Cholera outbreak report

# Introduction to this template

This is a template which can be used to create an automated outbreak situation report for cholera.

* It is organised by time, place and person. For a more detailed explanation of this template, please visit <https://r4epis.netlify.com/outbreaks>
* Feedback and suggestions are welcome at the [GitHub issues page](https://github.com/R4EPI/sitrep/issues)
* Text within <! > will not show in your final document. These comments are used to explain the template. You can delete them if you want.

## Installing and loading required packages

### Person

From the start of the outbreak up until 2019-W25 there were a total of 300 cases. There were 98 (32.7%) females and 102 (34.0%) males.

The most affected age group was 45+ years.

#### Demographics

Cases by age group and definition

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Age group | Confirmed cases (n) | % | Probable cases (n) | % | Suspected cases (n) | % | Total |
| 0-2 | 3 | 1.4 | 0 | 0 | 1 | 2.2 | 4 |
| 3-14 | 28 | 13.1 | 4 | 10 | 4 | 8.7 | 36 |
| 15-29 | 36 | 16.8 | 6 | 15 | 7 | 15.2 | 49 |
| 30-44 | 23 | 10.7 | 4 | 10 | 2 | 4.3 | 29 |
| 45+ | 124 | 57.9 | 26 | 65 | 32 | 69.6 | 182 |
| Total | 214 | 100.0 | 40 | 100 | 46 | 100.0 | 300 |

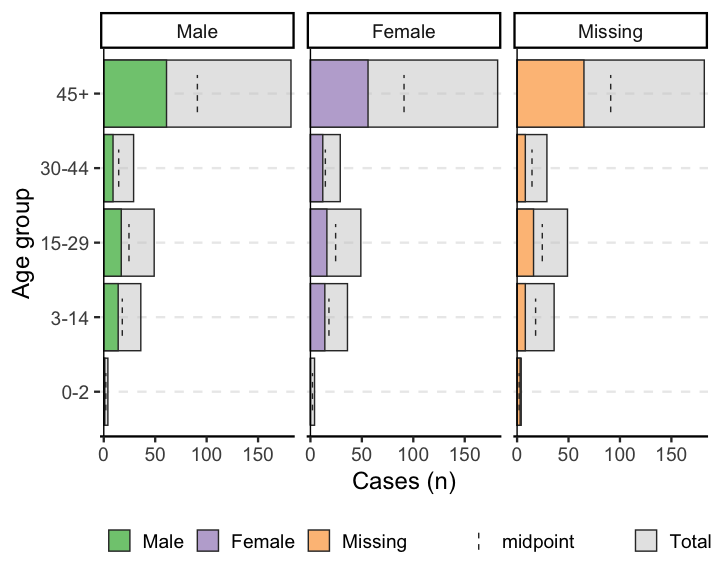
There were 100 (33.3%) cases missing information on sex and 0 (0.0%) missing age group.

Cases by age group and sex

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Age group | Male cases (n) | % | Female cases (n) | % | Missing cases (n) | % | Total |
| 0-2 | 1 | 1.0 | 0 | 0.0 | 3 | 3 | 4 |
| 3-14 | 14 | 13.7 | 14 | 14.3 | 8 | 8 | 36 |
| 15-29 | 17 | 16.7 | 16 | 16.3 | 16 | 16 | 49 |
| 30-44 | 9 | 8.8 | 12 | 12.2 | 8 | 8 | 29 |
| 45+ | 61 | 59.8 | 56 | 57.1 | 65 | 65 | 182 |
| Total | 102 | 100.0 | 98 | 100.0 | 100 | 100 | 300 |

Cases by population proportion (age group and sex)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Age group | Male cases (n) | % | Female cases (n) | % | Missing cases (n) | % | Total |
| 0-2 | 1 | 0.3 | 0 | 0.0 | 3 | 1.0 | 4 |
| 3-14 | 14 | 4.7 | 14 | 4.7 | 8 | 2.7 | 36 |
| 15-29 | 17 | 5.7 | 16 | 5.3 | 16 | 5.3 | 49 |
| 30-44 | 9 | 3.0 | 12 | 4.0 | 8 | 2.7 | 29 |
| 45+ | 61 | 20.3 | 56 | 18.7 | 65 | 21.7 | 182 |
| Total | 102 | 34.0 | 98 | 32.7 | 100 | 33.3 | 300 |

Age pyramid 

Of the patients, 102 (34.0%) were seen as outpatients and 198 (66.0%) were inpatients. Among inpatients, the median number of days admitted was 20, with a range between 1 and 109 days.

