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1 VACCINE PREVENTABLE DISEASES

a Measles clusters in Gauteng and Western Cape Provinces

There have been six confirmed cases of measles in Johannesburg, Gauteng Province within a 30-day period (data as at 15 March 2017). The cases were mostly primary school children, previously unvaccinated against measles. Additionally there has been one case of measles in Rustenburg, North West Province. These cases follow a confirmed outbreak in the Western Cape Province in 2017 – currently totalling 29 cases.

Vigorous vaccination campaigns have been conducted by the provincial departments of health in response. The Western Cape Department of health has vaccinated more than 380 000 children since February (data as at 19 March 2017). Children up to the age of 15 years were vaccinated in the affected sub-districts and up to 5 years of age in the rest of the province. In Gauteng, learners attending the affected school have been vaccinated and plans are underway for a province-

wide campaign.

All schools, crèches and health facilities country-wide should be on the lookout for measles. Measles is highly infectious and spreads rapidly from person to person, and can infect any measles-non-immune person of any age. Young children under 2 years of age are at highest risk of complications. Children’s vaccination cards should be checked to ensure measles vaccinations are up to date. Measles vaccines are routinely given at 6 and 12 months of age. Staff of health facilities are also urged to ensure they are measles immune.

Any suspected case requires a blood test for measles IgM. Without a blood test, measles cannot be differentiated from other rash illnesses, such as German measles.

Source: Division of Public Health Surveillance and Response; and Centre for Vaccines and Immunology, NICD-NHLS (melindas@nicd.ac.za); Western Cape Department of Health; Gauteng Department of Health

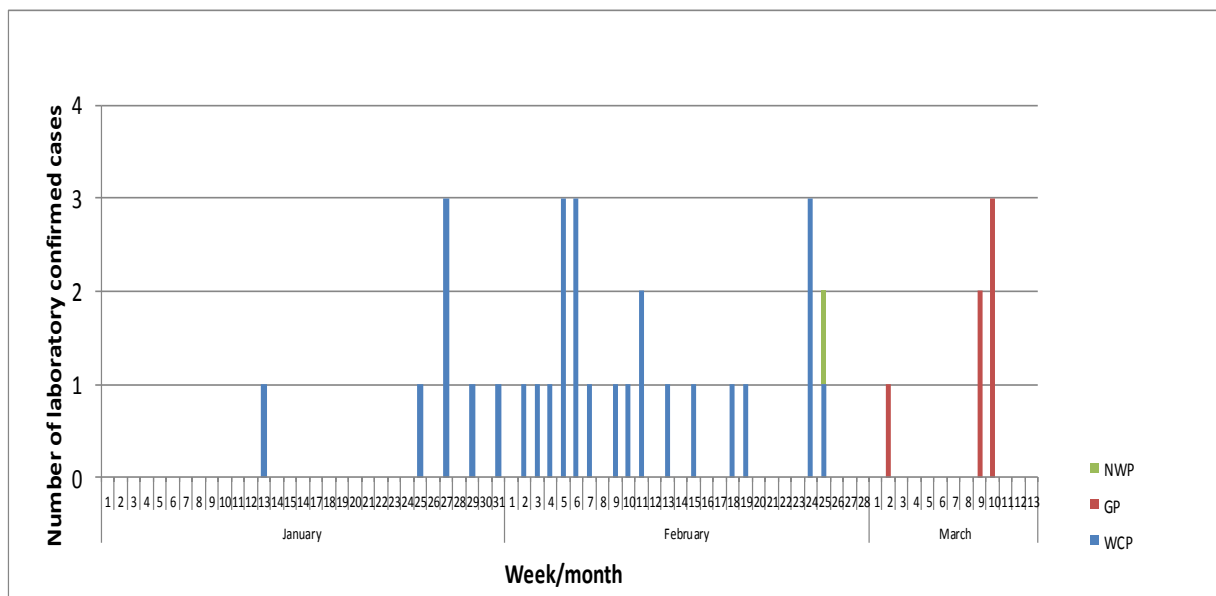


Fig 1. Laboratory-confirmed measles cases in South Africa, by province, 1 January – 15 March 2017 (n=36).

2 SEASONAL DISEASES

a Odyssean malaria in Gauteng and North West provinces

The National Institute for Communicable Diseases (NICD) was notified of two persons with malaria from Doornpoort, a suburb in the northern part of the City of Tshwane, and two others from Swartruggens in the North West Province. None of these people had travelled to a known malaria transmission area. The cases presented in late February and early March 2017. Unfortunately three of the patients passed away from complications of malaria.

Given that females of certain *Anopheles* mosquito species are responsible for transmitting malaria parasites, investigations of the two residences and environs in Tshwane and Swartruggens were carried out. No anopheles mosquito adults or larvae were found. There were *Culex* mosquitoes breeding in the general area as expected, but *Culex* mosquitoes never transmit malaria. The evidence available therefore suggests that these cases did not result from local transmission in Tshwane and Swartruggens but from translocation of infected mosquitoes from a malaria risk area in a vehicle or suitcase, as a very uncommon event - most

mosquitoes would not survive the journey.

