# Crimean-Congo haemorrhagic fever

Two people recently tested positive for Crimean-Congo haemorrhagic fever (CCHF) in South Africa.

In the first case, CCHF was confirmed in a 56-year-old farmer from Ventersdorp, North West Province, in early February 2020. The man had multiple tick exposures (bites and squashing of ticks) from his livestock. He presented to a healthcare facility in Ventersdorp on 7 February 2020 with acute fever, rigors, headache, malaise, abdominal, back and body pains. The next day, he was transferred to Klerksdorp hospital for treatment and was isolated on suspicion of a CCHF virus infection. Laboratory confirmation was done on 8 February 2020 by PCR. Antibody response was detected from samples collected on 13 February 2020 – immunoglobulin G (IgG) at titre 1:1000 and IgM at titre 1:10. The patient still had positive PCR result at that time. CCHF PCR was negative on 17 February 2020, and immune response remained the same. The man has since been discharged from the hospital and is recovering at home.

The second case, also 56 years of age, contracted CCHF from crushing ticks in an area in the Free State and Northern Cape provinces where he had recently visited. He became ill with fever and body pains on 19 February 2020 while attending a congress in Skukuza, Kruger National Park, Mpumalanga Province. He visited the local general practitioner on 20 February 2020 in Skukuza who immediately notified the NICD for investigation. A diagnosis of CCHF was confirmed by laboratory testing at the NICD on 21 February 2020. He is currently receiving medical care in a hospital in Gauteng Province.

These were the first cases of CCHF reported for South Africa in 2020 to date. In the previous year, three cases of CCHF were confirmed, one each from the Free State, Northern Cape and North West provinces.

To date, 217 CCHF cases have been laboratory confirmed since first detection of CCHF in the country in 1981. Majority of the cases occurred from tick exposures in farmers from the Free State, Northern Cape and North West provinces. CCHF is a serious illness in humans with a case-fatality-ratio of 24% recorded amongst laboratory-confirmed cases. At present, there is no vaccine or effective anti-viral therapeutic available. Clothing and protective worn for job-related occupational safety and health purposes (overall, apron, boots, gloves and other) referred to as personal protective equipment (PPE), can prevent CCHF infection from tick or animal blood/products exposure. Laboratory and health facility staff should institute special infection control measures and isolation precautions when managing suspected or confirmed cases of CCHF. More information on CCHF is accessible from www.nicd.ac.za.

**Article source:** Centre for Emerging Zoonotic and Parasitic Diseases, NICD-NHLS; januszp@nicd.ac.za

## VACCINE-PREVENTABLE DISEASES

# Cutaneous diphtheria caused by toxin-producing *Corynebacterium diphtheriae,* Eastern Cape Province

A 49-year-old female from Kirkwood, Sarah Baartman District, Eastern Cape Province, was diagnosed on 16 January 2020 with cutaneous diphtheria due to a toxin-producing *Corynebacterium diphtheriae*. The patient presented to the general practitioner on 7 January 2020 and was referred to a local hospital for management of septic ulcers and cellulitis on the left lower leg. On admission, the patient complained of a long-standing ulcer on the left lower leg which started in June 2019, with episodes of healing and recurring ulcers. On 21 December, she experienced severe pain radiating up to the thigh, fever and chills. On 22 December 2020, she developed swelling of the left lower leg, which subsided after a few days. Meanwhile, the wound progressively got worse with foul-smelling discharge and smaller ulcers developing around the chronic ulcer. During this period, she tried self-medication, including cleaning the wound with salt and water or water with Dettol.

The patient is immune-compromised and reportedly defaulted treatment three years ago. She has no other underlying medical conditions. She was initially admitted in a general ward, a wound swab was taken for culture and a 5-day course of intravenous antibiotic treatment (metronidazole and cefazolin) was initiated, followed by oral flucloxacillin. The wound improved and discharge from hospital was initially planned for 14 January 2020. However, provisional culture results from local laboratory received on 14 January were positive for *Streptococcus pyogenes* and *C. diphtheriae*. Results from the wound swab received from NICD on 16 January 2020 confirmed toxin-producing *C. diphtheriae*, at which point the patient was transferred to an isolation ward and the antibiotic agent was changed to oral penicillin. Further clinical examination at this time revealed multiple ulcers >2 cm in diameter (Figure 3A), with no clinical manifestation of systemic diphtheria disease. The ulcers continued to heal slowly (Figure 3B). The patient was discharged on 24 January 2020.

From 20 December 2019 until 7 January 2020, the patient was in close contact with five family members. Contact tracing was conducted and collection of oropharyngeal swabs from 15 hospital contacts was performed. A home visit was conducted on 21 January 2020; however, none of the family contacts were swabbed or given prophylaxis. Chemoprophylaxis was administered to all hospital contacts from 20-22 January 2020. All 15 hospital contacts with samples taken tested negative for *C. diphtheriae*. Repeat samples from patient ulcers and oropharyngeal samples collected on 20 January 2020 were negative for *C. diphtheriae*.

Diphtheria is caused by *C. diphtheriae,* and presents most commonly as a membranous pharyngitis, although other presentations such as cutaneous disease also occur. The organism produces a toxin that causes necrosis of tissues, leading to respiratory obstruction, and myocarditis which can be complicated by heart failure and death. Cutaneous diphtheria can be caused by both toxigenic and non-toxigenic strains, and the lesions usually appear on exposed body parts. The lesions start as vesicles and quickly form small, clearly demarcated ulcers. The lesions of cutaneous diphtheria can be a source of life-threatening respiratory infection in inadequately immunised people. Cutaneous diphtheria with toxigenic strains can be associated with toxin mediated complications and death. Bacterial co-infection of cutaneous diphtheria lesions is common, most notably with *Staphylococcus aureus* and *Streptococcus pyogenes*. This may lead to delay in diagnosis of cutaneous diphtheria. Skin ulcers not responding to conventional antibiotic treatment should be investigated for rarer causes such as cutaneous diphtheria.

Diphtheria (respiratory and cutaneous) is a category 1 notifiable medical condition (NMC); health workers are required to notify a suspected case of diphtheria within 24 hours of making the diagnosis by completing the NMC case notification form or logging it directly using the NMC App. Forms are to be emailed to NMCSurveillanceReport@nicd.ac.za and to local or district Communicable Diseases Control focal person. Contact tracing of close contacts of all positive cases is important and nasopharyngeal/oropharyngeal swabs should be collected before administration of chemoprophylaxis as asymptomatic contacts may be reservoirs of toxigenic *C. diphtheriae*.


**3A.** Left leg of patient 16 January 2020

**3B.** Left leg of patient 20 January 2020

**Figure 3A and 3B.** Pictures of left leg with cutaneous diphtheria, curtesy Dr Kom, picture 3A taken on 16 January 2020 and picture 3B on 20 January 2020

Article source: Centre for Respiratory Diseases and Meningitis, NICD-NHLS; cherylc@nicd.ac.za