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## **EDITORIAL**

In this first issue of the NICD Communiqué of 2019, in addition to our usual contributions, we describe a number of travel-associated cases of disease, and provide overviews of the case burden of rabies and Crimean-Congo haemorrhagic fever (CCHF) for 2019.

Two cases of trypanosomiasis were diagnosed and treated in Johannesburg amongst persons resident in Zambia and Malawi respectively. Dengue fever was diagnosed in five returning travellers from East Africa, South America and South-East Asia. Malaria was diagnosed in 11 persons resident in Gauteng Province without a travel history. In the absence of travel, and where entomological assessment of the place of residence fails to identify local breeding sites of *Anopheles* vectors, these cases are deemed to have occurred when a malaria-infected mosquito is brought into the area (e.g. in vehicles or luggage), and are termed 'odyssean malaria'.

Alarming, the number of cases of human rabies in 2018 (n=16) was the highest in the last 10 years, with eight cases from KwaZulu-Natal, six from Eastern Cape, and one each from Mpumalanga and Free State provinces. This resurgence is due to

increasing difficulties in containing canine rabies in these provinces. Our frequently-asked questions section describes 'expert opinion' regarding the provision of rabies post-exposure prophylaxis following saliva splash to the mucous membranes.

On the subcontinent, the Ebola outbreak continues in the DRC, with a new epi-centre emerging in Katwa. Local security concerns are limiting disease-containment measures. Two circulating vaccine-derived polio virus cases were detected in the northern province of Zambezia, Mozambique, where public health measures are ongoing. Almost 20 000 measles cases have been reported from Madagascar. In Zimbabwe, cases of cholera continue to be reported, although case numbers are not available, and the typhoid outbreak in Harare has resurged.

As usual, we include the WHO-AFRO infographic on public health and humanitarian events in the AFRO region.

## 1 ZONOTIC AND VECTOR-BORNE DISEASES

### a An update on rabies in South Africa

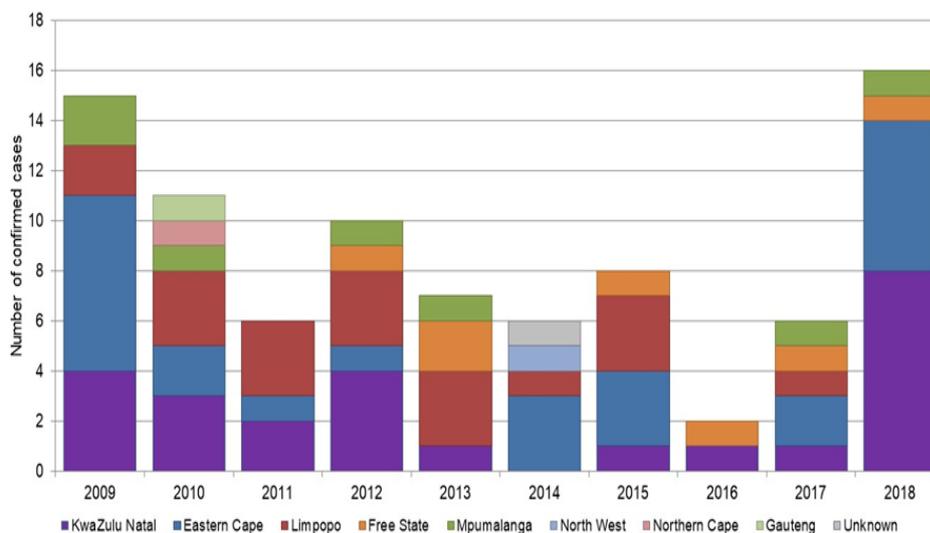
In 2018, there were sixteen human cases of rabies confirmed for South Africa (Figure 1). These cases were reported from KwaZulu-Natal (n=8), Eastern Cape (n=6), Mpumalanga (n=1) and Free State (n=1) provinces. Most of the cases were associated with dog exposures (n=12), and two were linked to cat exposures.

Since the previous report, rabies was confirmed in a woman from a farm in Senekal, Free State Province. She developed rabies after being scratched on the fingers by a stray cat. The patient reportedly sought medical treatment, and started rabies post-exposure prophylaxis. She received two of the four required doses of rabies vaccine, and reportedly no rabies immunoglobulin. Rabies was confirmed by fluorescent antibody test on post-mortem-collected brain sample. This is the third

case of rabies reported in the Free State since December 2017. Two cases, one confirmed and one suspected, were reported from Welkom in December 2017. An increase in the number of animal rabies cases has been noted in the southern areas (Thabo Mofutsanyana and Mangaung districts) of the Free State Province bordering with Lesotho.