A few cases of so-called 'Odyssean' malaria or 'taxi' or 'suitcase' malaria are confirmed, mainly in Gauteng Province, each year and coincide with the seasonal increase in malaria in the usual malaria transmission areas from January to April. There is no link between the cases in Tshwane and those in Swartruggens. These cases do not represent an expansion in the malaria transmission areas in South Africa but rather, to translocation of an infected malaria mosquito from a malaria area.

All healthcare practitioners are advised to consider malaria as a differential diagnosis in all patients presenting with unexplained fever (>38°C) and flu-like illness, especially in the presence of a change in the level of consciousness and/or progressive jaundice even in the absence of a travel history to a malaria-endemic region.

Source: Division of Public Health Surveillance and Response; Centre for Emerging, Zoonotic and Parasitic Diseases; Centre for Opportunistic, Tropical and Hospital Infections, NICD-NHLS; (johnf@nicd.ac.za)

b Malaria focus in western Waterberg, Limpopo Province

While the north-eastern regions of Limpopo Province are the traditional malaria transmission areas, a number of malaria cases have also been reported in Thabazimbi and Lephalale in the western Waterberg district, Limpopo Province. The western Waterberg was historically prone to malaria during favourable transmission years, so this is not totally unexpected. Normally, low numbers of cases are reported from Waterberg; however, it is viewed as an area with the potential for malaria transmission during high transmission seasons. Limited seasonal transmission also occurs in parts of southern Sekhukhune.

During the period 27 February - 13 March 2017, 49

malaria cases were reported in Thabazimbi, 14 of which were due to local transmission mostly in rural villages along the Lephalale River.

There have been a number of initiatives in response to these cases by the malaria control programme in Limpopo Province. The community has been informed of the signs and symptoms of malaria and advised to seek early medical attention. The health facilities in the area have adequate supplies of malaria diagnostic tests and medication for treatment. A vector control intervention was initiated and about 200 homes mainly along the Lephalale River were sprayed with long-acting insecticides applied to indoor walls. Malaria

surveillance teams are permanently placed in Waterberg, to detect and manage malaria appropriately. Over the last week, there have been no new cases of malaria acquired in this area but it is important to remain vigilant and to ensure that any persons with acute febrile illness be tested for malaria.

Every notified malaria case is fully investigated and preventive measures are introduced where appropriate. All health facilities in Limpopo are prepared to deal with increased malaria cases. Primary healthcare facilities can all test for malaria and treatment is available at this level. All hospitals also have access to the latest malaria treatment regimens.

Source: Centre for Emerging, Zoonotic and Parasitic Diseases; Centre for Opportunistic, Tropical and Hospital Infections, NICD-NHLS (johnf@nicd.ac.za); Department of Health, Limpopo Province

c Influenza vaccine for 2017 season, South Africa

South Africa experiences annual seasonal influenza epidemics every winter, although the timing of the influenza season varies from year to year. Influenza virus circulation occurs mainly during the winter months of May to August, but may start as early as April, and as late as July. Influenza vaccine will be available in the public and private sectors from the week starting 20 March 2017.

Individuals at increased risk of developing severe influenza illness are recommended to receive influenza vaccine. Due to limited resources and the fact that not all individuals who fall among the risk groups for severe influenza illness respond well to influenza vaccination, the National Department of Health is prioritising certain groups of individuals for targeted influenza vaccination campaign.

The following are among the groups that are prioritised for targeted public funded influenza vaccination in 2017:

1. Pregnant women, irrespective of stage of pregnancy.
2. HIV-infected individuals.
3. Individuals (other than HIV-infected persons) who are immunosuppressed and including persons on immunosuppressive medications.
4. Persons (adults or children) with underlying medical conditions and who are receiving regular medical care for conditions such as chronic pulmonary disease (including asthma) and cardiac disease (excluding hypertension), chronic renal and hepatic diseases, diabetes mellitus and similar metabolic disorders, sickle

cell anaemia and other haemoglobinopathies, and individuals who are morbidly obese.

5. All persons over the age of 65 years.

Other groups that would benefit from influenza vaccination but are not specifically targeted for influenza vaccination by the Department of Health include:

1. Healthcare workers (to reduce risk of spread of infection to vulnerable patients).
2. Adults and children who have any condition (e.g. cognitive dysfunction, spinal cord injuries, seizure disorders or other neuromuscular disorders) that can compromise respiratory function or the handling of respiratory secretions or that can increase the risk for aspiration.
3. Persons aged 6 months to ≤ 18 years who are receiving long-term aspirin therapy and who might be at risk for experiencing Reye's syndrome after influenza virus infection.
4. Residents of nursing homes and other chronic-care facilities.
5. Any persons wishing to minimise the risk of influenza acquisition, especially in workplace settings where large-scale absenteeism could cause significant economic losses.

Contraindications to influenza vaccination

1. Persons with a history of severe hypersensitivity to eggs.
2. Persons with acute febrile illnesses should preferably be immunized after symptoms have disappeared.

Recommended vaccine composition

- an A/Michigan/45/2015 (H1N1)pdm09-like virus;
- an A/Hong Kong/4801/2014 (H3N2)-like virus; and
- a B/Brisbane/60/2008-like virus.

Vaccines should be given sufficiently early to provide protection for the winter. A protective antibody response takes about 2 weeks to develop.

