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CONTENTS

Crimean-Congo haemorrhagic fever

Two cases of Crimean-Congo haemorrhagic fever (CCHF) acquired in South Africa have been laboratory confirmed in January 2013.

On 1 January 2013, a 31-year-old male working as a game warden on private game ranch near Jagersfontein (Free State Province) presented with clinical features suggestive of CCHF. The patient did not report any tick bites or direct exposure to unprocessed meat or slaughtering of animals. The Centre for Emerging and Zoonotic Diseases of the NICD/NHLS confirmed infection with CCHF virus by PCR and serology testing.

A second case of CCHF was laboratory confirmed on 12 January 2013 in a 44-year-old male hospitalised in Bloemfontein, Free State Province. He had been on a farm in Pomfret, North West Province (situated ±5 km from the border with Botswana), where he was bitten by a tick. Three days later he developed symptoms, and presented with fever, rash, conjunctivitis and pharyngitis.

No laboratory-confirmed cases were identified in 2011-2012. Human CCHF cases have been reported annually from South Africa since 1981, when it was first recognised in the country; between 0 and 20 cases of CCHF are diagnosed each year. Through nearly thirty years of passive surveillance, a total of 187 cases has been laboratory confirmed. Although cases have been reported from all of the nine provinces, more than half of the cases originate from the semi-arid areas of Northern Cape Province (31.5% of cases) and Free State Province (23% of cases).

CCHF infection is generally asymptomatic in many species of wildlife (including antelope) and livestock animals (including cattle, sheep, goats, hares and ostriches). Humans become infected sporadically by ticks, particularly *Hyalomma* ticks, which are both reservoirs and vectors for CCHF virus. Other modes of transmission include direct contact with blood/tissues of infected animals, and in the case of healthcare workers, through direct contact with the blood/tissue of infected patients; nosocomial outbreaks are well described and have been associated with high mortality rates. Disease may be severe in people, with case-fatality rates reported as 3 - 30% across various studies.

Detailed information for healthcare workers regarding CCHF can be found on the NICD website http://www.nicd.ac.za/ (see FAQ).

Source: Centre for Emerging and Zoonotic Diseases, and Division of Public Health Surveillance and Response, NICD-NHLS.

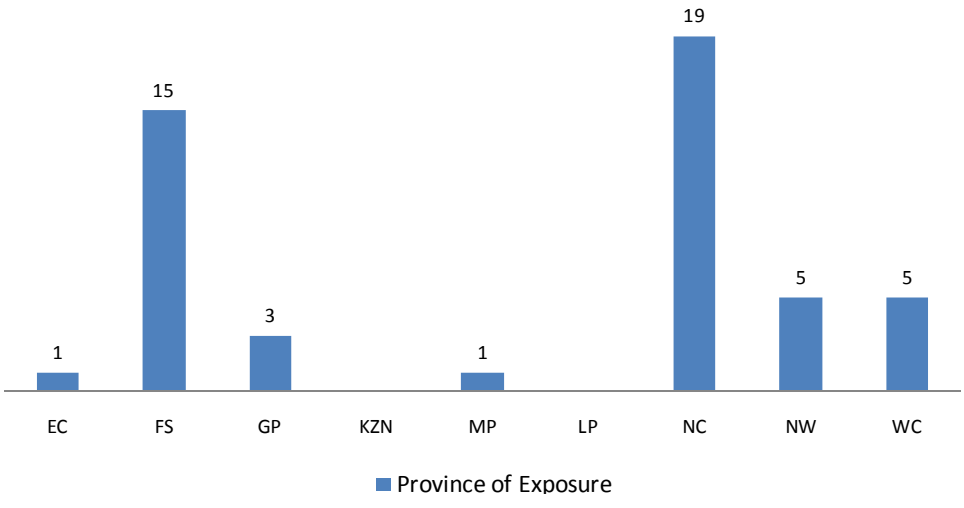

Figure. Laboratory-confirmed Crimean-Congo haemorrhagic fever cases, South Africa, 2000-2012

Odyssean malaria in Gauteng Province

Odyssean malaria is the acquisition of malaria in a non-endemic area by the bite of an imported mosquito. This rare phenomenon has been given many names, including airport-, baggage-, container-, port-, taxi-rank-, and minibus-malaria, all of which describe a variety of routes by which a mosquito may be imported to a non-endemic area and transmit infection. Such mosquitoes may survive up to three weeks depending on environmental conditions, and if infected, have the potential to transmit malaria to humans. The malaria parasite is transmitted by certain species of *Anopheles* mosquitoes, which are commonly found in the lowveld but are not adapted to highveld conditions and so do not naturally occur in Gauteng Province. It can and does, however, travel from malarious areas by various means of transport. During January 2013, two clusters of confirmed *Plasmodium falciparum* malaria cases were reported in persons resident in Gauteng Province, who had no history of travel to areas with malaria transmission risk.