Rabies in humans is preventable through post-exposure prophylaxis. For more information regarding the treatment and other important facts on rabies, please visit the NICD website: [www.nicd.ac.za](http://www.nicd.ac.za)

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



**Figure 1.** Confirmed human cases of rabies in South Africa, 2009-2018. Number increased substantially in 2018 compared to previous five years due to canine outbreaks in KwaZulu-Natal and Eastern Cape provinces.

### b An update on CCHF

A case of Crimean-Congo haemorrhagic fever (CCHF) was confirmed in January 2019. The patient, a 53-year-old male, was a veterinarian from the Free State Province. He reported contact with ticks following veterinary care given to a diseased flock of sheep in Ventersburg. The patient reported removing ticks from the sheep, but also had contact with pus and blood oozing from sores on the sheep. Two days later, he developed fever, headache and myalgia and self-medicated with veterinary-use doxycycline. Three days after this, he presented to a healthcare facility in Bloemfontein as he was not responding to the antibiotic treatment. Following admission, blood screens indicated leukopenia ( $1.83 \times 10^9/L$ ), raised AST (100 IU/L) but normal ALT and GGT, and thrombocytopenia ( $48 \times 10^9/L$ ). A clinical diagnosis of CCHF was made, the patient was isolated and treatment started with the antiviral, ribavirin. Crimean-Congo haemorrhagic fever was con-

firmed by RT-PCR and follow-up serological testing. The patient seroconverted, developing anti-CCHF IgG and IgM responses within 10 days following onset. The patient recovered and was discharged from hospital.

In 2018, two laboratory-confirmed CCHF cases involved a farmer and veterinary professional from the Free State and North-West provinces respectively. In both cases, exposures to ticks were reported. No fatalities associated with CCHF in South Africa have been recorded since 2017. More information on Crimean-Congo haemorrhagic fever is available from the NICD website ([www.nicd.ac.za](http://www.nicd.ac.za))

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

### c East African trypanosomiasis

East African trypanosomiasis [EAT] was confirmed in two patients admitted to a Johannesburg hospital in December 2018. Both presented with acute febrile illness; rapid progression of illness to multi-system involvement prompted medical evacuation. Both patients required admission to a critical care unit for supportive care and suramin therapy.

Patient 1 was a 24-year-old male working in the Luauno Game Management Area, adjoining the northern boundary of the Lower Zambezi Game Park, Zambia. He self-tested for malaria (negative RDT) after developing a fever, and travelled to Lusaka, the capital, after not responding to empiric malaria treatment. He had a typical trypanosomal chancre. The diagnosis of EAT was promptly confirmed on a peripheral smear; suramin was commenced, and medical evacuation to South Africa was arranged for management of complications of EAT. These included profound thrombocytopenia (platelet count of  $16 \times 10^9/L$ ) but no bleeding, raised transaminases (3 times normal), acute respiratory distress syndrome (ARDS) requiring nasal oxygen, and some initial confusion. This patient responded very well to treatment, including diuresis, platelet transfusions, and a course of suramin therapy. An examination of the cerebrospinal fluid excluded the presence of central nervous involvement.

Patient 2 was a 24-year-old from the United Kingdom working as a volunteer on an elephant census project in the Vwaza Marsh Wildlife Reserve, Malawi. He developed an acute febrile illness and was seen at a number of clinics over several days; malaria tests were reported as negative. He was treated with antibiotics but deteriorated and was transferred in a critical condition with liver failure (transaminases >100 times normal value), haemodynamic shock (but no definite myocarditis), encephalopathy and seizures, severe lactic acidosis, lower lobe pneumonia and ARDS, disseminated intravascular coagulopathy with bleeding, and renal failure. The patient had a typical trypanosomal chancre on his back, which seems to have been missed during his medical consultations in Malawi. The diagnosis of EAT was confirmed on a peripheral blood smear.

The intense parasitaemia initially seen on admission reduced significantly in response to suramin therapy. Despite ventilatory and inotropic support, dialysis, platelet and clotting factor replacement, the patient's condition continued to deteriorate and he demised. Liver failure, possibly as a result of a period of severe hypotension prior to admission, would seem to have been the major clinical problem.

While malaria is still the most frequent infection to consider, trypanosomiasis must be contemplated urgently in the differential diagnosis of progressive, acute febrile illness in persons living, working or travelling to trypanosomiasis-endemic areas. Both game parks are well-known areas for EAT, especially the Vwaza Marsh Wildlife Reserve in Malawi. A history of tsetse fly bites, the presence of a skin lesion – the trypanosomal chancre (often misdiagnosed as an eschar of African tick bite fever, a spider bite, or cellulitis) – and negative malaria RDTs, should strongly suggest a diagnosis of EAT.