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

3 ZOOBOTIC AND VECTOR-BORNE DISEASES

a Crimean-Congo haemorrhagic fever

For the year-to-date, a total of four Crimean-Congo haemorrhagic fever (CCHF) cases have been confirmed in South Africa. The fourth case involved a 61-year-old farmer from Bloemhof in the Free State Province, who reported a tick bite before falling ill. He presented with fever, gastrointestinal haemorrhage and melena. Blood tests revealed raised liver enzymes (ALT, 787 U/L and AST 257 U/L), profound leucopenia (white cell count of $0.57 \times 10^9/L$) and profound thrombocytopenia (platelet count of $11 \times 10^9/L$). The diagnosis was confirmed by RT-PCR. The course of illness was complicated by gastrointestinal haemorrhage. The patient was given platelets transfusion as well as Neupogen (a granulocyte stimulating factor). After a protracted period, the patient recovered well and follow up blood testing demonstrated a satisfactory immune response to CCHF virus. No secondary cases were reported. This is the second case reported from the Free State Province, with the other two cases reported from the Western Cape and Northern Cape provinces respectively. These cases were unrelated and all involved farmers that

reported tick exposures. In addition, two cases of CCHF were confirmed from Gobabis in Namibia. The cases were unrelated and reported tick bites before illness. One patient died whilst one made a recovery.

Tick bites constitute the major risk factor for CCHF virus infection, with the *Hyalomma* (or 'bontpoot' tick) most often associated with the virus. More than two-thirds of cases reported in South Africa since 1981 reported such exposures. Few cases involved transmission of the virus through contact with infected animal blood and tissues. Strict infection control and prevention measures are required during the management of CCHF patients to reduce the risk of transmission of the virus to health care workers. Secondary cases of CCHF involving health care workers or laboratory workers have been noted on four occasions since 1981.

Source: Centre for Emerging, Zoonotic and Parasitic Diseases, NICD-NHLS (januszp@nicd.ac.za); Department of Internal Medicine, Pelonomi Hospital, Bloemfontein, Free State Province

b Rabies

A human rabies case was confirmed from the Eastern Cape Province. The case involved a five-year-old boy who died on 6 February 2017. Laboratory confirmation of rabies was established on a brain sample using a fluorescent antibody test. The child was from Libode, a small town located close to Port St Johns. He was reportedly bitten by a dog early January 2017 and no rabies post-exposure prophylaxis was sought. He presented to a local health care facility with restlessness, respiratory distress and hydrophobia. Possible

herbal intoxication of the patient was also noted. The patient died on the same day of presentation to hospital.

Animal rabies cases continues to be reported from different parts of South Africa (data source: ARC-OVI; APVL). From the 1st of March, laboratory-confirmed dog rabies cases have been reported from the North West, Limpopo, KwaZulu-Natal, Eastern Cape and Mpumalanga provinces. In addition, cases of rabies in jackal and cattle have

been reported from the North West Province and north-western areas of Gauteng Province. A single case of rabies in a cape fox was reported from Uppington surrounds in the Northern Cape Province, whilst rabies in a bat-eared fox was confirmed from the Piketberg area in the Western Cape Province.

In order to minimise the risk of rabies to communities, vaccination of dogs and cats is required by law. Historically, most human cases in South Africa have been linked to exposures to rabid dogs. When potential exposures to the rabies virus have occurred it is important that rabies post-exposure prophylaxis is provided as required by national guidelines. These guidelines are accessible from the NICD website, www.nicd.ac.za.

For patients presenting with progressive encephalitis, particularly if prior exposure to dogs (or other animals are noted), rabies should be considered as part of the differential diagnosis. This

is particularly relevant if the case is fatal. Importantly, rabies tests are only valid once patients present with clinical disease, and cannot be interpreted to ascertain exposure to the virus (in this instance a risk assessment is required and the requirement for rabies post-exposure prophylaxis determined). Ante-mortem testing for rabies includes RT-PCR on saliva (repeat submissions of specimens collected at different time points required), cerebrospinal fluid and/or nuchal biopsy. Serology is of limited value for the diagnosis of rabies disease. Post-mortem diagnosis is best performed on brain samples, although nuchal biopsies may also be helpful. For more information regarding the tests offered by the NICD for rabies investigation, please visit www.nicd.ac.za

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

c Cluster of Sindbis virus infections in Gauteng Province: an update

In the first two months of 2017, a more than usual number of people in the northern suburbs of Johannesburg reported to their healthcare providers with a rash, in addition to one or more symptoms of mild fever, arthralgia, headache, nausea, myalgia and/or severe fatigue.

Investigation and laboratory analysis of the patients by the NICD confirmed a diagnosis of Sindbis infection in a majority of the rash cases. As of 14 March 2017, a total of 33 suspected cases has been referred for testing. IgM antibodies were demonstrated in serum samples from seventeen patients, indicating recent infection with Sindbis virus. Paired sera, taken 2 weeks apart to detect a significant rise in antibody titre, confirmed the diagnosis of Sindbis virus infection in 8 patients.

No virus-specific genetic material could be detected in any of the cases, despite employing alphavirus-generic and Sindbis virus-specific PCR assays, presumably due to the typically transient and low viraemia caused by infection with Sindbis virus. The

clinical course of Sindbis infection is usually mild and self-limiting and recovery uneventful.

