Diphtheria outbreak, Cox's Bazar, Bangladesh

Daily epidemiolgical bulletin

2018-01-01

Epidemiological overview as of 31 Dec 2017

Time

Between 8 Nov 2017 and 31 Dec 2017, 3014 suspected case-patients with diphtheria were reported in the settlements of forcibly displaced Myanmar nationals, Cox's Bazar (Figure 1), 78 of which were reported on 31 Dec 2017 (Figure 2). Date of onset information is missing for 107 (3.6%) case-patients.

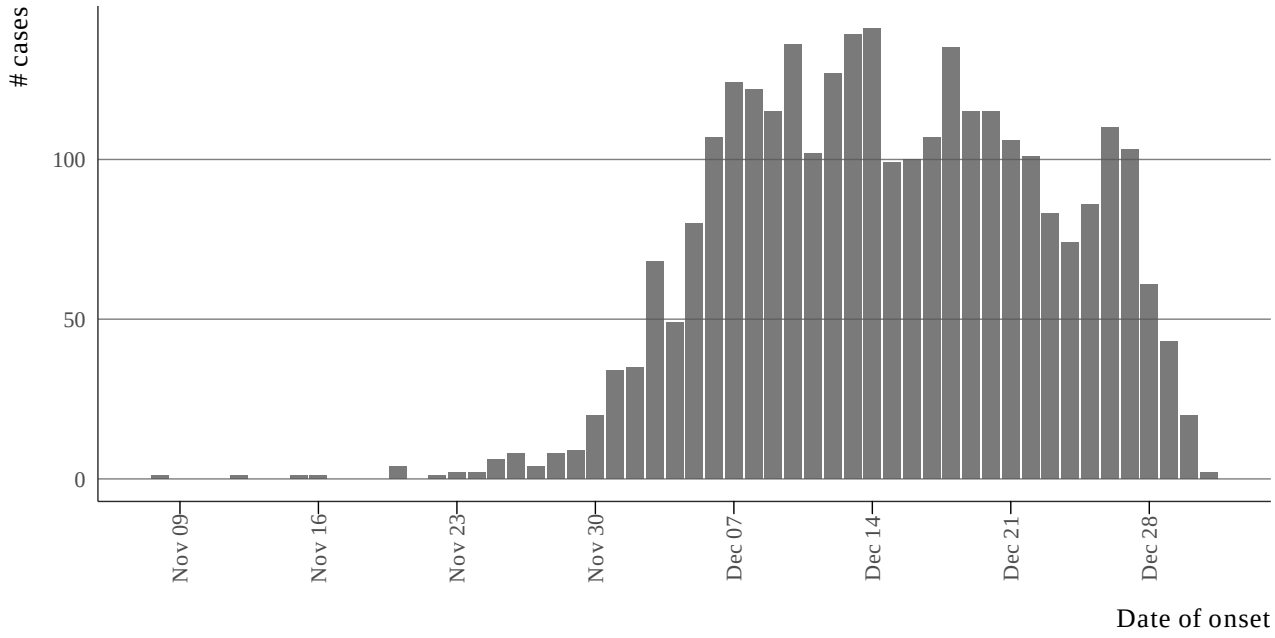

Figure 1: Epidemic curve (by date of onset of symptoms) of suspected case-patients of Diphtheria among forcibly displaced Myanmar nationals, Cox's Bazar, Bangladesh, 31 Dec 2017

Table 1: Distribution in time of presentation of cases among suspected case-patients of Diphtheria among forcibly displaced Myanmar nationals, Cox's Bazar, Bangladesh, 31 Dec 2017