The diagnosis can be confirmed on a peripheral blood smear, but this may not always be done in the setting where the patient is first seen, and repeat smears may be required. While the disease is uncommon, early consideration of this diagnosis is critical, as rapid progression to complicated disease is typical, and patients require urgent treatment with suramin and supportive care. WHO-supplied stocks of suramin are available in Johannesburg, South Africa; Harare, Zimbabwe; and Lusaka, Zambia.

Reference: Frean J, Sieling W, Pahad H, Shoul E, Blumberg L. Clinical management of East African trypanosomiasis in South Africa: Lessons learned. *International Journal of Infectious Diseases* (2018) 75: 101-108. [<https://doi.org/10.1016/j.ijid.2018.08.012>]

**Source:** Centre for Emerging Zoonotic and Parasitic Diseases, NICD-NHLS; Private Hospital in Johannesburg; [johnf@nicd.ac.za](mailto:johnf@nicd.ac.za)

### d Dengue fever in returning travellers

Dengue fever is not endemic in South Africa, and therefore local transmission does not occur. Cases seen in the country are from travellers returning from dengue-endemic regions such as South-East Asia, the Western Pacific, the Americas (Central and the northern parts of South America), Central, West and East Africa and the Eastern Mediterranean. Dengue fever was diagnosed in a small number of returning travellers in December 2018 and January 2019.

Dengue fever was confirmed in two patients by PCR, in December 2018. One case was a 50-year-old male from Cape Town who travelled to

Mombasa, Kenya, and presented with a 4-day illness characterised by arthralgia, photophobia, fever and headache. The patient also reported maculopapular rash on the face, arm and trunk. The second case was a 54-year-old male from Cape Town who travelled to Somalia, and presented with fever, myalgia, arthralgia and headache. This patient did not report any rash.

Probable dengue cases were detected in three patients by dengue serology. One case was a 20-year-old female from Centurion, Pretoria who travelled to Phuket, Thailand in November 2018. The patient presented with a fever, headache,

vomiting and a rash on the legs. The second case was a 32-year-old male from Somerset West who travelled to Central America and the Philippines at the end of 2018. The patient presented with headache, fever and a maculopapular rash on the arms and legs. The third case was a 27-year-old male from Durban, who travelled to Vietnam in January 2019 and presented with a fever, severe bone pain and rigors.

Physicians should be alert to returning travellers presenting with fever, rash, arthralgia, myalgia and

headache at this time of the year. There is no specific treatment for dengue fever apart from symptomatic management. Mosquito control and prevention of bites are essential in reducing dengue virus infection.

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

## 2 ENTERIC DISEASES

### a An update on cholera and typhoid fever

#### **Update on the cholera and typhoid outbreaks in Zimbabwe**

On 6 September 2018, a cholera outbreak was declared in Harare by the Ministry of Health of Zimbabwe. As at 16 January 2019, the cumulative number of cholera cases was 10 680 including 68 deaths. There has been an overall decline in the number of new cases reported per week across the country since the end of December 2018.

There has been a resurgence of typhoid fever in Harare since mid-September 2018. As at 09 December 2018, a cumulative total of 5 159 cases (including 15 deaths) was reported. The weekly incidence reportedly peaked in week 41 (week ending 14 October 2018) and has since been declining gradually.

#### **Cholera in South Africa**

Cholera is not endemic in South Africa. Infrequent, sporadic cholera cases are reported and are typically imported (travel-related). The notable exception is the 2008-2009 cholera outbreak which began as a spill-over from neighbouring Zimbabwe. During 2018, five laboratory-confirmed cases of cholera were reported in the country, including imported cases from Zimbabwe. Cases were detailed in previous NICD Communiqués: February 2018, Vol.17(2), October 2018, Vol.17(10), November 2018, Vol.17(11) - can be accessed on the NICD website:

<http://www.nicd.ac.za/index.php/publications/nicd-nhls-communicable-diseases-communicue/archives/>  
To date, no cholera cases have been reported for 2019.

