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Short Communication

# Emergence of Crimean-Congo hemorrhagic fever in Amreli District of Gujarat State, India, June to July 2013

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SUMMARY

Crimean-Congo hemorrhagic fever virus (CCHFV) etiology was detected in a family cluster (nine cases, including two deaths) in the village of Karyana, Amreli District, and also a fatal case in the village of Undra, Patan District, in Gujarat State, India. Anti-CCHFV IgG antibodies were detected in domestic animals from Karyana and adjoining villages. *Hyalomma* ticks from households were found to be positive for CCHF viral RNA. This confirms the emergence of CCHFV in new areas and the wide spread of this disease in Gujarat State.



## 1. Introduction

Crimean-Congo hemorrhagic fever (CCHF) is a severe acute febrile illness caused by the CCHF virus (CCHFV), with an overall case fatality of 9–50%.[1,2] CCHFV is widespread in Africa, Asia, Southeast Europe and the Middle East.[1,3] CCHF was first confirmed in India during 2010–2011, in Ahmadabad, Gujarat.[4] Person-to-person transmission and instances of nosocomial transmission were confirmed during 2010 (two cases), 2011 (eight cases), and 2012 (three cases).[5,6] In this article we describe a series of cases in an outbreak of CCHF occurring in Amreli District, Gujarat State during June–July 2013.

## 2. Case report

During the period June 23 to July 25, 2013, a cluster of suspected viral hemorrhagic fever (VHF) cases were reported in the village of Karyana, Amreli District, Gujarat State, India. There were fourteen reported cases, of which five were fatal. The primary case (case A) was a 90-year-old man, who presented on June 23 with fever, diarrhea, blood in the stools, and severe abdominal pain. After initial treatment at Amreli District Hospital, he died on June 25. His grandson (age 13 years, case B) was an index case who had close contact with case A and had a history of tick bite; he presented with fever on June 27. The wife of case A (age 85 years, case C) and his three daughters-in-law (age 60 years, case D; age 45 years, case E; age 23 years, case F) also developed fever (June 30) and hemorrhagic symptoms and signs (petechiae, per vaginal bleeding). Subsequently, another daughter-in-law (age 22 years, case G) and a son (age 40 years, case H) presented with fever and hemorrhagic symptoms and signs on July 2 and July 3, respectively. During the sickness period and during the funeral of case A, family members along with cases (B, C, D, E, F, G, H, I, J, K, L, M, and N) had regularly visited and stayed at the residence of case A (Table 1 and Fig. 1). Close family member contacts ($n$ = 75), along with family

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**Table 1**
CCHFV detection in viral hemorrhagic fever cases from in Karyana and Undra village, Gujarat, India

| NIV ID | Case | Sex | Age, years | Address | Onset date | Specimen collection date | POD, days | CCHF real-time RT-PCR (Ct value) | CCHF RT-PCR | CCHF IgM ELISA | Prognosis (died/recovered) | Date of event |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NA | A | M | 90 | Karyana | 23-Jun-13 | NA | NA | NA | NA | NA | Died | 25-Jun-13 |
| NIV1310777 | B | M | 13 | Karyana | 27-Jun-13 | 8-Jul-13 | 11 | Positive (38) | Positive | Positive | Recovered | 19-Jul-13 |
| NA | C | F | 85 | Karyana | 30-Jun-13 | NA | NA | NA | NA | NA | Died | 2-Jul-13 |
| NIV1310780 | D | F | 60 | Karyana | 30-Jun-13 | 6-Jul-13 | 6 | Positive (22.5) | Positive | Negative | Died | 6-Jul-13 |
| NIV1310779 | E | F | 45 | Karyana | 30-Jun-13 | 7-Jul-13 | 7 | Positive (29.7) | Positive | Positive | Recovered | 17-Jul-13 |
| NA | F | F | 23 | Karyana | 30-Jun-13 | NA | NA | NA | NA | NA | Died | 4-Jul-13 |
| NIV1310778 | G | F | 22 | Karyana | 2-Jul-13 | 8-Jul-13 | 6 | Positive (32.5) | Positive | Positive | Recovered | 19-Jul-13 |
| NIV1310776 | H | M | 40 | Karyana | 3-Jul-13 | 7-Jul-13 | 4 | Positive (22.5) | Positive | Negative | Died | 9-Jul-13 |
| NIV1311991 | I | F | 35 | Karyana | 2-Jul-13 | 24-Jul-13 | 22 | Negative | Negative | Negative | Recovered | 29-Jul-13 |
| NIV1310806 | J | M | 23 | Karyana | 7-Jul-13 | 9-Jul-13 | 2 | Positive (21.5) | Positive | Negative | Recovered | 23-Jul-13 |
| NIV1311122 | K | F | 50 | Karyana | 8-Jul-13 | 15-Jul-13 | 7 | Positive (29) | Positive | Negative | Recovered | 27-Jul-13 |
| NIV1310923 | L | M | 45 | Karyana | 8-Jul-13 | 11-Jul-13 | 3 | Negative | Negative | Negative | Recovered | 19-Jul-13 |
| NIV1311437 | M | F | 50 | Karyana | 10-Jul-13 | 16-Jul-13 | 6 | Positive (29.5) | Positive | Negative | Recovered | 26-Jul-13 |
| NIV1311581 | N | F | 35 | Karyana | 16-Jul-13 | 20-Jul-13 | 4 | Positive (30) | Positive | ND | Recovered | 31-Jul-13 |
| NIV1311579 | O | F | 68 | Undra (Patan) | 11-Jul-13 | 18-Jul-13 | 7 | Positive (30.4) | Positive | Negative | Died | 20-Jul-13 |