Date of presentation	Number	Cumulative number	Proportion (%)
2017-11-10	1	1	0
2017-11-18	1	2	0
2017-11-19	1	3	0
2017-11-26	1	4	0
2017-11-28	3	7	0
2017-11-30	2	9	0
2017-12-01	3	12	0
2017-12-02	11	23	0
2017-12-03	22	45	1
2017-12-04	14	59	0
2017-12-05	16	75	0
2017-12-06	42	117	1
2017-12-07	89	206	3
2017-12-08	71	277	2
2017-12-09	183	460	6
2017-12-10	145	605	5
2017-12-11	141	746	5
2017-12-12	113	859	4
2017-12-13	168	1027	6
2017-12-14	163	1190	5
2017-12-15	144	1334	5
2017-12-16	146	1480	5
2017-12-17	128	1608	4
2017-12-18	125	1733	4
2017-12-19	114	1847	4
2017-12-20	98	1945	3
2017-12-21	126	2071	4
2017-12-22	70	2141	2
2017-12-23	108	2249	4
2017-12-24	110	2359	4
2017-12-25	84	2443	3
2017-12-26	99	2542	3
2017-12-27	120	2662	4
2017-12-28	119	2781	4
2017-12-29	60	2841	2
2017-12-30	93	2934	3
2017-12-31	78	3012	3
Missing	2	3014	0
TOTAL	3014	3014	100

Prior to December 11 2017, a sensitive case definition was in use, that probably accounted for a substantial number of *false positive* case-patients being included. After this date, a more specific case definition of "A person with an illness characterized by laryngitis or pharyngitis or tonsillitis, and an adherent membrane of the tonsils, pharynx and/or nose OR gross lymphadenopathy" was applied, which needs to be kept in mind while interpreting the epidemic curve by date of presentation (Figure 2).

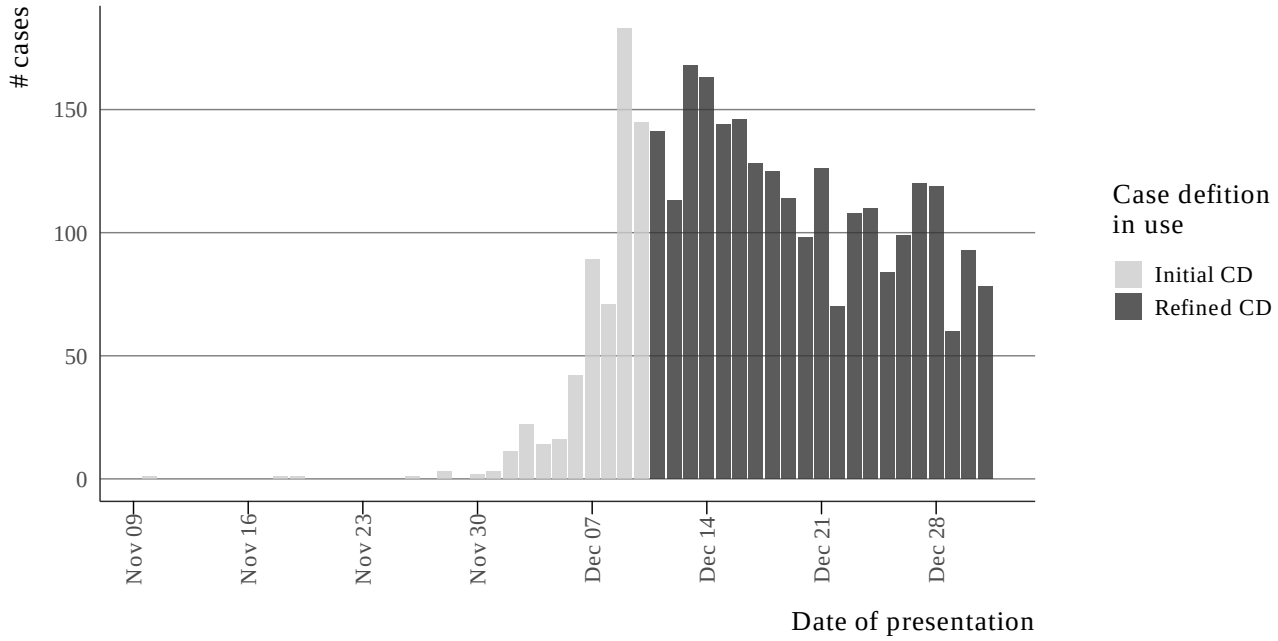

Figure 2: Epidemic curve (by date of presentation) of suspected case-patients of Diphtheria among forcibly displaced Myanmar nationals, Cox's Bazar, Bangladesh, 31 Dec 2017