#### **Typhoid fever in South Africa**

Typhoid fever remains endemic in South Africa. Typhoid outbreaks occurred in 2005-2006, but since then the number of culture-confirmed typhoid fever cases annually has remained stable at <150 cases per year. Most cases are typically sporadic, but small clusters and localised outbreaks do occur. Although imported travel-related cases are reported, the majority of cases are locally acquired, reflecting ongoing, albeit low-level, transmission. A recent imported case serves as a reminder to be alert for the disease in travellers from areas with high transmission or current outbreaks. A 19-year-old male who lives in Bulawayo, Zimbabwe,

travelled to South Africa for elective orthopaedic surgery. He was admitted on 17 December 2018, but surgery was delayed due to persistent pyrexia (>40°C) with no overt source. *Salmonella* Typhi (*S. Typhi*) was isolated from blood cultures collected five days after admission. He received appropriate antibiotic treatment and was discharged on 10 January 2019. No other imported typhoid fever cases linked to the Zimbabwean outbreak have been identified. For the year 2019 to date, two laboratory-confirmed cases (both locally acquired) have been reported.

#### **Alert for healthcare workers**

Heightened awareness for possible cholera and typhoid fever cases must be maintained whilst the outbreaks continue in Zimbabwe, and especially so given the current social unrest and economic crisis, which could disrupt outbreak control activities and result in increased travel to South Africa. All suspected cases of cholera and typhoid fever should be investigated and notified immediately to the relevant stakeholders.

**Cholera:** cholera should be excluded in any patient who develops acute watery diarrhoea with or without vomiting. Stool samples (or rectal swab samples where stool sample collection is problematic) must be collected and submitted with a specific request for cholera testing, in addition to routine MCS requests. If a delay in testing or transport of specimens is anticipated, specimens should be submitted in Cary-Blair transport media. Guidance on sample collection can be found at: [http://www.nicd.ac.za/assets/files/Suspected%20cholera\\_guidelines%20\(2\\_2\).pdf](http://www.nicd.ac.za/assets/files/Suspected%20cholera_guidelines%20(2_2).pdf).

Mild-to-moderate cholera cases may be treated with oral rehydration fluid. Severe cases require admission and intravenous fluid administration. Antibiotic treatment is recommended for patients with moderate to severe dehydration, as it reduces disease severity and the risk of further transmission. Azithromycin is recommended for cases linked to the current Zimbabwean outbreak.

**Typhoid fever:** Unfortunately, typhoid fever often presents with non-specific features and may mimic many other febrile diseases. Clinical features are protean, and include fever, white-coated tongue, gastrointestinal symptoms (abdominal pain,

nausea/vomiting, constipation, diarrhoea), hepatomegaly, splenomegaly, anaemia, neutrophilia or leukopenia, thrombocytopenia, headache, cough, relative bradycardia, and a rash ('rose spots'). The diagnostic test of choice for typhoid fever is blood culture. Serology (Widal test) is NOT recommended because of frequent false-positive and false-negative results and poor standardisation of test methods. Further guidance on investigation and

management of typhoid fever can be found at: [http://www.nicd.ac.za/assets/files/Guidelines\\_typhoid\\_20160125.pdf](http://www.nicd.ac.za/assets/files/Guidelines_typhoid_20160125.pdf).

**Source:** Centre for Enteric Diseases, NICD-NHLS; (junot@nicd.ac.za)

### 3 INTERNATIONAL OUTBREAKS OF IMPORTANCE

#### a Ebola virus disease outbreak, Democratic Republic of Congo (DRC)

The Ministry of Health (MoH), WHO and partners continue to respond to the ongoing Ebola virus disease (EVD) outbreak in the Democratic Republic of the Congo (DRC). As of 22 January 2019, 713 EVD cases (664 confirmed and 49 probable), including 439 deaths (390 confirmed and 49 probable) cases have been reported. Thus far, 247 people have been discharged from Ebola Treatment Centres (ETCs). Among cases with a reported age and sex, 59% (420/710) of cases were female, and 30% (214/708) were aged less than 18 years, including 108 infants and children under 5 years. Sixty-one healthcare workers have been infected to date.

The number of reported cases increased during recent weeks, most notably from the Katwa health zone, where response teams have faced pockets of community mistrust. The outbreak has also extended southwards to Kayina health zone, a high security risk area. Teams are working actively to build community trust and scale up response activities around these new clusters. During the periods of 2 - 22 January 2019, 102 new cases have been reported from 13 health zones, including: Katwa (62), Butembo (12), Oicha (6), Kayina (5), Beni (2), Manguredjipa (3), Kyondo (3), Kalungata (2), Komanda (1), Musienene (2), Biena (2), Mabalako (1), and Vuhovi (1). As of 14 January 2019 a total of 60 460 individuals has been vaccinated since the start of the outbreak. Contact tracing is continuing and 39 000 contacts have been registered and 4 634 contacts remain under surveillance.

