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Division of the National Health Laboratory Service

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CONTENTS

1 FOOD- AND WATER-BORNE DISEASES

Diarrhoeal disease outbreak, Bloemhof, North West Province

An outbreak of diarrhoeal disease in Bloemhof Municipality, North West Province, was reported during the week of 26 May 2014. Healthcare facilities in the area noticed an increase in the number of patients presenting with diarrhoea on Sunday 25 May 2014. Since then, >600 cases of diarrhoea have been reported by healthcare facilities in the area. The majority of cases were not severe, but 11 patients (mostly young children) required referral and/or admission to hospital. A total of three deaths was reported during the outbreak - all children <2 years of age with diarrhoea complicated by dehydration.

The number of diarrhoea cases has declined dramatically; during the week of 16 June 2014, very few cases were reported, in keeping with expected rates of background diarrhoeal disease in the community. Cases of diarrhoeal disease in young children may be expected to increase as a result of the annual rotavirus season (which is imminent), and is unrelated to the outbreak.

Stool samples collected during the outbreak were tested at Tshepong NHLS laboratory and NICD-NHLS (Centre for Enteric Diseases and Centre for Opportunistic, Tropical and Hospital Infections). Enteric pathogens were detected in 50% of the samples tested; in 71% of these cases, multiple pathogens were detected. *Cryptosporidium* spp. was detected in a single case, but no other enteric parasites were observed. Enteric viruses were detected in one-third of the samples, namely astrovirus, adenovirus and norovirus. At least 35% of stool samples yielded diarrhoeagenic *E. coli*; pathotypes isolated included diffusely adherent *E. coli* (DAEC), entero-invasive *E. coli* (EIEC) and enteropathogenic *E. coli* (EPEC). *Aeromonas* spp. was isolated in two cases.

Considering the clinical, epidemiologic and multipathogen nature of the outbreak, contaminated drinking water is the likely source of this outbreak. Water samples were collected and submitted for testing to independent laboratories by

local municipality/health officials, but test results are not known. Water samples are currently being tested at the Enteric Virus and Environmental Research Unit (Department of Medical Virology, University of Pretoria) for specific enteric viruses.

During the outbreak, numerous interventions and control measures were put in place to address the issues of safe water supply to the community, following which the case numbers decreased. Health promotion messaging included recommendations for making water safe (i.e. boiling water or adding bleach), advising the use of home-made oral rehydration solution for diarrhoea and vomiting, and encouraging timely healthcare-seeking behaviour.

Source: Outbreak Response Unit, SA-FELTP, Centre for Enteric Diseases, and Centre for Opportunistic, Tropical and Hospital Infections, NICD-NHLS; North West Province Department of Health; Enteric Virus and Environmental Research Unit, Department of Medical Virology, University of Pretoria; Tshepong NHLS laboratory

2 INTERNATIONAL ALERTS

a Middle East respiratory syndrome coronavirus (MERS-CoV): update and advice for pilgrims visiting the Middle East

As at 16 June 2014, the World Health Organization (WHO) has reported a total of 701 laboratory-confirmed cases of human infection with Middle East respiratory syndrome coronavirus (MERS-CoV) including at least 249 deaths. The number of MERS-CoV cases reported continues to increase, with a sharp rise noted since March 2014. To date all reported cases have been linked to countries in the Arabian Peninsula, Iran being the latest country to report cases. Other countries in or near the Arabian Peninsula with laboratory-confirmed cases include Jordan, Saudi Arabia, Yemen, United Arab Emirates (UAE), Qatar, Oman, Kuwait and Lebanon. Countries with travel-associated cases include Algeria, Tunisia, Egypt, United Kingdom (UK), France, Greece, Germany, Italy, the Netherlands, Malaysia, Philippines and the United States of America (USA).

Travel advice on MERS-CoV for pilgrims visiting the Middle East

WHO does not advise special screening at points of entry with regard to religious pilgrimages nor does it currently recommend the application of any travel or trade restrictions. However, the WHO has recently published a travel advisory on MERS-CoV for pilgrimages available at: http://www.who.int/ith/updates/20140603/en/.

Actions to take in preparation for Umra or Hajj pilgrimages

People with pre-existing medical conditions (diabetes, renal failure, chronic lung disease, and immunocompromised persons) are considered to be at high risk of severe disease from MERS-CoV infection. Pilgrims planning to travel are advised to consult a healthcare provider before travelling to review the risk and assess whether making the pilgrimage is advisable. Medical staff accompanying pilgrims should be up to date on MERS-CoV information and guidance, including how to recognise early signs and symptoms of infection, who is considered to be at high risk, and what to do when a suspected case is identified.