Place

Estimated attack rates (expressed as number of cases per 10,000 population) are shown in Figure 3. These estimates are based on population figures from 07 December 2017. **N.B.** due to difficulties in locating reported residence (particularly in the Kutupalong Expansion Zone), only 1878 out of 3014 (62.3%) total case-patients have been included in the attack rate calculations, which therefore likely under-estimate the true attack rates. Efforts are ongoing to map these case-patients.

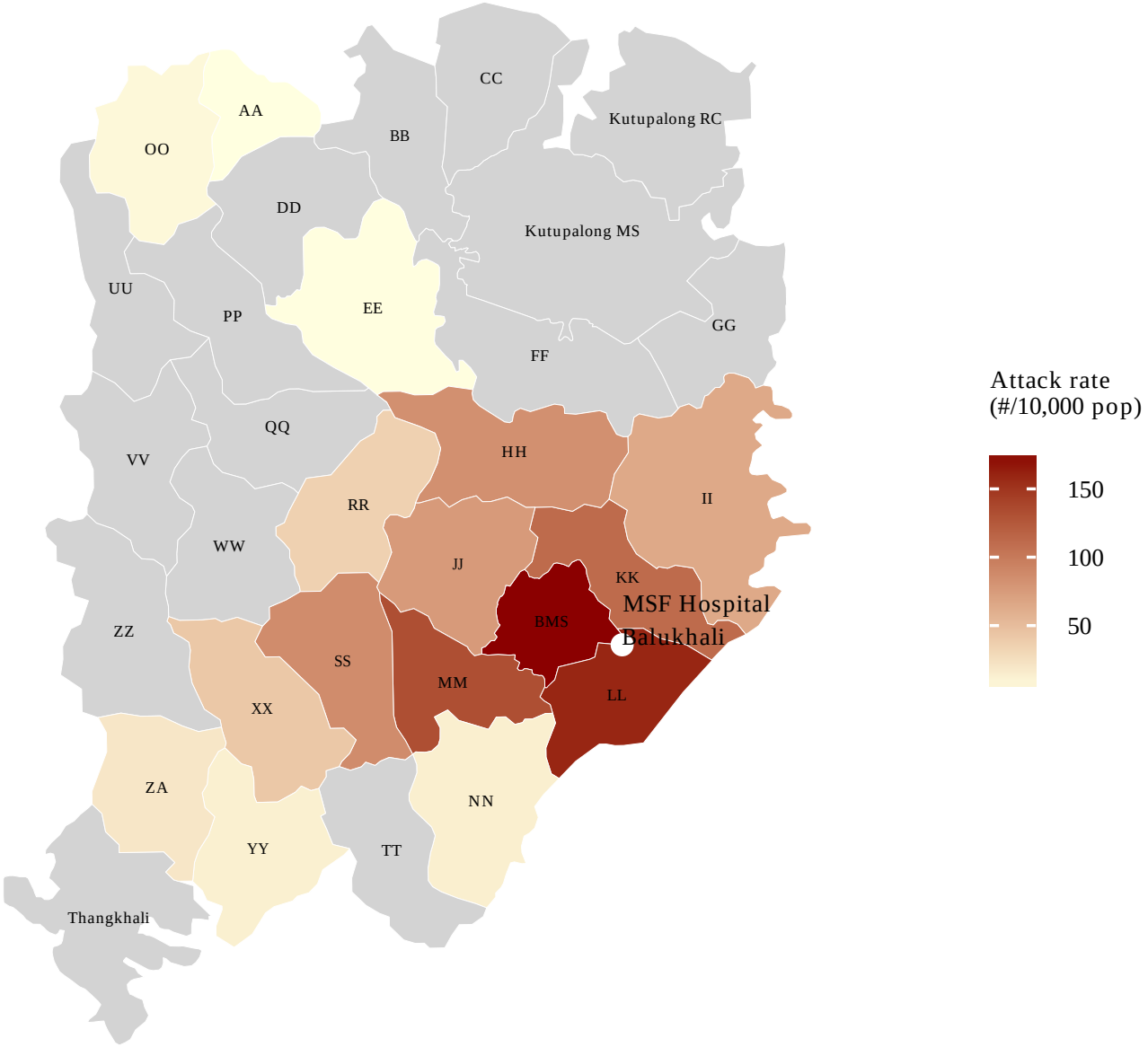

Figure 3: Diphtheria attack rate among forcibly displaced Myanmar nationals, Cox's Bazar, Bangladesh, 31 Dec 2017

Person

Age

The age distribution of suspect case-patients shows that, approximately: one-quarter are among the 0-5 year age group, one-third are in the 5-10 year age group, and one-fifth are aged between 10-15 years (Figure 4). Importantly, 25.9% of the suspected case-patients are aged 15 years and older.

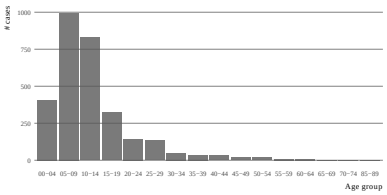

Figure 4: Age distribution of suspected case-patients of Diphtheria among forcibly displaced Myanmar nationals, Cox's Bazar, Bangladesh, 31 Dec 2017