##### **Public health response**

The MoH of the DRC continues to strengthen response measures, with support from WHO and partners. Priorities include coordination, surveillance, contact tracing, laboratory capacity, infection prevention and control, clinical management of patients, vaccination, risk communication and community engagement, psychosocial support, safe and dignified burials, cross-border surveillance, and preparedness activities in neighbouring provinces and countries. Infection prevention and control practices in healthcare facilities, especially antenatal clinics, need to be further strengthened. Stringent hand hygiene is essential. Contact tracing activities continue with over 39 000 contacts registered by 16 January 2019. The field team is intensifying

community engagement and case investigation to ensure 100% of high-risk contacts are identified timeously and followed up daily. As of 13 January 2019, more than 26 million travellers have been screened. Between 10-14 January 2019, 9 alerts were notified, investigated and validated.

##### **WHO risk assessment**

This outbreak of EVD is affecting north-eastern provinces of the Democratic Republic of the Congo, which borders Uganda, Rwanda and South Sudan. Potential risk for transmission of EVD at the national and regional levels includes travelling between the affected areas, the rest of the country, and neighbouring countries including the displacement of Congolese refugees. Additionally, the security situation in North Kivu and Ituri at times limits the implementation of response activities. As the risk of national and regional spread is very high, neighbouring provinces and countries are advised to enhance surveillance and preparedness activities. Based on this context, on 28 September 2018, the public health risk assessment was revised from high to be very high at the national and regional levels, and low globally. WHO continues to advise against any restriction of travel to, and trade with, the Democratic Republic of the Congo based on currently available information.

##### **Situation in South Africa**

As at 29 January 2019, there have been no EVD cases in South Africa associated with the current outbreak in the DRC. In addition, there are no suspected cases of EVD in South Africa at present.

**Source:** Division of Public Health Surveillance and Response, NICD-NHLS (outbreak@nicd.ac.za); WHO: [www.who.int](http://www.who.int)

## 4 SEASONAL DISEASES

### a Clusters of odyssean malaria in Gauteng Province—December 2018

There were 11 cases of odyssean malaria at two separate locations during December 2018. The first cluster occurred in Orange Farm, south of Johannesburg, Gauteng Province. There were three confirmed cases in this cluster. The cases were sisters (21y, 14y, 7y) who became ill around the same time, and were treated at a hospital in Johannesburg. During our investigation, we confirmed no travel to malaria risk areas and no injections/drips/blood transfusions as possible causes. No *Anopheles* mosquito adults or larvae were found at the site. Thanks to a prompt diagnosis by the laboratory, which examined a blood smear when a low platelet count was observed, all three cases were treated immediately and recovered fully. Unfortunately, the same was not true for the eight cases (6 confirmed, 2 probable) observed in the second cluster in Munsieville, Mogale City, West Rand District. Delays in recognising odyssean malaria occurred due to unreliable histories and difficulty tracing family members. Again, no *Anopheles* mosquito adults or

larvae were found. The Munsieville cluster, summarised in Table 1, had a very high case fatality rate of 50% (4/8), as is often the case with odyssean malaria.

In Gauteng Province, malaria cases imported from risk areas are well known, but malaria in persons who have not travelled to transmission areas is rare and always unexpected, leading to delayed diagnosis and a high rate of complications. Most of South Africa's odyssean malaria cases occur in Gauteng Province because it is a major destination. We urge healthcare workers to consider malaria as a differential diagnosis in patients with a fever and progressive 'flu-like illness, even if they have not travelled, as this can save lives.

**Source:** Centre for Emerging Zoonotic and Parasitic Diseases, NICD-NHLS, and West Rand District Health Office; johnf@nicd.ac.za

**Table 1.** Summary of confirmed and probable cases of odyssean malaria, November—December 2018

	Place	Person	Date of onset	Outcome	Comment
1*	Munsieville	M 41y	25 Nov	Recovered	No records
2	Munsieville	M 2y	26 Nov	Recovered	
3	Munsieville	F 34y	28 Nov	Recovered	
4	Munsieville	M 13y	1 Dec	Recovered	
5	Munsieville	M 40y	± 10 Dec	Demised 12 Dec	Diagnosis made after death
6	Orange Farm	F 21y	10 Dec	Recovered	
7	Orange Farm	F 14y	± 12 Dec	Recovered	
8	Orange Farm	F 7y	± 12 Dec	Recovered	
9	Munsieville	F 21y	10 Dec	Demised 22 Dec	
10*	Munsieville	4m		Demised ± 20 Dec	No records
11	Munsieville	M 27y	24 Dec	Demised 29 Dec	Diagnosis made after death

\*Probable cases.