Actions to take during Umra or Hajj

- To lower the risk of infection, travellers are advised to:
  - ⇒ Practice good hand hygiene and respiratory hygiene (covering mouth and nose when coughing or sneezing, washing hands after contact with respiratory secretions, or if not possible coughing/sneezing into upper sleeves of clothing and keeping a distance of one metre with other persons when having acute febrile respiratory symptoms)
  - ⇒ Avoid close contact with camels, visiting farms and consuming camel products (unpasteurised milk, urine or improperly cooked meat)
- Travellers to the Arabian Peninsula who develop symptoms either during travel or after their return are encouraged to seek medical attention and to share their history of travel with healthcare workers
- Travellers who develop significant acute respiratory illness with fever and cough (severe enough to interfere with usual daily activities) are advised to:
  - ⇒ Report to the medical staff accompanying the group or to the local health services
  - ⇒ Minimise their contact with others to keep from infecting them
  - ⇒ Practise cough etiquette, and delay travelling until they are no longer symptomatic
  - ⇒ Avoid attending crowded places and preferably isolate themselves until the end of

the respiratory symptoms and, if isolation is not possible, use a tissue for covering nose and mouth or a surgical mask when in crowded places.

Actions to take after Umra or Hajj

- Travellers returning from Umra or Hajj are advised that if they develop a significant acute respiratory illness during the two weeks after their return, they should seek medical attention and notify their medical practitioner of their recent travel for Umra or Hajj. They should also practice cough etiquette and minimise contact with others.
- Persons who have had close contact with a pilgrim or traveller with a significant acute respiratory illness and who themselves develop such an illness should be advised to seek medical help and inform medical personnel that they have been in contact with a sick traveller so that they can be monitored for MERS-CoV.

Indications for MERS-CoV testing

Clinicians and healthcare facilities should be aware of the possibility of MERS-CoV infection in returning travellers/pilgrims who present with acute respiratory illness, especially those with fever and cough, and/or pneumonia. They should also be aware of atypical presentation in patients who are immunocompromised. Details of case definitions, indications for testing and appropriate specimens for MERS-CoV can be accessed at the NICD webpage: http://www.nicd.ac.za/?page=alerts&id=5&rid=340.

Additional information on MERS-CoV can be accessed at the following websites:
WHO website: www.who.int
NICD website: www.nicd.ac.za
CDC website: www.cdc.gov

Source: Centre for Respiratory Diseases and Meningitis, NICD-NHLS

b Ebola virus disease outbreak in West Africa: update

The outbreak of Ebola virus disease (EVD) in West Africa which was first reported in a World Health Organization communiqué on 23 March 2014 is ongoing. Available evidence suggests that the outbreak began in Guinea's Guéckédou Prefecture during December 2013, with subsequent spread to other prefectures in Guinea (including the capital Conakry), as well as neighbouring Liberia and Sierra Leone. All three countries reported new cases during the week of 16 June 2014, indicating ongoing transmission of EVD. The cumulative number of cases and deaths are shown in Table 1.

The risk of infection for travellers is very low since most human infections result from direct contact with the body fluids or secretions of infected patients, particularly in hospitals (nosocomial transmission) and as a result of unsafe procedures, use of contaminated medical devices (including needles and syringes) and unprotected exposure to contaminated body fluids. Since the current outbreak is reported in countries and areas which are not frequented by many tourists or travellers, the risk of EVD cases being imported into South Africa is low. However, healthcare or international agency workers etc. involved in the outbreak response may travel to and present in South Africa for medical care, and a high index of suspicion is important for such cases. A detailed history regarding travel and level of contact with suspected/confirmed EVD cases is extremely important.

Further information for South African healthcare workers regarding the case definition for suspected EVD and laboratory testing can be accessed at www.nicd.ac.za.

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

Table 1. Ebola virus disease outbreak in West Africa: summary of cases as at 22 June 2014

Country	Total cases (laboratory-confirmed, probable and suspected)	Total deaths	Case fatality rate
Guinea	390	267	68%
Liberia	41	25	61%
Sierra Leone	136	58	43%

3 SEASONAL DISEASES

a Seasonal influenza

The 2014 influenza season has not yet begun. The start of the annual influenza season has been defined as the week during which the influenza detection rate has risen to ≥ 10% and is sustained for ≥2 consecutive weeks. To date, the influenza detection rate from Viral Watch surveillance programme sites has only risen above 10% sporadically, but not been sustained for ≥ 2 weeks.