From the start of the outbreak, 69 (23.0%) patients recevied treatment plan A, 68 (22.7%) received treatment plan B, and 55 (18.3%) received treatment plan C.

Cases by treatment plan and case definition

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Fluid treatment plan | Confirmed cases (n) | % | Probable cases (n) | % | Suspected cases (n) | % | Total |
| None | 31 | 14.5 | 10 | 25 | 7 | 15.2 | 48 |
| Treatment plan A | 50 | 23.4 | 8 | 20 | 11 | 23.9 | 69 |
| Treatment plan B | 51 | 23.8 | 4 | 10 | 13 | 28.3 | 68 |
| Treatment plan C | 40 | 18.7 | 8 | 20 | 7 | 15.2 | 55 |
| Unknown | 42 | 19.6 | 10 | 25 | 8 | 17.4 | 60 |
| Total | 214 | 100.0 | 40 | 100 | 46 | 100.0 | 300 |

The median number of days admitted was 20, with a range between 1 and 109 days. A total of 96 (32.0%) patients were readmitted to the CTC.

Cases by dehydration severity at admission

|  |  |  |
| --- | --- | --- |
| Dehydration severity | Cases (n) | % |
| Severe | 69 | 23.0 |
| Some | 74 | 24.7 |
| None | 71 | 23.7 |
| Unknown | 86 | 28.7 |
| Total | 300 | 100.0 |

Cases by dehydration severity during stay

|  |  |  |
| --- | --- | --- |
| Dehydration severity | Cases (n) | % |
| Severe | 78 | 26.0 |
| Some | 68 | 22.7 |
| None | 74 | 24.7 |
| Unknown | 80 | 26.7 |
| Total | 300 | 100.0 |

Cases by lab results

## Note: Using an external vector in selections is ambiguous.  
## ℹ Use `all\_of(LABS)` instead of `LABS` to silence this message.  
## ℹ See <https://tidyselect.r-lib.org/reference/faq-external-vector.html>.  
## This message is displayed once per session.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Results | Culture (n) | % | PCR (n) | % | RDT (n) | % |
| Not done | 52 | 17.3 | 53 | 17.7 | 47 | 15.7 |
| Negative | 50 | 16.7 | 51 | 17.0 | 55 | 18.3 |
| Positive O1 | 33 | 11.0 | 40 | 13.3 | 46 | 15.3 |
| Positive O139 | 59 | 19.7 | 60 | 20.0 | 48 | 16.0 |
| Positive O1 & O139 | 52 | 17.3 | 49 | 16.3 | 48 | 16.0 |
| Invalid/contaminated | 54 | 18.0 | 47 | 15.7 | 56 | 18.7 |
| Total | 300 | 100.0 | 300 | 100.0 | 300 | 100.0 |

Cases by vaccination status

|  |  |  |
| --- | --- | --- |
| Vaccination status | Cases (n) | % |
| Yes - vaccination card/ink | 78 | 26.0 |
| Yes - verbal | 84 | 28.0 |
| No | 71 | 23.7 |
| Unsure | 67 | 22.3 |
| Total | 300 | 100.0 |

#### Case fatality ratio

Of 198 (66.0%) inpatients, there have been 56 (18.7%) deaths, of which 48 (16.0%) were dead on arrival.

Among inpatients who died, the time to death is shown below.

|  |  |  |
| --- | --- | --- |
| Time (hours) | Deaths (n) | % |
| 0-4 hours | 12 | 21.4 |
| >4-24 hours | 16 | 28.6 |
| >24-48 hours | 10 | 17.9 |
| >48 hours | 18 | 32.1 |
| Total | 56 | 100.0 |

The case fatality ratio among inpatients with known outcomes is below.

|  |  |  |  |
| --- | --- | --- | --- |
| Deaths | Cases | CFR (%) | 95%CI |
| 56 | 198 | 28.3 | (22.47–34.92) |

The case fatality ratio by sex among inpatients with known outcomes is below.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Sex | Deaths | Cases | CFR (%) | 95%CI |
| Male | 15 | 66 | 22.7 | (14.29–34.17) |
| Female | 20 | 65 | 30.8 | (20.89–42.80) |
| - | 21 | 67 | 31.3 | (21.51–43.20) |
| Total | 56 | 198 | 28.3 | (22.47–34.92) |