A husband and wife living on a plot in Donkerhoek/Mooiplaats (Tshwane District, Gauteng Province) experienced the onset of flu-like symptoms on 22 December 2012. The husband (46 years old) developed chest pain for which he was admitted to Steve Biko Academic Hospital. His wife (34 years old) collapsed at home and was admitted to Steve Biko Academic Hospital the following day. Despite the absence of a travel history, *P. falciparum* antigen tests and malaria smears were requested in both cases by the attending clinicians. *P. falciparum* antigen tests were positive in both cases, with parasitaemia counts of 2% and <1% reported for the wife and husband respectively. Both had complications necessitating ICU care.

A 46-year-old female living on the neighbouring plot in Donkerhoek/Mooiplaats became ill on 25 December 2012 whilst on a cruise on the Orange River in Namibia. Her symptoms worsened and she was taken to a healthcare facility in the Northern Cape on 01 January 2013 where she was treated for 'exhaustion'. On return home, she was admitted to Steve Biko Academic Hospital on 04 January 2013, critically ill. Investigations were done to exclude malaria; the *P.falciparum* antigen test was positive, and a parasitaemia of 23% noted. Unfortunately, this patient had numerous malaria-related complications and died three days later.

The second cluster was reported on 17 January 2013. Three cases of laboratory-confirmed malaria were reported by the infection prevention and control practitioner at Arwyp Hospital, Kempton Park (Ekurhuleni District, Gauteng Province). A 30-year-old female was admitted on 13 January 2013 and subsequently diagnosed with cerebral malaria (*P. falciparum* antigen positive; 33.4% parasitaemia). Her only history of travel was to Rustenburg for two days over Christmas. A 41-year-old male was admitted on 16 January 2013 and diagnosed with malaria (positive *P. falciparum* antigen test, 0.8% parasitaemia); he subsequently required ICU care. His 12-year-old son was admitted on 17 January 2012, and malaria tests were also positive (*P. falciparum* antigen test positive, 3.5% parasitaemia); fortunately he developed no complications. The father and son live together in a Kempton Park suburb, and their residence is merely a few blocks from the residence of the first case.

These two clusters of cases highlight the need for healthcare workers to be vigilant, and malaria should always be considered in patients with unexplained fever even in the absence of a suggestive travel history.

Road transport from malarious areas is a source of translocated vectors. Gauteng Province is a non-transmission area because of its altitude and climate. Within it, the Johannesburg-Pretoria metropole is the destination of a large volume of road passenger traffic from neighbouring countries, mainly Mozambique and Zimbabwe, as well as from other malaria risk regions within South Africa. Between 1996 and 2004, a total of 46 cases of malaria was identified in residents who had not traveled to known risk areas (Table), as well as several cases subsequently. Note the high mortality rate of these cases compared with the national malaria mortality rate. Although there is a major international airport in the area, there was no clustering of cases in its vicinity, and we believe that most, if not all, patients were infected by vector mosquitoes transported by minibus taxis/road transport. During the period there were, in addition, 2 cases of induced malaria (one each of needle and transfusion malaria), which is a reminder that mechanical transmission of malaria is possible, although rare.

Table. Odyssean Malaria in Gauteng Province, South Africa, 1996 – 2004

Total number of cases identified	46
Median time (range) to diagnosis after onset	6 days (1 – 11 days)
Most frequent initial clinical diagnoses	Influenza, viral hepatitis, septicaemia
Proportion of patients with thrombocytopenia	80%
Malaria species involved	All *Plasmodium falciparum*
Case fatality rate	12%
National malaria case fatality rate (1999 - 2005)	0.6 – 1%

The importance of odyssean malaria cases is related to the frequent delayed or missed diagnosis of the cause of illness in affected patients, with resulting high rates of complications and mortality. The absence of a history of travel to a malaria-endemic area is almost always responsible for this. In some cases, the diagnosis is only made at autopsy.

Malaria parasites should routinely be sought in one or more successive blood films of any febrile patient in whom a diagnosis is not readily apparent, especially if the platelet count is low. Clinicians should specifically request malaria examinations and should not assume that these will automatically be done when a full blood count is requested. Since thrombocytopenia is a very common (but not invariable) finding in patients with both uncomplicated and severe malaria, its unexplained presence in a febrile patient should alert one to the possibility of malaria. Quantitative parasite counts should always be requested as these give an indication of the severity of illness and are useful in showing the response to treatment. The presence of falciparum gametocytes on blood films is indicative of the presence of malaria infection of at least 10 days' duration (but frequently 3 weeks or longer).

Reference

Frean J, Blumberg L. Odyssean and Non-Mosquito-transmitted Forms of Malaria. In: Schlagenhauf-Lawlor P (ed). (2008) Travelers' Malaria (2nd ed). BC Decker, Hamilton, Ontario.