The average week of influenza season onset over the past 30 years has been the last week of May (range last week of April to first week of July). However, the number of specimens submitted by Viral Watch sites has increased from an average of 35 per month during March and April to 104 for the month of May, and 65 for this month as at 12 June.

Influenza A(H3N2) has been detected in 29 patients, influenza A(H1N1)pdm09 in 13, and influenza B virus in five patients. The majority (64%, 30/47) of patients with influenza were from Western Cape Province. In addition, 23 specimens have been received from patients at a point of entry into South Africa. Influenza B was detected in eight and influenza A(H1N1)pdm09 in two of these patients respectively.

As at 12 June 2014, 699 patients hospitalised with severe acute respiratory illness were tested at the four surveillance programme sentinel sites. Of these, four patients tested positive for influenza: two with influenza A(H3N2), and one each with influenza A(H1N1)pdm09 and influenza A (unsubtyped) (Table 2). In addition, 30% (202/699), 28% (187/699) and 8% (57/699) of cases were positive for respiratory syncytial virus, rhinovirus and adenovirus, respectively.

Table 2. Cumulative number of identified influenza types and subtypes and total number of samples collected by hospital, Severe Acute Respiratory Illness surveillance programme

Hospital	A not subtyped	A(H1N1)pdm09	A(H3N2)	B	Total samples
Edendale (KZN)	0	0	0	0	242
Klerksdorp-Tshepong (NW)	1	0	1	0	316
Mapulaneng (MP)	0	0	0	0	77
Matikwane (MP)	0	1	1	0	64
Total:	1	1	2	0	699

Clinicians are reminded to consider influenza in patients admitted with severe acute respiratory illness and to initiate empiric influenza antiviral therapy where influenza is suspected in such cases. Recommendations on target groups, dosages and contraindications for the 2014 influenza vaccine and influenza antiviral treatment are available in the Healthcare Workers Handbook on Influenza 2014, which can be accessed at: http://nicd.ac.za/assets/files/Healthcare%20Workers%20Handbook%20on%20Influenza%20in%20SA%20_12%20May%202014(1).pdf.

Source: Centre for Respiratory Diseases and Meningitis, NICD-NHLS

b Meningococcal disease

In South Africa, meningococcal disease is endemic with cases occurring year-round, but with seasonal peaks in winter and early spring. In addition, there is a natural cyclical pattern of meningococcal disease with peaks of disease occurring every 5 to 10 years. Current rates of meningococcal disease in South Africa are at a nadir and we are expecting an increase in rates based on known periodicity.

Currently, sporadic cases of meningococcal disease continue to be reported across the country, with no noticeable seasonal increase of laboratory-confirmed cases as yet. There are inherent delays in laboratory-based reporting, which lags behind

clinical reports; in addition, because our laboratory-based surveillance system excludes disease diagnosed clinically without laboratory confirmation, reported rates represent a minimum estimate of the true burden of disease.

By the end of epidemiological week 22 (week ending 31 May 2014), a total of 42 laboratory-confirmed cases was reported to the Centre for Respiratory Diseases and Meningitis (CRDM), NICD-NHLS (Table 3). The highest burden of disease is among the <1 year age group, where 10 (24%) cases have been reported so far. A slightly higher number of cases for the equivalent time period and age group in 2013 (n=13, 22%) was reported.

The reported cases were caused by diverse serogroups, which is in keeping with sporadic endemic disease in the country. Serogroup data were available for 35/42 (83%) of cases. Serogroups B, C and W* have been identified most commonly this year (9/35, 26% serogroup B; 9/35, 26% serogroup C and 11/35, 31% serogroup W*). There were also 5 cases of serogroup Y and 1 case of serogroup X disease.

No additional cases have been reported from Eastern Cape Province or in adults 30-39 years of age (increase in case numbers noted in May 2014 Communiqué).

As the meningococcal season is due to start and an increase in cases may be expected this year, clinicians should have a high index of suspicion for meningococcal disease in patients who present with an acute febrile illness and nonspecific early signs and symptoms. Disease typically has a rapid progression and should be managed as a medical emergency in order to reduce morbidity and mortality. All cases of suspected and/or confirmed meningococcal disease (meningitis and sepsis) should be notified telephonically to the Department of Health.