CFR by age group among inpatients with known outcomes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Age group | Deaths | Cases | CFR (%) | 95%CI |
| 0-2 | 1 | 1 | 100.0 | (20.65–100.00) |
| 3-14 | 12 | 26 | 46.2 | (28.76–64.54) |
| 15-29 | 10 | 34 | 29.4 | (16.83–46.17) |
| 30-44 | 3 | 19 | 15.8 | (5.52–37.57) |
| 45+ | 30 | 118 | 25.4 | (18.43–33.97) |
| Total | 56 | 198 | 28.3 | (22.47–34.92) |

#### Attack rate

The attack rate per 10,000 population is below (based on available population data available for the catchment area/region of interest).

Below gives the attack rate per 10,000 population (N = 4,999.5)

|  |  |  |
| --- | --- | --- |
| Cases (n) | AR (per 10,000) | 95%CI |
| 300 | 600.1 | (537.54–669.33) |

Here, we can see that the attack rate for a population of 4,999.5 was 600.06 (CI 537.54–669.33).

To give attack rate by age group, with appropriate population denominators, use the following code.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Age group | Cases (n) | Population | AR (per 10,000) | 95%CI |
| 0-2 | 4 | 340.0 | 117.6 | (45.84–298.54) |
| 3-14 | 36 | 1,811.0 | 198.8 | (143.93–273.97) |
| 15-29 | 49 | 1,380.0 | 355.1 | (269.62–466.32) |
| 30-44 | 29 | 808.0 | 358.9 | (251.04–510.70) |
| 45+ | 182 | 660.5 | 2,755.5 | (2428.47–3108.46) |

#### Mortality attributable to cholera

Mortality rate attributable to cholera per 10,000 population

|  |  |  |  |
| --- | --- | --- | --- |
| Deaths | Population | Mortality (per 10,000) | 95%CI |
| 87 | 4999.5 | 174 | (141.30–214.14) |

Crude mortality rate attributable to cholera per 10,000 population per day

|  |  |  |  |
| --- | --- | --- | --- |
| Deaths | Person-days | Mortality (per 10,000/day) | 95%CI |
| 87 | 2689731 | 0.3 | (0.26–0.40) |

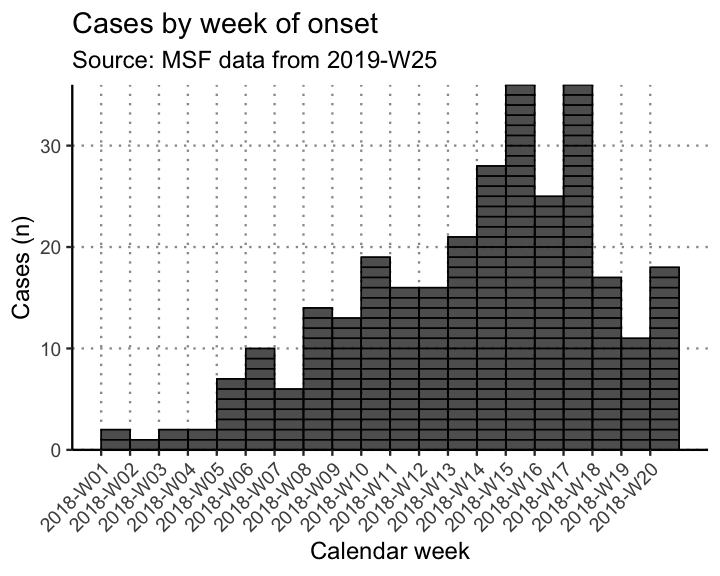
Mortality rate attributable to cholera per 10,000 patients per day

|  |  |  |  |
| --- | --- | --- | --- |
| Deaths | Population | Mortality (per 10,000/day) | 95%CI |
| 87 | 9195 | 94.6 | (76.78–116.55) |