### b Update on influenza in the northern hemisphere

Influenza activity has been increasing in the temperate zone of the northern hemisphere. In Europe, almost equal proportions of influenza A(H1N1) pdm09 and A(H3N2) have been detected, whereas in North Africa, mainly influenza A(H3N2) has been detected.

Detections of influenza A(H1N1)pdm09 predominated in the United States of America and Canada, as well as in East Asia.

Although our influenza season has not started, clinicians should have a high index of suspicion for influenza in returning travellers from the northern hemisphere.

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

## 5 ALERT FOR RETURNING TRAVELLERS

The end of year is a popular time for many people to travel, visiting friends and family. Healthcare providers and travellers returning from within the southern African region and further afield should be aware of the infectious disease risks related to travel.

Travellers returning from the southern African region should be aware of malaria, cholera, typhoid, African tick bite fever, East African trypanosomiasis and various mosquito-borne viruses (e.g. dengue, chikungunya, West Nile).

**Malaria** is the most important travel-related infection to consider at this time, given that it is high season in southern Africa for both residents of malaria transmission areas and travellers, and the need for rapid diagnosis and urgent treatment to prevent severe malaria and deaths. Most persons presenting with malaria in South Africa either acquire the infection in malaria risk areas within the country or have a history of travel to neighbouring countries, with the highest risk in Mozambique. Malaria risk areas within South Africa are the lowveld areas of Limpopo, Mpumalanga and northern KwaZulu-Natal provinces. Any person who develops a fever, chills, headache, and muscle/joint pain within 10 – 30 days of returning from a malaria-endemic area must seek medical attention urgently and have a malaria blood test as soon as possible. Travellers must inform their health practitioners of recent travel. Medication to prevent malaria, while highly effective, may not be 100% protective. Rarely, malaria-infected mosquitoes may travel surprisingly far (by road, rail or air transport) and can cause infection in distant places (called 'odyssean malaria'). In December, two clusters of odyssean malaria were reported in Gauteng Province (NICD Communiqué, January 2019, Vol.18(1)). Healthcare workers should be aware of malaria as a possible diagnosis in persons with fever and unexplained progressive illness, whether or not there is history of recent travel to a risk area. Immediate notification of all malaria cases is mandatory in South Africa.

**Typhoid and cholera** outbreaks are ongoing in Zimbabwe. Any person who develops sudden, severe watery diarrhoea within 5 days of returning from a cholera-endemic area should be tested for cholera. Typhoid fever symptoms (intermittent fever, headache, abdominal pain, nausea, and diarrhoea or constipation) are less specific, but can resemble malaria. Any person presenting with these signs within 2-4 weeks of returning from a typhoid-endemic area should be tested for typhoid. Both cholera and typhoid cases should be notified immediately.

**African tick bite fever** is a common and potentially dangerous infection that can be acquired when visiting the bush or farms anywhere in Africa. Clinically, tick bite fever can resemble malaria (fever, headache) at first, but is usually accompanied by an eschar (black mark or scab surrounded by inflamed skin at the site of infected tick bite), and painful regional lymph nodes. Sometimes a skin rash may be present. Doxycycline is the treatment

of choice and is highly effective.

**East African trypanosomiasis (sleeping sickness)** is an uncommon but potentially fatal infection caused by a blood parasite transmitted by tsetse flies. The infection is occasionally seen in visitors to game parks along the Zambezi Valley in Zimbabwe, the Luangwa Valley in Zambia, and various game parks in Malawi and other East African countries. An inflamed local skin lesion at the bite site and malaria-like symptoms are typical, disease progression is very rapid and urgent specialised management is required.

Some **mosquito-borne viral infections** (e.g. dengue, chikungunya, West Nile) circulate periodically in southern Africa and can resemble malaria. Any person who develops a fever, headaches, muscle/joint pain or a skin rash should see a healthcare practitioner. Although there is no specific treatment, it is important in these cases to rule out malaria, which is frequently fatal without treatment.

Dengue should also be considered in persons with fever, muscle pain and on occasion a rash, who have travelled to Thailand, India, others countries in Southeast Asia, East and West Africa, as well as to Central and South America. Most infections are mild and will resolve in a few days.

The temperate countries in the northern hemisphere (United Kingdom, Europe, North America) are experiencing their **influenza** season, and influenza should be considered in any person who develops upper respiratory tract symptoms, fever, and muscle/joint pain within a week of return from that region.