Sindbis virus is a mosquito-borne arbovirus and is maintained in nature in a mosquito-bird cycle. Humans are incidentally infected through mosquitoes and are effectively dead-end hosts for Sindbis virus.

The recent outbreak has not been unexpected after an increase in mosquitoes was seen with the improvement in summer rainfall to near-normal levels from November to January after the 2016 drought. The outbreak-affected area is suburban with numerous green areas and water sources with ample birdlife. March typically coincides with the greatest population density of the Sindbis (and West Nile) virus vector mosquito on the South African inland plateau, or 'highveld' and, as a result, an increase in Sindbis virus activity. Between 20 and 30 sporadic cases of Sindbis fever are confirmed annually in patients from South Africa.

A large epidemic of Sindbis fever was documented in the Karoo in 1974 with about 4000 infected human cases. Smaller outbreaks occurred in 2010 and earlier with a dozen to hundreds of humans affected. The reported Sindbis cases likely represent a fraction of the true number due to the

mild and non-specific clinical presentation of Sindbis fever.

Source: Division of Public Health Surveillance and Response; Centre for Emerging, Zoonotic and Parasitic Diseases, NICD-NHLS; (januszp@nicd.ac.za)

4 ENTERIC DISEASES

a Diarrhoea outbreak on the South Coast, Kwazulu-Natal Province, December 2016

On 5th January 2017, the Outbreak Response Unit (ORU) of the NICD was alerted to an increase in the number of diarrhoea cases over December 2016 in several areas in the South Coast, Ugu District, of Kwazulu-Natal Province. Contamination of a nearby lagoon was believed to be the cause of the increase in cases seen. Two private hospitals in the area reported seeing cases of diarrhoea in excess of what was expected for the area at that time. According to the district communicable disease control coordinator (CDCC), other surrounding hospitals (including public hospitals) did not observe this increase. From 14 December 2016 to 06 January 2017, 693 diarrhoea cases, and no deaths, were reported from one of the private hospitals (Figure 2). Ages ranged from 3 months to 88 years, with most cases (n=606; 87%) occurring in persons <50 years (Figure 3); and 51% (n= 352) were females. On 16 January 2017, a team from the NICD investigated the cases seen at the one private hospital that reported most of the cases. Folder review was done on a randomly-selected sample of cases and controls. Water samples were taken from

the lagoon and from the final effluent at the waste water treatment works draining into the lagoon. Four stool and 16 rectal swab samples were obtained from some of the cases. The water samples tested PCR positive for norovirus and adenovirus in the final effluent; and norovirus, astrovirus and rotavirus positive in the lagoon. 55% (n=11) of the 20 tested specimens were also positive for norovirus. The randomly selected cases have been telephonically interviewed so as to identify common risk factors. The investigation is still ongoing. At this moment, a direct association cannot be made between the findings from the water and stool samples and the cases of diarrhoea reported in the South Coast in December 2016. Further analytic studies are pending and an update will be published once all analyses are completed.

Source: Division of Public Health Surveillance and response; and Centre for Enteric Diseases, NICD-NHLS; (nicolap@nicd.ac.za)

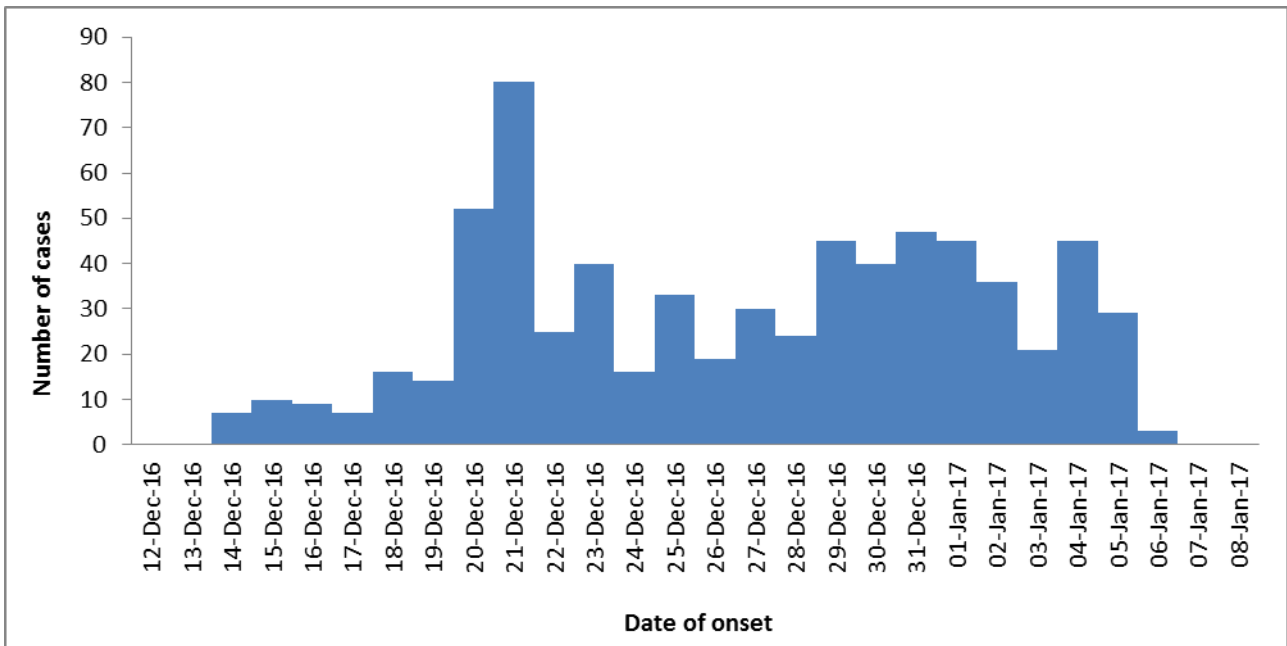


Figure 2. Number of diarrhoea cases in a private hospital, Ugu District, Kwazulu-Natal Province, 14 Dec 2016 – 06 Jan 2017.