Source: Centre for Respiratory Diseases and Meningitis, NICD-NHLS

Table 3. Number of laboratory-confirmed meningococcal disease cases reported until end of week 22, 2013 and 2014, by province

	Year	
Province	**2013**	**2014**
Eastern Cape	12	11
Free State	5	2
Gauteng	15	12
KwaZulu-Natal	12	2
Limpopo	0	0
Mpumalanga	1	0
Northern Cape	1	0
North West	0	0
Western Cape	13	15
Total	59	42

*Previously known as serogroup W135. Harrison OB, EID 2013: 19(4) 566-573

4 ZOONOTIC DISEASES

Rabies

Rabies is endemic in South Africa and certain areas of the country are highly affected by rabies circulating in domestic dogs. At present, these areas include: Bushbuck Ridge and Mbombela surrounds in Mpumalanga Province; eThekwini and surrounds in KwaZulu-Natal Province; Mthatha and Queenstown areas in Eastern Cape Province; Ladybrand and surrounds in Free State Province. There has also been a recent increase in dog rabies cases in North West Province. It is important, however, to note that rabies is not restricted to these hotspots.

Human rabies cases in South Africa are mostly

associated with dog exposures. A nine-year-old boy and his five-year-old brother were attacked by a neighbour's dog in Mogwase town (near Rustenburg), located in north-eastern North West Province on 06 April 2014. The boys were promptly taken to a healthcare facility after the attack, where rabies vaccination and rabies immunoglobulin was administered to the five-year-old boy. His older brother, however, did not receive any rabies post-exposure prophylaxis (PEP) since the healthcare professional considered his wounds to be superficial. The owner of the dog implicated in the attack tried to contain the animal and kill it, but was bitten in the process sustaining a finger laceration. The man reportedly did not seek any medical attention after the incident, and died three weeks after the incident. No report of his clinical condition prior to death is available at this time. The older brother started experiencing fever, headaches, confusion and agitation on 26 May 2014. He was admitted to a local hospital in Rustenburg on 02 June 2014, and died six days later. During hospitalisation a cerebrospinal fluid specimen and two saliva specimens were collected and submitted for laboratory investigation. Rabies reverse transcription PCR tested repeatedly negative on these specimens. Rabies virus specific antibodies were measured in the cerebrospinal fluid specimen, and although IgM tested negative, IgG was positive at a low titre. The latter finding supports the clinical diagnosis of rabies in this patient. A post-mortem brain specimen has been requested to confirm the diagnosis. The five-year old brother who received rabies PEP remains well at this time.

The tragic outcome of this case serves as a stark reminder of the critical importance of appropriate application of rabies PEP, which can be a life-saving intervention. Even superficial wounds including nicks and scratches are deemed as exposures, albeit the need for rabies immunoglobulin in such cases may not be indicated (i.e. category 2 exposures). However, any injury, including a scratch, that draws blood constitutes a category 3 exposure and both rabies vaccine and rabies immunoglobulin are indicated. Community awareness of the risk of rabies following dog exposures remains low in most communities in South Africa, particularly in peri-urban/rural areas.

A total of three laboratory-confirmed human rabies cases has been recorded during 2014 in the country to date. These cases originated from Limpopo, Eastern Cape and North West provinces. In addition, three probable cases of human rabies have been reported from Limpopo (n=1) and Mpumalanga (n=2) provinces. These cases were clinically compatible with rabies, and a history of exposure to a dog/potentially rabid animal was noted; however, for numerous reasons laboratory confirmation was not possible.

Healthcare professionals and members of the public can access more information on rabies through the NICD website: www.nicd.ac.za.

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

5 ANTIMICROBIAL RESISTANCE

Update on carbapenemase-producing Enterobacteriaceae

The Johannesburg and Cape Town Antimicrobial Resistance Reference Laboratories (AMRRL) of the Centre for Opportunistic, Tropical and Hospital Infections (COTHI) at NICD/NHLS offer testing of suspected carbapenemase-producing Enterobacteriaceae (CPE) isolates for the presence of selected carbapenemase genes. For May 2014, a total of 34 Enterobacteriaceae isolates were screened, 65% (22/34) of which were confirmed to be carbapenemase-producing Enterobacteriaceae. The most common isolates referred for testing were *Klebsiella pneumoniae* (17/34, 50%) followed by *Enterobacter cloacae* (7/34, 20%) (Figure 1).