### Time

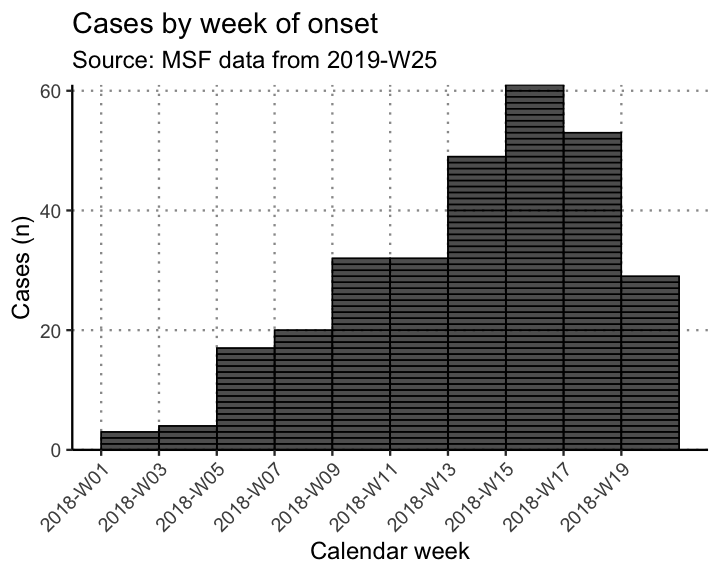
There were 0 (0.0%) cases missing dates of onset.

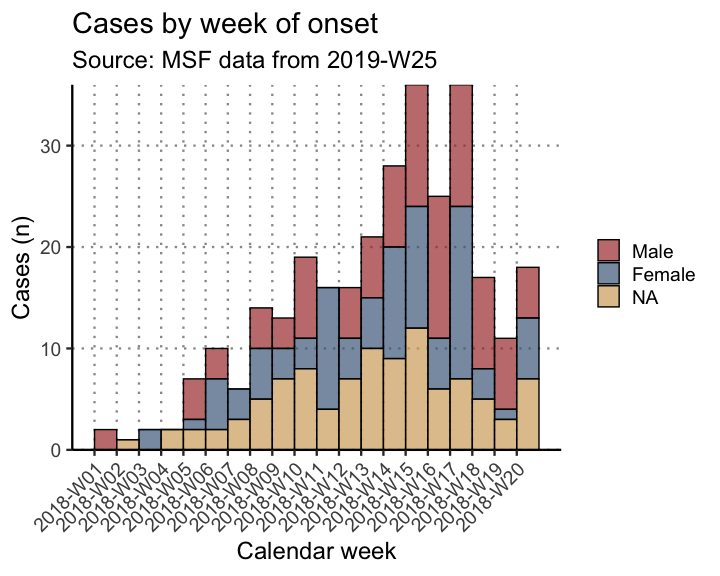
## Warning: It is deprecated to specify `guide = FALSE` to remove a guide. Please  
## use `guide = "none"` instead.

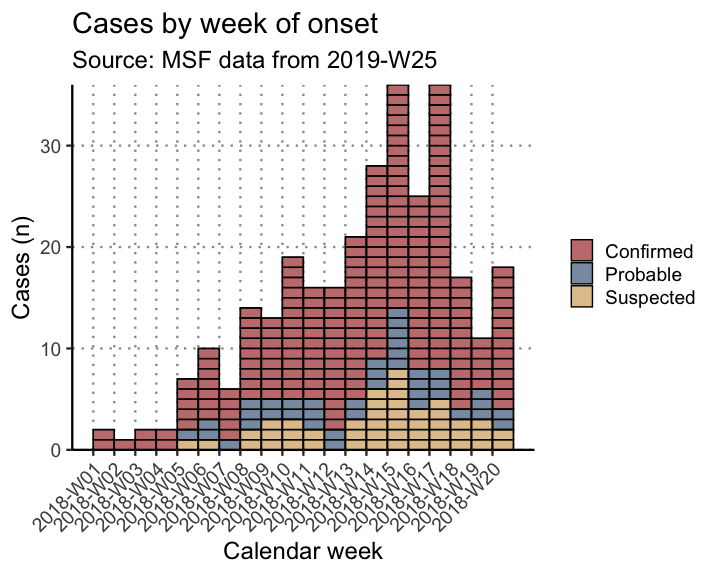


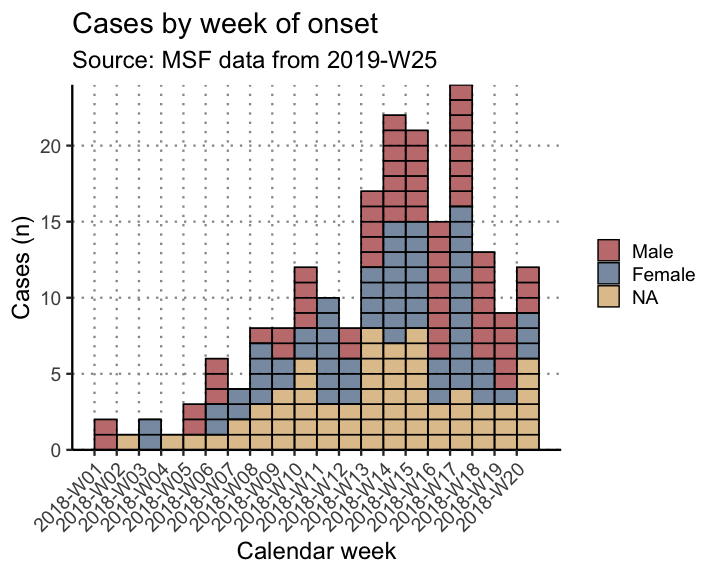
The peak of the outbreak was in 2018-W15.