CCHFV, Crimean-Congo hemorrhagic fever virus; NIV, National Institute of Virology; POD, post-onset day of testing the serum; Ct, cycle threshold; M, male; F, female; NA, sample not available; ND, not done.

relatives ($n$ = 280), had stayed briefly in the house of the primary case during the funeral and other rituals following his death (Fig. 1). The secondary attack rate was 3.7% and the primary attack rate was 0.3%.

Case C died on post-onset day 2 due to cardio-respiratory arrest and case F died on post-onset day 4 due to hemorrhagic shock. Serum samples from suspected VHF cases were tested for dengue NS1 and IgM antibody and were referred to the National Institute

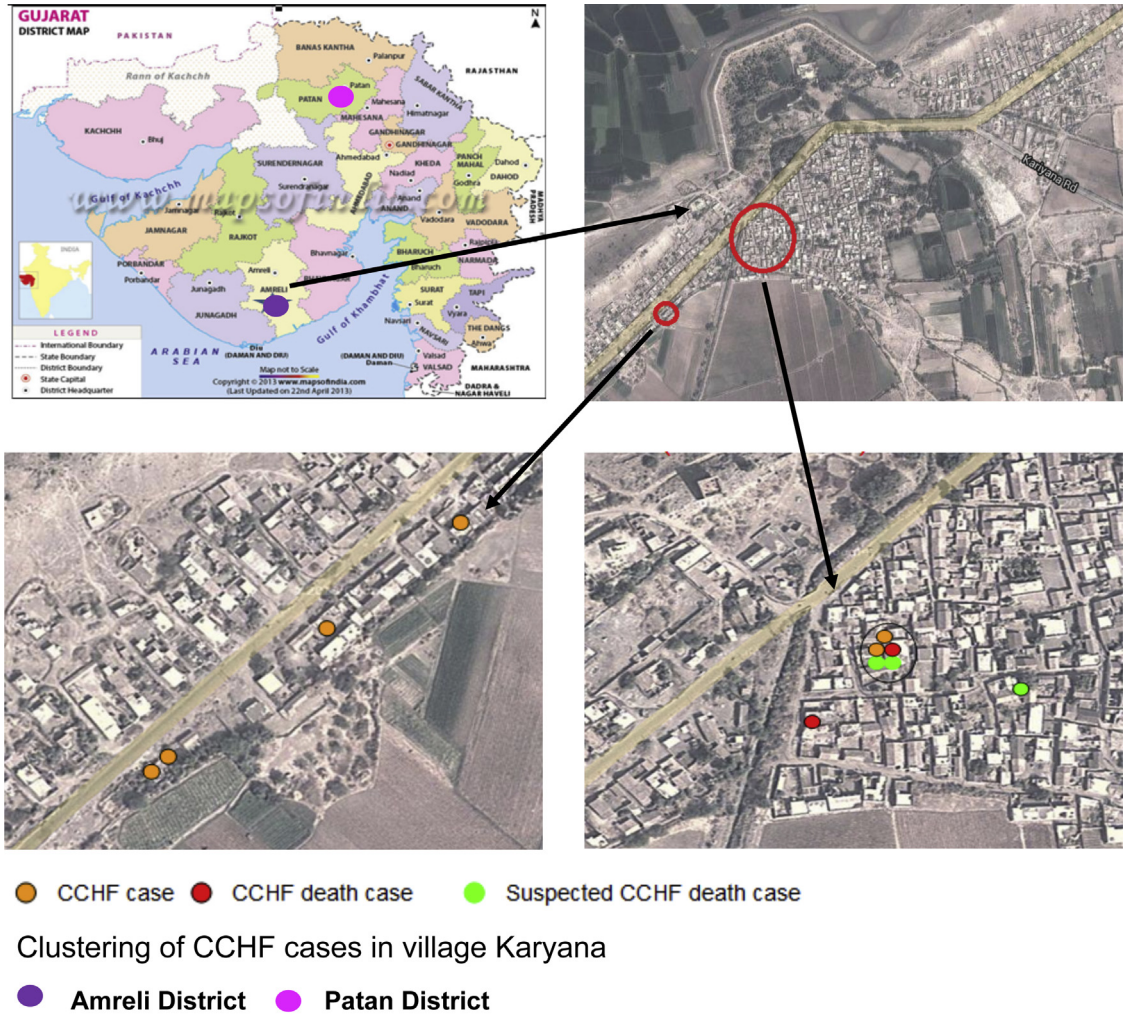


**Figure 1.** Geographical distribution of Crimean-Congo hemorrhagic fever cases in the villages of Karyana, Amreli District, and Undra, Patan District, in Gujarat.