



## Letter to the Editor

# Resurgence of diphtheria in Yemen due to population movement

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Diphtheria is an epidemic prone bacterial disease caused by a non-encapsulated Gram-positive bacillus (*Corynebacterium diphtheria*). It may lead to death due to airway obstruction and it can be prevented by routine vaccination.<sup>1</sup> The paper by Stefansson et al. in this issue of the Journal of Travel Medicine showed how a single booster dose of diphtheria vaccine is effective for travelers regardless of time interval since previous doses.<sup>2</sup> Unfortunately, vaccine coverage against diphtheria is low in migrants, displaced populations and in fragile nations.<sup>3,4</sup>

Yemen is one of the developing countries that suffer from chronic political instability. The current war has destroyed the infrastructure of the country and caused the deterioration of basic services, as well as the displacement of people from their homes searching for safe shelters. In Yemen, there are more than 2 million Internally Displaced Persons (IDPs) living in disease-prone living conditions. Diphtheria outbreak in Yemen has been declared in October 2017, there were 2311 probable diphtheria cases reported up to 9 September 2018, from 217/333 (65%) districts in 20/23 (87%) governorates. A total of 123 deaths were reported from the 20 governorates, which resulted in an overall CFR of 5.3%. Around 64% of cases occurred in five governorates which were Ibb, Sana'a governorate, Al-Hodeida, Hajjah and Sana'a city (see Table 1). The IDP problem enhanced the rapid spread of diphtheria cases in many locations in Yemen, for example; Ibb governorate reported 24% of the total diphtheria cases in Yemen and received more than 25% of the total number of IDPs in Yemen (<https://reliefweb.int/report/yemen/displaced-people-ibb-yemen-devastated-hunger-and-disease-3-years>).

A connection between Yemen and the Horn of Africa (HOA) cannot be ignored. Up to April 2017, around 54% of total regional Yemeni refugees were in the HOA countries in Djibouti (39%), Somalia (38%), Ethiopia (15%) and Sudan (7%). There is not only population movement from Yemen to HOA but also in the other direction. Despite the wars raging in Yemen, this is the only gateway for illegal migration from the HOA to the Arabian Peninsula; Yemen received 280,623 illegal migrants

through that path from March 2015 to September 2017 (<https://data2.unhcr.org/en/country/yem>). There is thus a huge need to focus on raising the diphtheria immunization coverage among citizens, displaced persons and illegal immigrants in Yemen to avoid a greater spread of the disease and its subsequent transmission across borders. With increasing travel globally, diphtheria may otherwise spread further and cause outbreaks in countries where diphtheria was almost eliminated.<sup>5</sup>

**Table 1.** Distribution of diphtheria cases, deaths and corresponding case fatality rates by governorates of Yemen (October 2017–9 September 2018) according to the eDEWS bulletin 36.

Governorates	No. of probable cases (%)	Deaths	CFR (%)
Ibb	560 (24)	20	4
Abyan	30 (1.3)	8	27
Sana'a city	205 (8.9)	4	2
Al Baidha	58 (2.5)	6	10
Al Jawf	16 (0.7)	3	19
Al-Hodeida	237 (10.3)	18	8
Ad Dhale'a	161 (7)	2	1
Al Mahweet	101 (4.4)	2	2
Taiz	85 (3.7)	9	11
Hajjah	206 (8.9)	11	5
Say'on	3 (0.3)	0	0
Damar	96 (4.2)	10	10
Raymah	6 (0.3)	2	33
Shabwah	1 (0.0)	0	0
Sadah	25 (1.1)	5	20
Sana'a	278 (12)	6	2
Aden	88 (3.8)	3	3
Amran	123 (5.3)	8	7
Lahj	20 (0.9)	5	25
Mareb	12 (0.5)	1	8
<b>Total</b>	<b>2311</b>	<b>123</b>	<b>5.3</b>

Source: The National Weekly Epidemiological Bulletin: Volume 06, issue 36.

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