## Warning: It is deprecated to specify `guide = FALSE` to remove a guide. Please  
## use `guide = "none"` instead.







Cases by week of onset among inpatients by sex 

Attack rate per 10,000 population by week

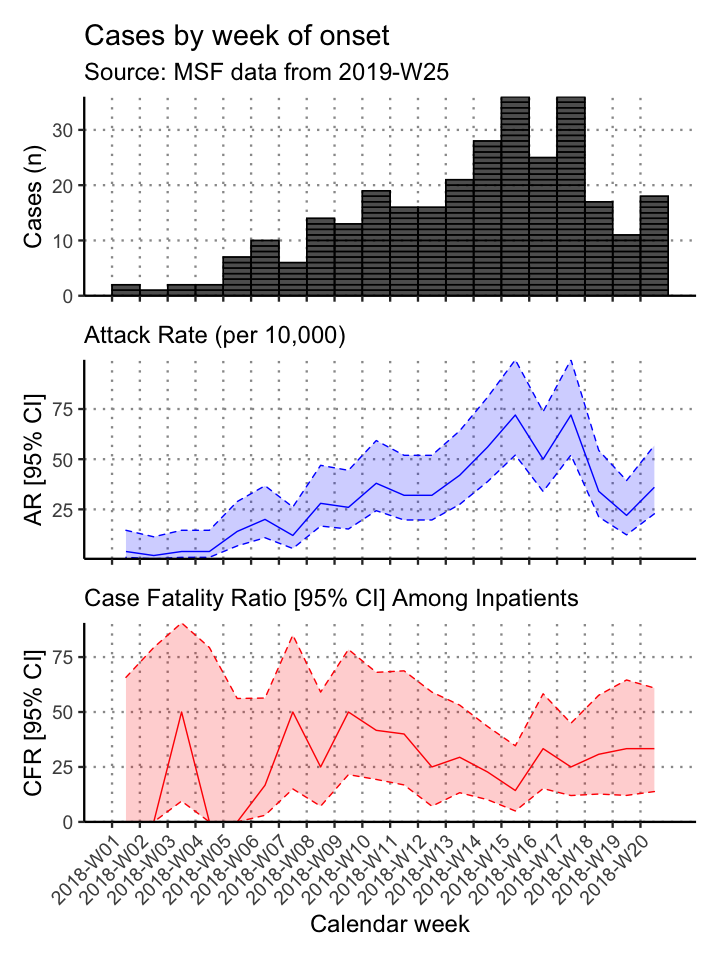
|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Epiweek | Cases (n) | Population | AR (per 10,000) | 95%CI |
| 2018-W01 | 2 | 4999.5 | 4 | (1.10–14.58) |
| 2018-W02 | 1 | 4999.5 | 2 | (0.35–11.32) |
| 2018-W03 | 2 | 4999.5 | 4 | (1.10–14.58) |
| 2018-W04 | 2 | 4999.5 | 4 | (1.10–14.58) |
| 2018-W05 | 7 | 4999.5 | 14 | (6.78–28.88) |
| 2018-W06 | 10 | 4999.5 | 20 | (10.87–36.78) |
| 2018-W07 | 6 | 4999.5 | 12 | (5.50–26.16) |
| 2018-W08 | 14 | 4999.5 | 28 | (16.69–46.95) |
| 2018-W09 | 13 | 4999.5 | 26 | (15.20–44.44) |
| 2018-W10 | 19 | 4999.5 | 38 | (24.34–59.28) |
| 2018-W11 | 16 | 4999.5 | 32 | (19.71–51.93) |
| 2018-W12 | 16 | 4999.5 | 32 | (19.71–51.93) |
| 2018-W13 | 21 | 4999.5 | 42 | (27.49–64.13) |
| 2018-W14 | 28 | 4999.5 | 56 | (38.78–80.83) |
| 2018-W15 | 36 | 4999.5 | 72 | (52.06–99.52) |
| 2018-W16 | 25 | 4999.5 | 50 | (33.89–73.72) |
| 2018-W17 | 36 | 4999.5 | 72 | (52.06–99.52) |
| 2018-W18 | 17 | 4999.5 | 34 | (21.24–54.39) |
| 2018-W19 | 11 | 4999.5 | 22 | (12.29–39.36) |
| 2018-W20 | 18 | 4999.5 | 36 | (22.79–56.84) |