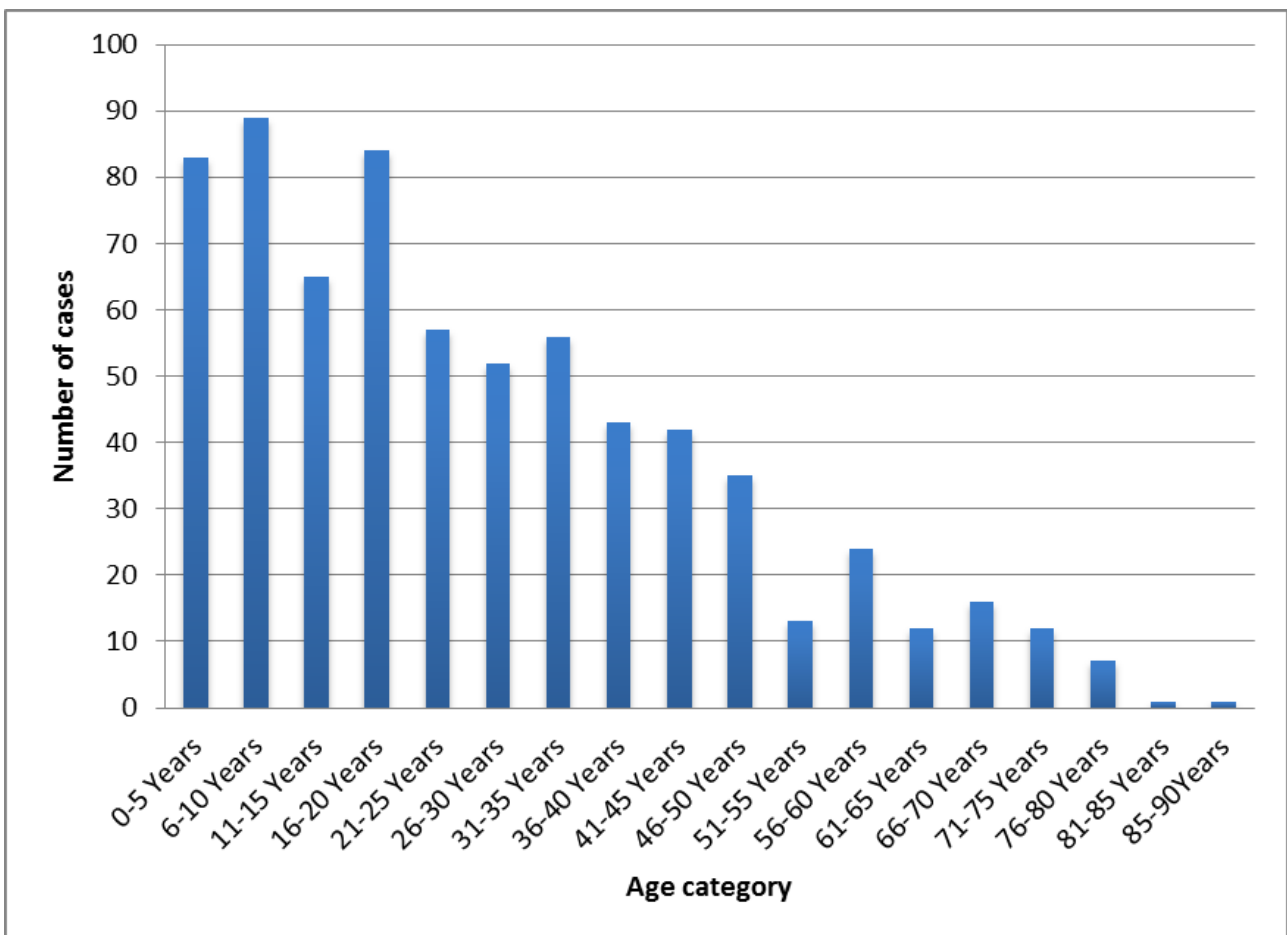


Figure 3. Number of diarrhoea cases by age categories in a private hospital, Ugu District, Kwazulu-Natal Province.

5 MISCELLANEOUS OUTBREAKS OF INTEREST

a Outbreak of human myiasis in Northern Cape Province, March 2017

Several cases of human myiasis in the rural areas between Upington and Kuruman, Northern Cape Province, were recently reported to the NICD.

Human myiasis refers to the infestation of living tissue by the larvae (maggots) of certain fly species. These cases were evidently caused by *Cordylobia anthropophaga*, better known as the tumbu, mango or putzi fly.