Source: Division of Public Health Surveillance and Response and Centre for Opportunistic, Tropical & Hospital Infections, NICD-NHLS; NHLS Steve Biko Academic Hospital; City of Tshwane Health; Arwyp Hospital

Dengue fever

A 27-year-old South African woman, who had been resident in the United Kingdom for the past four years, travelled to South-East Asia for three weeks during December 2012, She visited Bangkok and a number of islands in Thailand (including Phuket, Krabi and Phi Phi), and then on to Vietnam where she visited Hanoi and the northern region, travelling by scooter. On the return flight to South Africa she developed fever, myalgia, arthralgia and severe headache. These symptoms resolved after three days; however, she then experienced a progressive illness characterised by recurrent fever, palmar and plantar erythema and hypersensitivity, and abdominal pain. This was accompanied by a progressive thrombocytopenia (decrease from 121 x 10^9/L to 38 x 10^9/L over three days), leucopenia (initial count of 6.3 x 10^9/L which decreased to 2.74 x 10^9/L) with an absolute lymphocytosis, and transaminasemia (peak AST 286 IU/L, ALT 172 IU/L). These findings together with the travel history prompted testing for dengue fever with a resultant positive PCR and an initial low positive IgM. Malaria, typhoid and scrub typhus were initially considered in the differential diagnosis. The presence of abdominal pain and the rapid decrease in platelet counts were concerning features as they are included in the list of 'warning signs' for developing complicated dengue fever. Fortunately, the patient made an uneventful recovery.

Dengue must be considered in the differential diagnosis of acute febrile illness in travellers returning from dengue-endemic areas in Asia, Africa, and Central and South America.

Further information regarding the diagnosis and treatment of dengue can be accessed at: http://whqlibdoc.who.int/

Source: South African National Travel Health network, Division of Public Health Surveillance and Response, and Centre for Emerging and Zoonotic Diseases, NICD-NHLS; Lancet Laboratories.

BEYOND OUR BORDERS: INFECTIOUS DISEASE RISKS FOR TRAVELLERS

The 'beyond our borders' column focuses on selected and current international diseases that may affect South Africans travelling abroad.

Disease & Countries	Comments	Advice to travellers
Dengue fever: Portugal (Madeira)	As of 9 December 2012, 2 050 cases of dengue fever have been reported in Madeira.	Dengue viruses are transmitted by *Aedes* spp mosquitoes, which usually bite during daytime. There are no available vaccines. When travelling to a dengue-risk area, use mosquito repellents containing DEET to avoid being bitten. Wear long-sleeved pants and shirts during the day and stay in well-ventilated (fan/air-conditioned) rooms where possible. Burning mosquito coils at night and sleeping under a mosquito net in a well-ventilated room is also helpful.
Yellow Fever: Sudan (Darfur)	As of 9 January 2013, a total of 849 suspected cases, including 171 deaths, has been reported. The outbreak has affected mostly Central, North, West and South Darfur.	Yellow fever is an acute viral haemorrhagic disease transmitted by infected mosquitoes. Symptoms appear after an incubation period of 3 to 6 days. Symptoms include fever, muscle pain with prominent backache, and headache. Most patients improve and their symptoms resolve after 3 to 4 days. However, 15% of patients enter a second, more toxic phase within 24 hours of the initial remission. High fever returns and is accompanied by severe multisystem illness (including icteric hepatitis and haemorrhagic diathesis). Travellers to at-risk yellow fever areas need to have proof either of yellow fever vaccination or a medical waiver certificate. The vaccine must be received at least 10 days prior to departure. The vaccine is contraindicated in pregnant women, infants <9 months, individuals with egg allergies, and certain immune-suppressed persons. Vaccinated travellers should still take precautionary measures to avoid being bitten by mosquitoes, including use of insect repellents (containing 30-50% DEET), wearing light-coloured clothing, and use of insecticide-treated bed nets.

Disease & Countries	Comments	Advice to travellers
Anthrax: Zimbabwe (Masvosva)	As of 11 January 2013, 20 human cases have been confirmed in Masvosva, Zimbabwe. Nearly 40 cases are reported to have been exposed to meat from infected animals.	Anthrax is a zonotic disease caused by the bacterium *Bacillus anthracis*. The disease is most common in cattle, sheep, antelopes and other herbivores. Infection in humans is usually acquired from occupational contact with infected animal products, including consumption of contaminated meat. There is no risk of person-to-person transmission. Anthrax infection can occur in three forms: cutaneous, inhalation and intestinal. Symptoms usually occur within seven days of exposure. In cutaneous disease, the characteristic presentation is a small skin lesion that ulcerates, with surrounding vesicles and marked swelling, soon forming a black scab; inhalational disease presents as flu-like symptoms that progress to severe respiratory distress and shock; and vomiting, loss of appetite, fever, abdominal pain and diarrhoea are presenting features in intestinal disease. Travellers should avoid eating undercooked meat from sick animals or animals that were found dead.

Source: Division of Public Health Surveillance and Response, NICD-NHLS.

References and additional reading:

- ProMED-Mail (www.promedmail.org)
- World Health Organization (www.who.int)
- Centers for Disease Control and Prevention (www.cdc.gov)

Last accessed: 15 January 2013.