Table 2: Age distribution of suspected case-patients of Diphtheria among forcibly displaced Myanmar nationals, Cox's Bazar, Bangladesh, 31 Dec 2017

Age group	Number	Proportion (%)	Cumulative proportion (%)
00-04	407	14	14
05-09	995	33	46
10-14	830	28	74
15-19	324	11	85
20-24	144	5	90
25-29	132	4	94
30-34	48	2	96
35-39	35	1	97
40-44	32	1	98
45-49	18	1	98
50-54	19	1	99
55-59	7	0	99
60-64	8	0	100
65-69	1	0	100
70-74	3	0	100
85-89	1	0	100
Missing	10	0	100
TOTAL	3014	100	100

Sex

1352 (44.9%) of the case-patients are male, while 1649 (54.7%) of the case-patients are female (Figure 5). Information on sex was missing for 13 (0.4%) of case-patients.

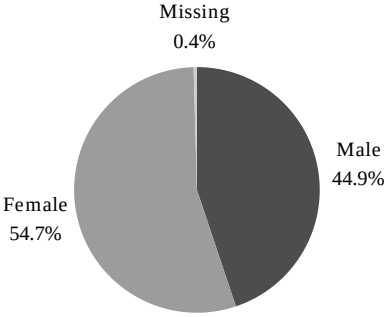

Figure 5: Sex distribution of suspected case-patients of Diphtheria among forcibly displaced Myanmar nationals, Cox's Bazar, Bangladesh, 31 Dec 2017

Signs and symptoms prevalence

There are 254 (8.4%) suspected case-patients without information on signs and symptoms. Of those suspected case-patients with this information, the prevalence of signs and symptoms is shown in Figure 6 (**N.B.** patients with *no* information are excluded from this analysis):

