged stalling of humanitarian aid is likely to waste the resources by inaccurate storing conditions. (CDC)

Vulnerable groups affected

50% of suspected cases are reported among **children** between the ages of 5 and 14. About 90% of fatalities are reported in children aged less than 15. Low vaccination rates leave children particularly vulnerable. (MSF 12/12/2017) At least one million children are currently at risk of contracting diphtheria due to unavailability of vaccines and medicines in Yemen. (ECDC 16/12/2017) Malnourished children are nine times more likely to die as a result of diseases such as diphtheria (VOA 4/07/2017).

Unvaccinated **IDPs** are vulnerable to diphtheria due to congested living conditions in sites, where isolation is difficult. Displaced people in Ibb governorate, where the highest number of cases and CFR are reported, lack shelter, food, fuel, and lack of access to health facilities. (WHO 2017)

Aggravating factors

Impact of ongoing conflict

Conflict in Yemen escalated in 2015 and continues to affect security, humanitarian access, and availability of health services. The airstrikes and violence have escalated in December, especially in Sana'a, Sa'ada, Al Hudaydah and Taizz governorates, resulting

in more than 200 casualties and a wave of displacement (OHCHR 19/12/2017). Increased movements of population might further drive the outbreak inducing the spread of disease. Due to the crisis, the economy has sharply contracted, depleting livelihoods and leaving more than 20 million people dependent on humanitarian aid. (OCHA 2017)

Poor health system

Restricted imports of medical supplies, damaged infrastructure, and lack of skilled health practitioners have exacerbated the spread of disease. Only 50% health facilities are fully functional. Health services are restricted due to disruption of salaries paid to health personnel. Only 30% of the medicines that entered the country pre-crisis are currently entering the country. In 2016, 49 out of 276 districts had no doctors, and over 40% of districts had two or less doctors. (WHO 1/11/2016 WHO 2017)

Cholera outbreak

Yemen is currently suffering from a cholera outbreak resulting in almost one million suspected cholera cases and over 2,200 associated deaths as of 18 December. The outbreak has affected 21 governorates, especially Al Hudaydah, Hajjah, and Amran, which are also affected by diphtheria. The health system's capacity to deal with consequences of another outbreak have been heavily affected. (ECHO December 2017)

Blockade

The Saudi-led coalition has implemented a naval blockade on Yemen's coast, and restricted travel by air, land, and sea since 2015. Al Hudaydah and Saleef ports have been particularly affected by the blockade. The blockade has been a key factor in increasing delivery times of humanitarian supplies and preventing essential supplies from entering the country including food, medicines, medical equipment, and fuel. Fuel shortages in particular severely affect health and WASH facilities as well as the access of affected population to health services. (OCHA 2017, WHO 2017) In November, the Saudi-led coalition tightened the blockade and temporarily halted all commercial and humanitarian access for two weeks. Since late November, however, it has been partially lifted. (Al-Monitor 20/12/2017)

Contextual information

Previous outbreaks

Diphtheria is endemic in Yemen. In 2016, 27 cases were reported across the country. An average of 50 suspected cases of diphtheria are reported annually in Yemen since 2000. The last known large scale outbreak of diphtheria in Yemen occurred in the Al Hudaydah

governorate in 1981-82 that resulted in a total of 149 cases with no deaths. (WHO 19/11/2017)

Key characteristics

Demographic profile: Current estimated population is 29.3 million. (OCHA 2017) An estimated 54% are living under the national poverty line (AI Monitor 06/01/2017).

Food security: 17.8 million people food insecure, including 8.4 million in IPC 3 (Crisis) or worse. (OCHA 2017)

Nutrition: 1.8 million children and 1.1 million pregnant or lactating women are acutely malnourished including 400,000 children suffering from SAM (OCHA 2017). The prevalence of moderate and severe stunting is 47%. (UNICEF)

Health: infant mortality rate: 34/1000, under-five mortality rate: 42/1000 (UNICEF), maternal mortality rate: 385/100,000 (World Bank 2015).

WASH: population using unimproved water source or surface water: 34%, population using improved sanitation facilities: 24%, population practicing open defecation: 44% (UNICEF)

Lighting and cooking: Gas is the most commonly used cooking fuel, but has become scarce and expensive (WFP 15/03/2017).

Literacy: In 2015 the literacy rate for women stood at 54.8%, and for men at 85% (World Bank 2015).

Response capacity

Local and national response capacity

Local capacity to respond to the crisis is very low, as the areas most severely affected are largely under the control of al Houthi and Hadi forces who have limited financial resources. National health system is near collapse due to conflict, import restrictions on medicines and supplies, collapsing infrastructure, and critical shortages of health staff. (Critical Threats December 2017 Critical Threats 15/11/2017).

International response capacity

The main international agencies (WHO, UNICEF) are currently responding to the outbreak together with MSF, which put together a rapid response team to survey and identify suspected cases in communities, and provide prophylaxis to those in contact with a diphtheria patient (MSF 12/12/2017).

On 20 December, tetanus and diphtheria vaccines for 2.7 million children and adults up to the age of 25 were delivered to Sana'a by UNICEF. 8,500 children under five years were vaccinated in Ibb governorate in November. A vaccination campaign targeting 300,000 children younger than 12 months began on 25 November (UNICEF 20/12/2017, WHO 27/11/2017). Although the vaccines have reached the country, it is unclear how easily they can be distributed to the affected areas.

The Diphtheria Treatment Unit was opened in December in Nasser Hospital in Ibb city. An ambulance referral system is expected to be set up to transport suspected cases to hospital. MSF plans to support transport of samples to a laboratory to better confirm cases, and carry out health promotion activities to alert communities to diphtheria. An intensive care unit is being set-up in Sadaqa hospital, Aden.

Information gaps and needs

- Conflicting and no up-to-date numbers of suspected cases and/or deaths available per governorate or district
- Lack of information on the capacities of local health centres to deal with the outbreak and the vaccination coverage in the worst affected areas.

Lessons learned

- Treating diphtheria is effective if patients are isolated and receive antibiotics and anti-toxins. Left unchecked, however, diphtheria can cause devastating epidemics, mainly affecting children.
- The repeated dosages of vaccination have a significant role in building immunity in the affected area.
- The re-emergence of diphtheria warns of an immediate threat of other epidemics and a longer-term potential for the re-emergence of vaccine-preventable diseases in the country

Diphtheria cases and demographic indicators

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Al Bayda	760,000	173,987	175,777	330,680	2	0
Sa'ada	1,078,000	242,217	216,663	505,317	2	1
Al Jawf	589,000	158,452	113,949	263,558	1	1
Hadramaut	1,424,036	371,514	328,060	585,662	1	0
Marib	336,859	84,537	75,910	142,223	1	0
Raymah	566,000	114,733	126,277	263,928	1	0
Total	26,610,895	6,063,899	5,967,936	11,989,115	312	35

Source: OCHA Yemen, WHO December 2017