The resurgence of **measles** globally is a serious concern. The Americas, Eastern Mediterranean region and Europe experienced protracted outbreaks recently. For returning travellers, this means that any unvaccinated person (of any age) can become infected and then spread the infection to other susceptible people as they travel. It is usually seen in children or adolescents, and symptoms are a rash, fever, conjunctivitis and coughing. Healthcare workers are advised to test for measles if it is suspected so that the case can be isolated to prevent disease spread. Cases should be immediately notified so that ring vaccination can be performed in the affected community.

For more information, please refer to Diseases A – Z on the NICD website: [www.nicd.ac.za](http://www.nicd.ac.za)

**Source:** Centre for Emerging Zoonotic and Parasitic Diseases, NICD-NHLS; [johnf@nicd.ac.za](mailto:johnf@nicd.ac.za)

## 6 FREQUENTLY-ASKED QUESTIONS TO THE NICD 24-HOUR HOTLINE

### a What rabies PEP is required for a saliva splash in the eyes?

Contact with potentially rabies virus-contaminated saliva on mucous membranes (eyes, nose and mouth) is regarded as a category 3 exposure. Examples of this type of exposure include licks on the face with the potential of mucous membrane contamination or drops of saliva splashing into the eyes.

While this type of exposure is considered category 3 and is potentially high risk, there is limited documentation of clinical rabies disease having developed in those cases where exposure is definitely limited to mucous membrane contact.

Such exposures require the administration of a full regimen of rabies vaccine and rabies immunoglobulin (RIG). The World Health Organization recommendations for rabies post-exposure prophylaxis were published in 2018, see [https://www.who.int/rabies/resources/who\\_wer9316/en/](https://www.who.int/rabies/resources/who_wer9316/en/). A four-dose schedule (at days 0, 3, 7 and 14 post-exposure, one dose per day) of rabies vaccine, administered intramuscularly (in deltoid, or anterolateral thigh in children <2 years) should be provided. The 2018 WHO recommendations emphasise the importance of delivering RIG at the site of exposure, where the biological can actively neutralise the rabies virus. Typically, the RIG product is infiltrated in and around the entire wound site (the calculated dose can be diluted to ensure adequate coverage of the entire wound if required). For exposures at mucous membrane sites, for example the eyes, the site of administration of RIG clearly poses some challenges and scientific evidence to

support the precise intervention is not available. Expert opinion recommends the use of RIG locally by lavaging the mucosa with RIG diluted with saline. A portion of the RIG dose (as per dosage recommendation per kg) should be used locally for the lavage and any remaining RIG should be given intramuscularly in the deltoid. The administration of the intramuscular portion is an extra precautionary measure but again is not evidence-based for this type of exposure. If the animal exposure is a bite or scratch (i.e. any break in the skin on the face, the scalp, ears, lips, eyelids) then RIG must be infiltrated into the wound as usual. The procedure can be quite painful especially given that the use of a local anaesthetic agent is discouraged, as this produces potential for spread of the virus. If the patient is a child and there are extensive wounds in sensitive areas, then sedation/general anaesthetic may be needed to facilitate RIG administration.

In patients with prior history of rabies vaccination, either pre- or post-exposure, a two-dose booster vaccination regimen is required only. In such cases, the requirement for RIG is removed.

For more information on rabies and how to prevent the disease, please visit the NICD website, [www.nicd.ac.za](http://www.nicd.ac.za).

**Source:** Centre for Emerging Zoonotic and Parasitic Diseases, NICD-NHLS; [januszp@nicd.ac.za](mailto:januszp@nicd.ac.za)

## 7 BEYOND OUR BORDERS

The 'Beyond our Borders' column focuses on selected and current international diseases that may affect South Africans travelling abroad. Numbers correspond to Figure 2 on page 9.

### 1. Mozambique: Circulating vaccine-derived poliovirus type 2 (cVDPV)

Two genetically-linked circulating vaccine-derived poliovirus type 2 (cVDPV2) cases have been detected in the Molumbo district of the Zambezia province in Mozambique. The primary case is a 6-year-old girl with no history of vaccination, and the other, a community contact of the initial case. Vaccine-derived polio viruses (VDPVs) are rare strains of poliovirus that have genetically mutated from the oral poliovirus strain. The oral polio vaccine contains a live, weakened vaccine virus. When a child is vaccinated, the weakened vaccine virus replicates in the intestine and enters the bloodstream, triggering a protective immune response. Vaccine-virus is excreted via faeces for a period of 6-8 weeks post-vaccination. As it is excreted, some of the vaccine-virus may no longer be the same as the original vaccine virus as it has genetically altered during replication.