This fly is common in Africa and occurs in the northern regions of South Africa including Northern Cape, Gauteng, KwaZulu-Natal, Limpopo, Mpumalanga and North West provinces.

This fly species generally parasitises large mammals including dogs and, inadvertently, humans. The flies typically deposit their eggs in soil but will also lay them on soiled clothing. Once the larvae hatch, they attach to an animal (or human), pierce the skin, and grow through three larval instars inside the boil-like skin lesion that they form. When they are ready to pupate, they exit the lesion and fall to the ground. This process generally takes up to 12 days.

Humans can become infested by these larvae by donning clothes onto which eggs have been laid.

The larvae are best removed by covering the lesion with an inert gel such as a petroleum jelly (Vaseline). This irritates the larva, causing it to move and loosen its grip on the sides of the lesion. The larva can then be squeezed out. It is important to ensure that the entire larva is removed undamaged, so as to prevent inflammation and secondary bacterial infection, which is why the use of scalpels and forceps is not recommended for larval extraction.

Cordylobia infestations are not uncommon in some parts of South Africa, are not life threatening and cannot be transmitted from one person to another. They typically occur during the summer months in warm, humid areas of the country, and in periods of high summer rainfall the range of the fly expands, sometimes to include Gauteng Province.

Infestations are best avoided by ironing all clothing that has been left to dry outdoors, including underwear. Clothing should not be placed on the ground to dry.

Source: Centre for Emerging, Zoonotic and Parasitic Diseases; Centre for Opportunistic, Tropical and Hospital Infections, NICD-NHLS (basilb@nicd.ac.za); Department of Health, Northern Cape

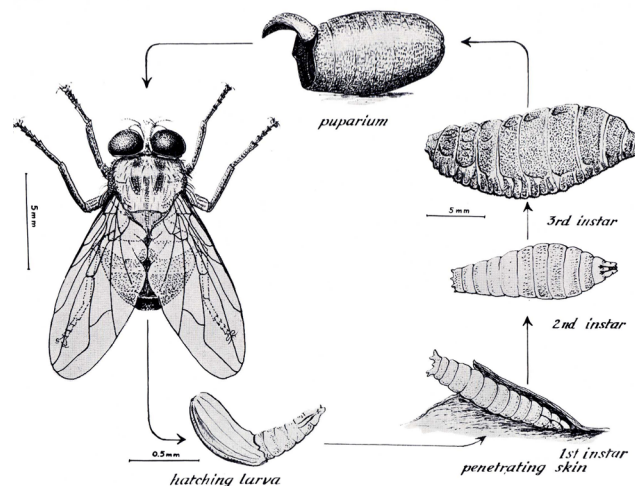


Figure 4. Tumbu fly life cycle



Figure 5. Typical tumbu fly lesions

6 SURVEILLANCE FOR ANTIMICROBIAL RESISTANCE

a Carbapenemase-resistant Enterobacteriaceae—a monthly update

The Antimicrobial Resistance Laboratory and Culture Collection (AMRL-CC) of the Centre for Opportunistic, Tropical and Hospital Infections (COTHI) at the NICD has been testing referred isolates of suspected carbapenemase-producing Enterobacteriaceae (CPE) for the presence of selected carbapenemases. CPE have become a threat to healthcare and patient safety worldwide by compromising empiric antibiotic therapeutic choices and increasing morbidity, hospital costs and the risk of death. We are receiving clinically significant isolates from all specimen types, based on antimicrobial susceptibility testing criteria, for molecular confirmation. For February 2017, a total of 106 Enterobacteriaceae isolates were received. One hundred and one isolates were screened, 86 of which expressed the carbapenemases for which they were screened. Six isolates expressed two

carbapenemases (NDM and OXA-48 & variants, n=4; VIM and OXA-48 and variants, n=1 and GES and OXA-48 and variants, n=1) (Table 1). The majority of the screened isolates were *Klebsiella pneumoniae* (65) followed by *Enterobacter cloacae* (21).

It is important to note that these figures do not represent the current burden of CPEs in South Africa. However our data reveal the presence of carbapenemases in Enterobacteriaceae isolates from various specimen types, nationally. As a first step, CPE surveillance is required to determine the extent of the problem, in order to restrain the emergence and spread of resistance. The AMRL-CC is currently running a surveillance programme at national sentinel sites for CPE infections in patients with bacteraemia, which provides representative

data. This significant data will inform public health policy and highlight priorities for action. Controlling the spread and limiting the impact of CPEs in South Africa requires intensive efforts in both the public and private healthcare sectors going forward. NHLS and private laboratories are encouraged to submit suspected CPE isolates based on antimicrobial susceptibility testing (AST) criteria to AMRL-CC,

NICD/NHLS. Please telephone (011) 555 0342/44 or email: olgap@nicd.ac.za; for queries or further information.

Source: Centre for Opportunistic, Tropical and Hospital Infections, NICD-NHLS; (olgap@nicd.ac.za)

Table 1. Enterobacteriaceae by CPE enzyme type for January and February 2017 at the AMRL-CC, CO THI, NICD.