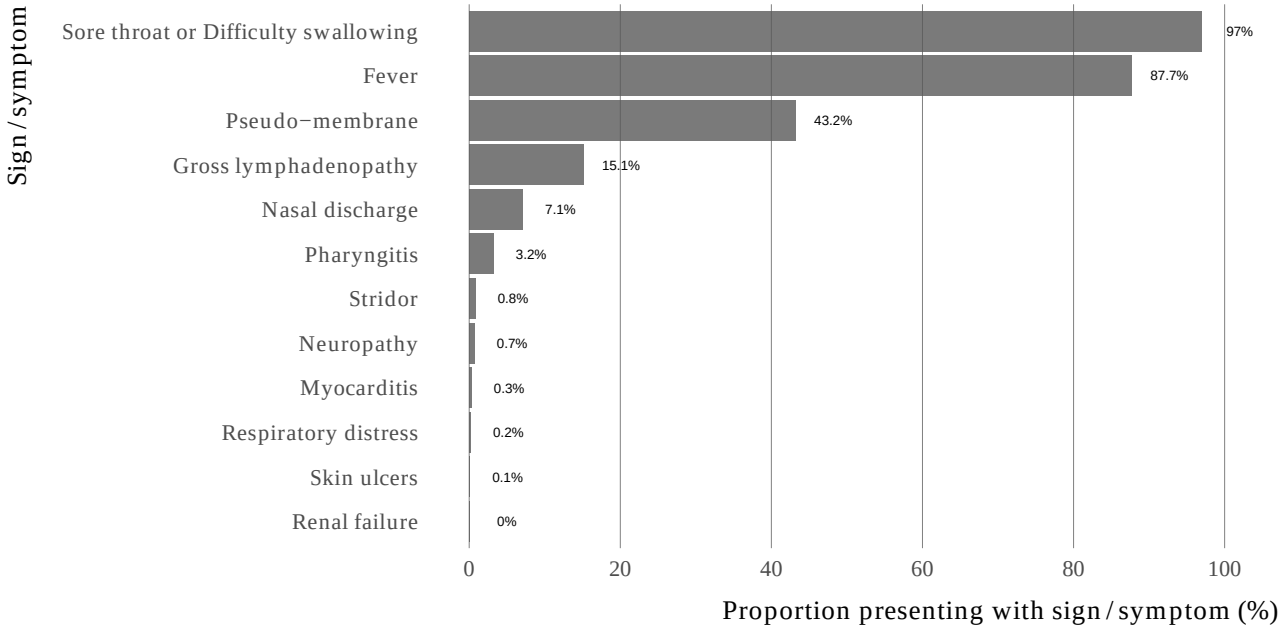

Figure 6: Prevalence of signs/symptoms among suspected case-patients of Diphtheria among forcibly displaced Myanmar nationals, Cox's Bazar, Bangladesh, 31 Dec 2017

Laboratory results

Out of 66 samples (2.2% of all case-patients) tested by PCR, 21 (31.8%) were positive for diphtheria.

Delay distributions

The median [IQR] delay from *symptom onset* to *presentation* at health facilities was 2 [2 - 3] days. Among those who have died, the median [IQR] delay from *symptom onset* to *death* was 7 [4.75 - 10.25] days.

Outcomes

There are 28 deaths recorded in the linelist thus far.

Table 3: Distribution in time of deaths among suspected case-patients of Diphtheria among forcibly displaced Myanmar nationals, Cox's Bazar, Bangladesh, 31 Dec 2017

Date of death	Number	Proportion (%)	Cumulative proportion (%)
2017-11-22	1	4	4
2017-11-23	1	4	7
2017-11-29	2	7	14
2017-12-02	1	4	18
2017-12-04	1	4	21
2017-12-05	1	4	25
2017-12-07	2	7	32
2017-12-08	4	14	46
2017-12-09	2	7	54
2017-12-10	1	4	57
2017-12-12	1	4	61
2017-12-13	2	7	68
2017-12-16	1	4	71
2017-12-17	2	7	79
2017-12-18	1	4	82
2017-12-20	1	4	86
2017-12-22	2	7	93
2017-12-25	1	4	96
2017-12-31	1	4	100
TOTAL	28	100	100