As long as infected cases exist, all countries stand the chance of polio outbreaks. The Global Polio Eradication Initiative (GPEI) and partners are

working with Mozambique to support the local public health authorities in conducting field investigation, risk assessments, implementation of immunisation and outbreak response.

### 2. United Kingdom: Scarlet fever

In the past year, there has been an increase in cases of scarlet fever in Kent, United Kingdom. The figures show that there was a record high of 1 143 cases of scarlet fever reported in 2018, up from 362 in 2017. Cases across the whole country were recorded at 31 865 in 2018, up from 17 813 in 2017. Scarlet fever is a very contagious, seasonal bacterial illness caused by *Streptococcus pyogenes* (group A streptococcus). It usually presents with a sore throat, fever, headaches, and a rosy rash that generally starts on a patient's chest. It mainly affects children and the sickness usually peaks between December and May. Public Health England suggested that the increase in cases in scarlet fever was partly due to more infections, but also partly due to more awareness of the condition leading to better reporting.

### 3. Madagascar: Measles

From 4 October 2018 to 7 January 2019, 19 539 measles cases and 39 'facility-based' deaths have been reported by the Ministry of Public Health of Madagascar. Cases were reported from 66 of 114 total districts in all 22 regions of Madagascar. Among the 19 539 measles cases, 375 have been laboratory-confirmed (all are IgM+) and 19 164 were confirmed by epidemiological link. Measles is an acute, highly contagious viral disease that has potential to lead to major epidemics. It usually presents in people with fever and maculopapular rash, cough, runny nose and/or red eyes.

The Ministry of Public Health of Madagascar is coordinating the response activities, with the support of the World Health Organization (WHO) and other partners, some of which include: vaccination campaigns, community mobilisation, risk assessments and enhanced active surveillance. Currently, the WHO does not recommend any restriction on travel and/or trade to Madagascar based on the information available on the current outbreak.

### 4. Saudi Arabia: Middle East respiratory syndrome-related coronavirus

From 1 December 2018 through 31 December 2018, the International Health Regulations (IHR) National Focal Point of Saudi Arabia reported five cases of Middle East respiratory syndrome-related coronavirus (MERS-CoV) infection. Since 2012, the global count stands at 2 279 with 806 associated deaths. Infection with MERS-CoV can cause severe disease resulting in high mortality. Humans are infected with MERS-CoV from direct or indirect contact with dromedary camels (for example, consumption of camel's raw milk). MERS-CoV has demonstrated the ability to transmit between humans. So far, the observed non-sustained human-to-human transmission has occurred mainly in healthcare settings. MERS-CoV appears to cause more severe disease in people with diabetes, renal failure, chronic lung disease, and immunocompromised persons. Therefore, these people should avoid close contact with animals, particularly camels, when visiting farms, markets, or barn areas where the virus is known to be

potentially circulating. The WHO does not currently recommend the application of any travel or trade restrictions.

### 5. Tanzania: Anthrax

A suspected outbreak of anthrax in Momba District, Songwe Region in Tanzania was reported on 11 January 2019 by the Ministry of Health. The initial investigation began on 9 December 2018 when the index case, a 70-year-old woman, developed illness and died in the community. Since then, similar clusters of cases have been reported with three subsequent deaths. As of 17 January 2019, a total of 81 human cases of cutaneous anthrax has been reported, including 4 deaths (case fatality ratio, 4.9%). The outbreak of anthrax in humans was preceded by the deaths of 16 head of cattle since November 2018, and the community reportedly consumed and/or handled the carcasses.

A national response team has been deployed to the area. There are challenges due to shortage of field staff. However, measures have been undertaken to contain the disease and prevent further transmission.

### 6. Yemen: Cholera

A medical source at the Zaidia rural hospital north of the city of Hodeidah, western Yemen, reported the death of nine people, including three children, after severe watery diarrhoea and vomiting, likely to have cholera. A total of 87 cases with watery diarrhoea was received at the hospital within three days. This is above the 11 735 suspected cholera cases that were reported in December 2018.

The outbreak was expected as previously recommended preventive measures have not been taken. Other contributing factors included lack of medical centres and facilities in the area and militant obstruction of global organisations intervening to assist with the epidemic. The WHO continues to provide support to local health authorities to mitigate the outbreak.

**Source:** Promed ([www.promed.org](http://www.promed.org)) and the World Health Organization ([www.who.int](http://www.who.int))



**Figure 2.** Current outbreaks that may have implications for travellers. Numbers correspond to text above. The red dot is the approximate location of the outbreak or event.