Organism	NDM		OXA-48 & Variants		VIM		GES	
	Jan 2017	Feb 2017	Jan 2017	Feb 2017	Jan 2017	Feb 2017	Jan 2017	Feb 2017
<i>Citrobacter amalonaticus</i>	-	-	-	1	-	-	-	-
<i>Citrobacter freundii</i>	1	1	2	4	-	-	-	-
<i>Enterobacter cloacae</i>	2	1	11	12	-	-	-	-
<i>Escherichia coli</i>	4	-	9	3	-	-	-	-
<i>Klebsiella oxytoca</i>	-	-	-	1	-	-	-	-
<i>Klebsiella pneumoniae</i>	23	11	67	50	1	2	-	1
<i>Klebsiella species</i>	1	-	2	1	-	-	-	-
<i>Providencia rettgeri</i>	3	1	2	-	-	-	-	-
<i>Salmonella enterica</i>	-	1	-	-	-	-	-	-
<i>Serratia marcescens</i>	-	-	2	1	-	-	-	-
Total	34	15	95	73	1	2	0	1

NDM: New Delhi metallo-beta-lactamase; **OXA:** oxacillinase; **VIM:** Verona integron-encoded metallo-beta-lactamase; **GES:** Guiana-extended-spectrum.

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 6 on page 13.

1. Ebola: West Africa

As per the January 2017 Communique, there have been no new cases of Ebola since April 2016. Research into an effective vaccine is still ongoing. A regional Center for Disease Control (CDC) has been established in Abuja, Nigeria by the West African Health Authorities to deal with pandemics such as Ebola.

2. H7N9: China and Taiwan

To date, mainland China has reported more than 480 cases of human H7N9 since October 2016, whilst Hong Kong has reported a total of 5 cases. The spokesman of The Centre for Health Protection (CHP) of the Department of Health reported, "The number of cases in this wave so far has been much higher than that in the same period last winter season. The situation demands particular attention."

With regard to Taiwan, The Centers for Disease Control (CDC) has confirmed the first fatality from H7N9 in a Taiwanese man who returned to Taiwan after a business trip to China. The man was hospitalised and died after about one month of hospital treatment.

WHO advises that travellers to countries with known outbreaks of avian influenza should avoid, if possible, poultry farms, contact with animals in live poultry markets, entering areas where poultry may be slaughtered, or contact with any surfaces that appear to be contaminated with faeces from poultry or other animals. Travellers should also wash their hands often with soap and water, and follow good food safety and good food hygiene practices.

3. Lassa Fever: Nigeria and Benin

According to the Nasarawa State Government, of the 11 confirmed cases recorded since the index case in November 2016, 8 have died, while 3 others are responding to treatment. The number of people who had contact with the patients has risen from 66 to 82 and they have been placed on oral drugs, and are monitored by twice-daily temperature taking.

Lassa fever has also killed two people in neighbouring Benin and an outbreak response has been mounted to curb the spread from the reported 61 infected cases.

4. Yellow Fever: Brazil

Since December 2016 to date, Brazil, Colombia, Ecuador, Peru, the Plurinational State of Bolivia, and Suriname have reported suspected and confirmed yellow fever cases.

In Brazil, since the beginning of the outbreak in December 2016 to 17 March 2017, there have been 1561 reported cases (448 laboratory-confirmed, 263 discarded and 850 remain under investigation); including 264 deaths (144 confirmed, 10 discarded and 110 under investigation). The case fatality rate (CFR) is 32% among confirmed cases.

According to the probable site of infection, the confirmed cases are distributed in 4 states: Minas Gerais (n=349), Espírito Santo (n=93), São Paulo (n=4) and Rio de Janeiro (n=2). According to a

revised risk assessment supported by the scientific and technical advisory group on geographical yellow fever risk mapping (GRYF), yellow fever transmission continues to expand towards the Atlantic Coast of Brazil. The implications of this are that the entire State of Espírito Santo would be considered as a high risk area for transmission, leading to recommendations for international travellers visiting any area in Espírito Santo State to receive yellow fever vaccination prior to their visit.

Given the current yellow fever situation in Brazil and the emergence of cases in areas where cases have not been detected in several years, the Pan American Health Organization, Regional Office of the World Health Organization (PAHO/WHO) urges Member States to continue efforts to detect, confirm, and adequately and timely treat cases of yellow fever. To this end, health care workers should be kept up-to-date and trained to detect and treat cases especially in areas of known virus circulation.

The current advice from the WHO Secretariat for international travellers going to areas of Brazil deemed to be at risk, including Espírito Santo State in its entirety, is the following:

- Vaccination against yellow fever at least 10 days prior to the travel. Note that, as per Annex 7 of the International Health Regulations (2005), a single dose of a yellow fever vaccine approved by WHO is sufficient to confer sustained immunity and life-long protection against yellow fever disease. Travellers with contraindications for yellow fever vaccine (children below 9 months, pregnant or breastfeeding women, people with severe hypersensitivity to egg antigens, and severe immunodeficiency) or over 60 years of age, should consult their health professional for advice; adoption of measures to avoid mosquito bites; awareness of symptoms and signs of yellow fever; seeking care in case of symptoms and signs of yellow fever, while travelling and upon return from areas at risk for yellow fever transmission.

Source: Division of Public Health Surveillance and Response, NICD-NHLS, from Promed (www.promed.org)



Figure 6. Current outbreaks that may have implications for travellers. Number correspond to text above. The red dot is the approximate location of the outbreak or event

8 TRAVEL ADVISORY

With the approach of Easter and the public holidays in April, it is important for travellers from South Africa to take precautions for the following diseases.