The age distributions of those case-patients who have died is shown below:

Table 4: Age distribution of deaths among suspected case-patients of Diphtheria among forcibly displaced Myanmar nationals, Cox's Bazar, Bangladesh, 31 Dec 2017

Age group	Number	Proportion (%)
00-04	15	54
05-09	8	29
10-14	4	14
20-24	1	4
TOTAL	28	100

Contact tracing

Contact tracing and follow-up for chemo-prophylaxis is an important component of the outbreak response strategy. Close contacts are defined as "those sleeping in the same shelter or who have been directly exposed to nasopharyngeal secretions of the patient on a prolonged or regular basis".

The median [IQR] number of contacts is 5 [3 - 7], while the total range is 0-21 (Figure 7).

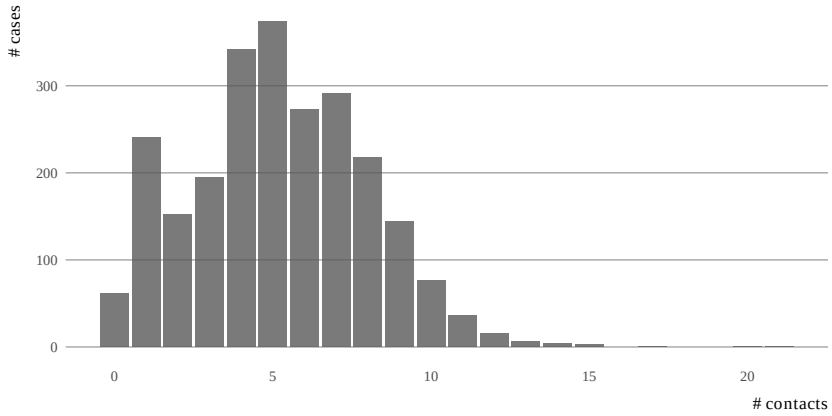

Figure 7: Distribution of numbers of close contacts of suspected case-patients of Diphtheria among forcibly displaced Myanmar nationals, Cox's Bazar, Bangladesh, 31 Dec 2017

Overall, at least 72.1% of households of case-patients have been successfully traced (data are incomplete for the beginning of the outbreak), and there has been a marked improvement over time (Figure 8). In the households that were successfully traced, at least 10594 contacts (85.4%) have been put on chemoprophylaxis thus far. The mean number of contacts per case-patient was 5.1, with a mean of 4.7 contacts per case-patient started on chemoprophylaxis treatment.

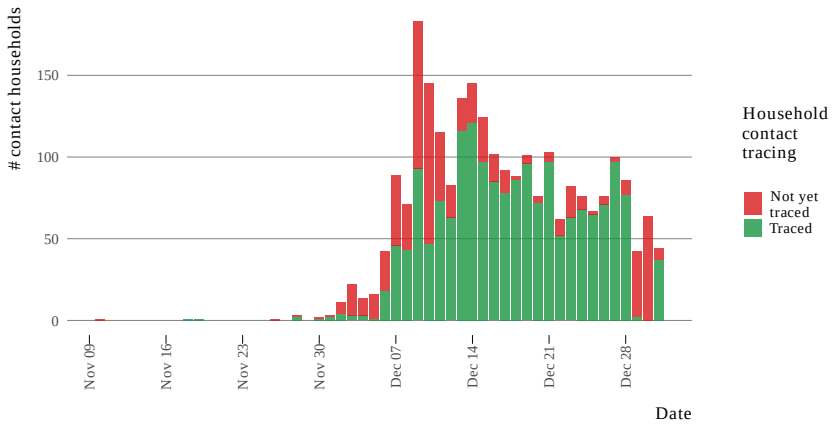

Figure 8: Number of households of suspected case-patients of Diphtheria successfully traced vs. not yet traced, by date of presentation, among forcibly displaced Myanmar nationals, Cox's Bazar, Bangladesh, 31 Dec 2017