Cumulative attack rate per 10,000 population per week

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Epiweek | Cases (n) | Population | AR (per 10,000) | 95%CI |
| 2018-W01 | 2 | 4999.5 | 4.0 | (1.10–14.58) |
| 2018-W02 | 3 | 4999.5 | 6.0 | (2.04–17.63) |
| 2018-W03 | 5 | 4999.5 | 10.0 | (4.27–23.39) |
| 2018-W04 | 7 | 4999.5 | 14.0 | (6.78–28.88) |
| 2018-W05 | 14 | 4999.5 | 28.0 | (16.69–46.95) |
| 2018-W06 | 24 | 4999.5 | 48.0 | (32.28–71.33) |
| 2018-W07 | 30 | 4999.5 | 60.0 | (42.07–85.53) |
| 2018-W08 | 44 | 4999.5 | 88.0 | (65.63–117.93) |
| 2018-W09 | 57 | 4999.5 | 114.0 | (88.11–147.42) |
| 2018-W10 | 76 | 4999.5 | 152.0 | (121.63–189.84) |
| 2018-W11 | 92 | 4999.5 | 184.0 | (150.29–225.14) |
| 2018-W12 | 108 | 4999.5 | 216.0 | (179.24–260.14) |
| 2018-W13 | 129 | 4999.5 | 258.0 | (217.58–305.75) |
| 2018-W14 | 157 | 4999.5 | 314.0 | (269.17–366.09) |
| 2018-W15 | 193 | 4999.5 | 386.0 | (336.08–443.08) |
| 2018-W16 | 218 | 4999.5 | 436.0 | (382.85–496.24) |
| 2018-W17 | 254 | 4999.5 | 508.1 | (450.55–572.45) |
| 2018-W18 | 271 | 4999.5 | 542.1 | (482.64–608.31) |
| 2018-W19 | 282 | 4999.5 | 564.1 | (503.45–631.48) |
| 2018-W20 | 300 | 4999.5 | 600.1 | (537.54–669.33) |

Case fatality ratio as a proportion among inpatients by week

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Epiweek | Deaths | Cases | CFR (%) | 95%CI |
| 2018-W01 | 0 | 2 | 0.0 | (0.00–65.76) |
| 2018-W02 | 0 | 1 | 0.0 | (0.00–79.35) |
| 2018-W03 | 1 | 2 | 50.0 | (9.45–90.55) |
| 2018-W04 | 0 | 1 | 0.0 | (0.00–79.35) |
| 2018-W05 | 0 | 3 | 0.0 | (0.00–56.15) |
| 2018-W06 | 1 | 6 | 16.7 | (3.01–56.35) |
| 2018-W07 | 2 | 4 | 50.0 | (15.00–85.00) |
| 2018-W08 | 2 | 8 | 25.0 | (7.15–59.07) |
| 2018-W09 | 4 | 8 | 50.0 | (21.52–78.48) |
| 2018-W10 | 5 | 12 | 41.7 | (19.33–68.05) |
| 2018-W11 | 4 | 10 | 40.0 | (16.82–68.73) |
| 2018-W12 | 2 | 8 | 25.0 | (7.15–59.07) |
| 2018-W13 | 5 | 17 | 29.4 | (13.28–53.13) |
| 2018-W14 | 5 | 22 | 22.7 | (10.12–43.44) |
| 2018-W15 | 3 | 21 | 14.3 | (4.98–34.64) |
| 2018-W16 | 5 | 15 | 33.3 | (15.18–58.29) |
| 2018-W17 | 6 | 24 | 25.0 | (12.00–44.90) |
| 2018-W18 | 4 | 13 | 30.8 | (12.68–57.63) |
| 2018-W19 | 3 | 9 | 33.3 | (12.06–64.58) |
| 2018-W20 | 4 | 12 | 33.3 | (13.81–60.94) |