Malaria

Malaria is present along the borders with Zimbabwe and Mozambique. It is specifically prevalent in:

- Vembe and Mopane district municipalities of Limpopo Province;
- Ehlanzeni district municipality in Mpumalanga Province, including Bushbuckridge;
- Umknanyakude in Kwazulu-Natal Province;
- Kruger National Park.

Travellers visiting these areas are advised to take precautions. Non-pharmaceutical measures are recommended; these include clothing to cover the entire body, topical mosquito repellents in the form of creams or sprays for the body, bed nets and mosquito repellents or insecticides for use in living quarters. Anti-malarial chemoprophylaxis should also be considered.

Travellers visiting neighbouring countries of Mozambique, Zimbabwe, Zambia, Malawi, Botswana and Namibia should also take precautions, especially with the increase of malaria

cases due to the storms following Cyclone Dineo that affected Mozambique and the north-eastern parts of South Africa.

All travellers, whether travelling to low or high risk areas, are advised to be aware of the malaria symptoms of fever, chills, sweats, headaches, nausea and vomiting, body aches, general malaise and yellow discolouration of eyes/skin, and to report to their nearest health facility or doctor if they suspect that they may have contracted malaria.

Cholera

Cholera is not endemic to South Africa and the last outbreak was from November 2008 to June 2009, affecting all 9 provinces. The risk of imported cholera causing outbreaks is ever-present, especially from Zimbabwe and Mozambique, where the disease is endemic. There have been recent reports of an increase of cholera cases in Mozambique following Cyclone Dineo and although no imported cases have been reported yet, travellers should take the following precautions in endemic countries:

- Drink and use safe water. Use treated or bottled water that is in sealed containers for all

cooking, drinking, washing of utensils and brushing of teeth.

- Wash your hands regularly with soap, particularly before eating, preparing food or feeding your children and after using the toilet, changing your child's nappy or taking care of someone ill with diarrhoea.
- Cook food (especially seafood) well, eat it whilst hot, keep it covered and peel fruits and vegetables. *Boil it, Cook it, Peel it, or Forget it!*
- Be cautious about food prepared by vendors or restaurants.

All travellers are advised to be aware of the symptoms of cholera, which include the sudden onset of profuse, painless and watery diarrhoea, with flecks of mucus in the stool (rice water stools) and vomiting; and to report to their nearest health facility or doctor if they suspect that they may have contracted cholera.

Tick bite fever

In South Africa the most common rickettsial disease is tick bite fever (TBF), a bacterial infection transmitted by ticks. It is common in both urban and rural settings at all times of the year and is caused by *Rickettsia conorii* or *R. africae*. Symptoms of TBF include rash, fever, headache and lymphadenopathy after an incubation period of 5 to 7 days. An eschar, a small dark brown or black scab, surrounded by obvious inflammation, may be noticed on the skin where the infected tick attached. This is a classical sign of TBF. TBF is an important differential diagnosis of acute febrile illness with multi-organ involvement and haemorrhage. CCHF must be urgently considered in such cases and investigated by laboratory testing. Other diseases to consider are malaria, mosquito-borne virus infections, sleeping sickness, bilharzia and typhoid fever. The diagnosis of TBF is a clinical one, based on the findings of an eschar or possible tick exposure. Doxycycline is optimal therapy in all age groups. With the current increase in the number of ticks, protection against tick bites should be taken especially when visiting the bushveld areas. Mosquito repellents that contain DEET, like Tabard, Peaceful Sleep and Mylol, will repel ticks as well, but they need to be re

-applied every few hours. Clothes that are impregnated with permethrin insecticide will also work to some extent. It is important to inspect yourself and your loved ones for ticks, which can be tiny; and to report to the nearest health facility or doctor if you suspect a potential exposure to ticks along with any of the symptoms described.

Typhoid Fever

South Africa has a low endemicity for typhoid fever, and sporadic cases are reported in all provinces every year. In addition to sporadic endemic disease, clusters and outbreaks may occur and there is ongoing risk of typhoid fever in any area where water quality and sanitation is not optimal.

Currently, there has been an increase in cases of typhoid fever in Harare, Zimbabwe, which has been experiencing a typhoid outbreak since 2012 due to contamination of water sources. Travellers to Zimbabwe are therefore advised to take the following precautions:

- Drink and use safe water. Use treated or bottled water that is in sealed containers for all cooking, drinking, washing of utensils and brushing of teeth.
- Wash your hands regularly with soap, particularly before eating, preparing food or feeding your children and after using the toilet, cleaning your child's bottom or taking care of someone ill with diarrhoea.
- Cook food (especially seafood) well, eat it whilst hot, keep it covered and peel fruits and vegetables. *Boil it, Cook it, Peel it, or Forget it!*
- Be cautious about food prepared by vendors or restaurants.
- Consider requesting an anti-typhoid vaccine from your doctor before travelling.

All travellers are advised to be aware of the symptoms of typhoid fever, which include fever, headache and gastrointestinal symptoms such as abdominal pain/cramps, nausea and vomiting, constipation or diarrhoea, and to report to their nearest health facility or doctor if they suspect that they may have contracted typhoid fever.

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