Inpatient admissions by case definition and week

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| value | Confirmed (n) | % | Probable (n) | % | Suspected (n) | % | Total |
| 2018-W01 | 2 | 1.4 | 0 | 0.0 | 0 | 0.0 | 2 |
| 2018-W02 | 1 | 0.7 | 0 | 0.0 | 0 | 0.0 | 1 |
| 2018-W03 | 2 | 1.4 | 0 | 0.0 | 0 | 0.0 | 2 |
| 2018-W04 | 1 | 0.7 | 0 | 0.0 | 0 | 0.0 | 1 |
| 2018-W05 | 2 | 1.4 | 0 | 0.0 | 1 | 3.1 | 3 |
| 2018-W06 | 4 | 2.9 | 1 | 3.8 | 1 | 3.1 | 6 |
| 2018-W07 | 3 | 2.1 | 1 | 3.8 | 0 | 0.0 | 4 |
| 2018-W08 | 5 | 3.6 | 1 | 3.8 | 2 | 6.2 | 8 |
| 2018-W09 | 5 | 3.6 | 2 | 7.7 | 1 | 3.1 | 8 |
| 2018-W10 | 10 | 7.1 | 0 | 0.0 | 2 | 6.2 | 12 |
| 2018-W11 | 6 | 4.3 | 2 | 7.7 | 2 | 6.2 | 10 |
| 2018-W12 | 6 | 4.3 | 2 | 7.7 | 0 | 0.0 | 8 |
| 2018-W13 | 13 | 9.3 | 2 | 7.7 | 2 | 6.2 | 17 |
| 2018-W14 | 15 | 10.7 | 3 | 11.5 | 4 | 12.5 | 22 |
| 2018-W15 | 12 | 8.6 | 4 | 15.4 | 5 | 15.6 | 21 |
| 2018-W16 | 10 | 7.1 | 2 | 7.7 | 3 | 9.4 | 15 |
| 2018-W17 | 19 | 13.6 | 1 | 3.8 | 4 | 12.5 | 24 |
| 2018-W18 | 10 | 7.1 | 1 | 3.8 | 2 | 6.2 | 13 |
| 2018-W19 | 4 | 2.9 | 3 | 11.5 | 2 | 6.2 | 9 |
| 2018-W20 | 10 | 7.1 | 1 | 3.8 | 1 | 3.1 | 12 |
| Total | 140 | 100.0 | 26 | 100.0 | 32 | 100.0 | 198 |

Inpatient discharges by reason for exit and week

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Week | Died (n) | % | Discharged (n) | % | Left (n) | % | Transferred (n) | % | Total |
| 2018-W01 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 2 | 2.6 | 2 |
| 2018-W02 | 0 | 0.0 | 0 | 0.0 | 1 | 2.4 | 0 | 0.0 | 1 |
| 2018-W03 | 1 | 1.8 | 0 | 0.0 | 0 | 0.0 | 1 | 1.3 | 2 |
| 2018-W04 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 1 | 1.3 | 1 |
| 2018-W05 | 0 | 0.0 | 1 | 4.3 | 0 | 0.0 | 2 | 2.6 | 3 |
| 2018-W06 | 1 | 1.8 | 3 | 13.0 | 0 | 0.0 | 2 | 2.6 | 6 |
| 2018-W07 | 2 | 3.6 | 0 | 0.0 | 0 | 0.0 | 2 | 2.6 | 4 |
| 2018-W08 | 2 | 3.6 | 0 | 0.0 | 3 | 7.3 | 3 | 3.8 | 8 |
| 2018-W09 | 4 | 7.1 | 1 | 4.3 | 2 | 4.9 | 1 | 1.3 | 8 |
| 2018-W10 | 5 | 8.9 | 0 | 0.0 | 3 | 7.3 | 4 | 5.1 | 12 |
| 2018-W11 | 4 | 7.1 | 2 | 8.7 | 2 | 4.9 | 2 | 2.6 | 10 |
| 2018-W12 | 2 | 3.6 | 0 | 0.0 | 1 | 2.4 | 5 | 6.4 | 8 |
| 2018-W13 | 5 | 8.9 | 2 | 8.7 | 4 | 9.8 | 6 | 7.7 | 17 |
| 2018-W14 | 5 | 8.9 | 1 | 4.3 | 4 | 9.8 | 12 | 15.4 | 22 |
| 2018-W15 | 3 | 5.4 | 4 | 17.4 | 3 | 7.3 | 11 | 14.1 | 21 |
| 2018-W16 | 5 | 8.9 | 3 | 13.0 | 3 | 7.3 | 4 | 5.1 | 15 |
| 2018-W17 | 6 | 10.7 | 3 | 13.0 | 7 | 17.1 | 8 | 10.3 | 24 |
| 2018-W18 | 4 | 7.1 | 1 | 4.3 | 5 | 12.2 | 3 | 3.8 | 13 |
| 2018-W19 | 3 | 5.4 | 2 | 8.7 | 1 | 2.4 | 3 | 3.8 | 9 |
| 2018-W20 | 4 | 7.1 | 0 | 0.0 | 2 | 4.9 | 6 | 7.7 | 12 |
| Total | 56 | 100.0 | 23 | 100.0 | 41 | 100.0 | 78 | 100.0 | 198 |

### Place

#### Descriptive

Cases by region and facility type

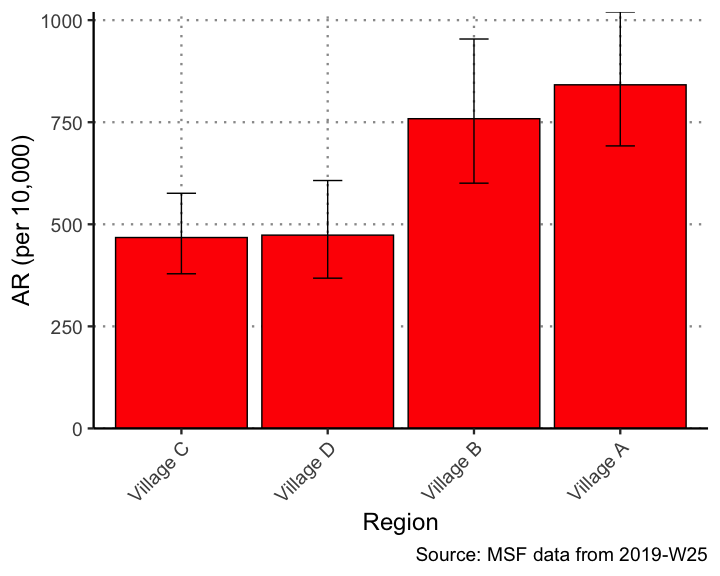
|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Region | Inpatient (n) | % | Outpatient (n) | % | Total |
| Village A | 56 | 28.3 | 37 | 36.3 | 93 |
| Village B | 48 | 24.2 | 18 | 17.6 | 66 |
| Village C | 54 | 27.3 | 29 | 28.4 | 83 |
| Village D | 40 | 20.2 | 18 | 17.6 | 58 |
| Total | 198 | 100.0 | 102 | 100.0 | 300 |

Inpatient discharges by reason for exit and region

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Region | Died (n) | % | Discharged (n) | % | Left (n) | % | Transferred (n) | % | Total |
| Village A | 16 | 28.6 | 11 | 47.8 | 7 | 17.1 | 22 | 28.2 | 56 |
| Village B | 10 | 17.9 | 7 | 30.4 | 15 | 36.6 | 16 | 20.5 | 48 |
| Village C | 20 | 35.7 | 3 | 13.0 | 11 | 26.8 | 20 | 25.6 | 54 |
| Village D | 10 | 17.9 | 2 | 8.7 | 8 | 19.5 | 20 | 25.6 | 40 |
| Total | 56 | 100.0 | 23 | 100.0 | 41 | 100.0 | 78 | 100.0 | 198 |

Attack rage per 10,000 population by region

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Region | Cases (n) | Population | AR (per 10,000) | 95%CI |
| Village A | 93 | 1,105 | 841.6 | (691.99–1020.08) |
| Village B | 66 | 870 | 758.6 | (600.72–953.81) |
| Village C | 83 | 1,775 | 467.6 | (378.79–575.99) |
| Village D | 58 | 1,225 | 473.5 | (368.04–607.20) |



Mortality rate per 10,000 population by region

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Region | Deaths | Population | Mortality (per 10,000) | 95%CI |
| Village A | 26 | 1105 | 235.3 | (161.07–342.53) |
| Village B | 18 | 870 | 206.9 | (131.27–324.67) |
| Village C | 29 | 1775 | 163.4 | (113.99–233.66) |
| Village D | 14 | 1225 | 114.3 | (68.20–190.92) |

#### Maps