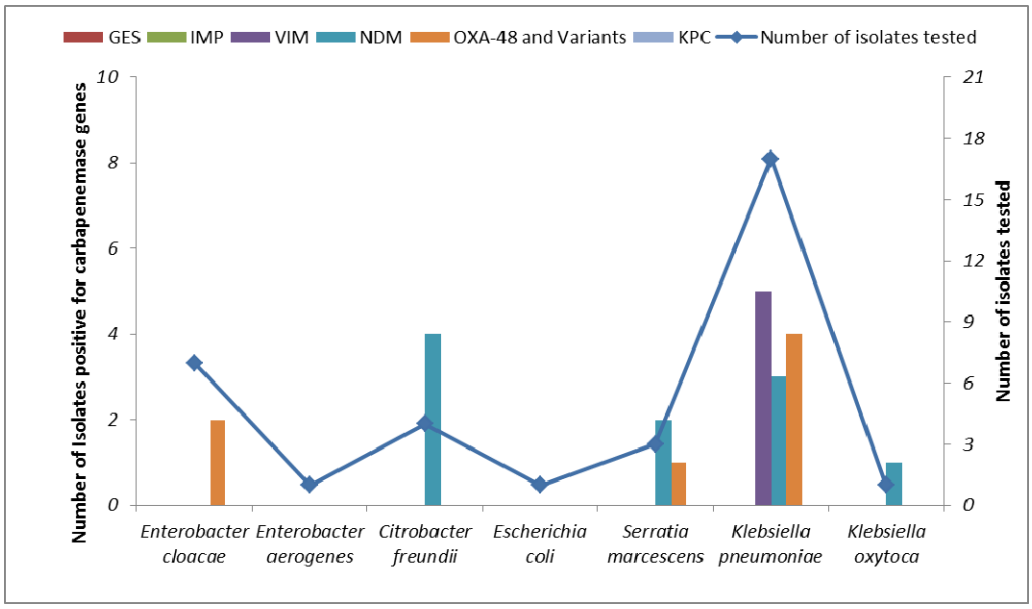

Figure 1. Enterobacteriaceae isolates screened (n=34) and confirmed CPE (n=22) during May 2014, AMRRL (NICD-NHLS)

Ten NDM-positive isolates were identified (six from private hospitals in KwaZulu-Natal Province and four from public hospitals in Free State and Western Cape provinces). Seven OXA-48-positive isolates were identified (six from private hospitals in Gauteng and KwaZulu-Natal provinces, and one from a Gauteng Province public hospital). Five VIM-positive isolates were identified, all from the public sector in Gauteng Province (Figure 2).

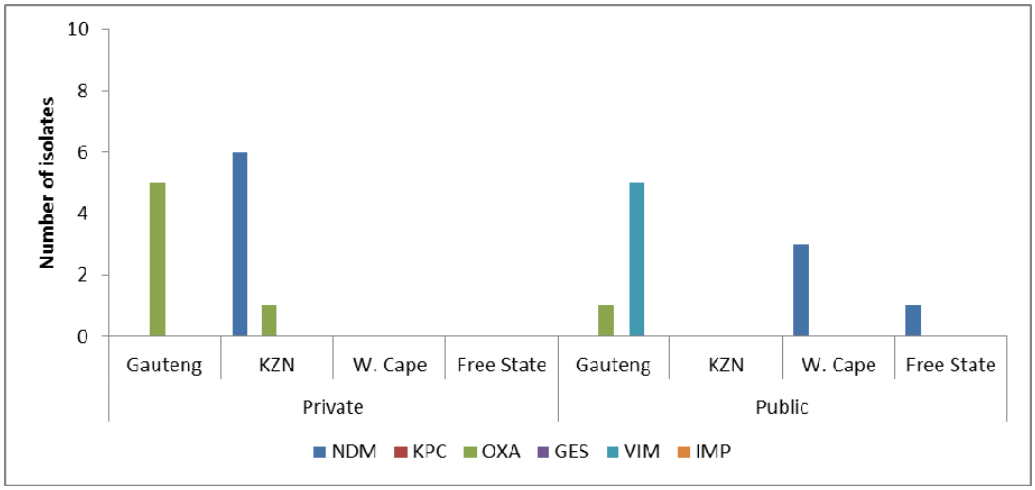

Figure 2. Distribution of CPE (n=22) by province and healthcare sector, May 2014, AMRRL (NICD-NHLS)

It is important to note that these figures do not represent the current burden of CPEs in South Africa. Given that CPE infections are currently not reportable or notifiable in South Africa, there is no platform for appropriate surveillance reports and consequently no locally representative data is available. This is of major concern, since meaningful data can inform public health policy and highlight priorities for action. Controlling the spread and limiting the impact of CPEs in South Africa will require 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 the AMRRL, NICD/NHLS. Please telephone (011) 555 0342/44 or email ashikas@nicd.ac.za and olgap@nicd.ac.za for queries or further information. In the Western Cape area, please email colleen.bamford@nhls.ac.za.

Source: Centre for Opportunistic, Tropical and Hospital Infection, NICD-NHLS

6 VACCINE-PREVENTABLE DISEASES

Oral polio vaccine shortage in South Africa

The National Department of Health has noted a temporary shortage of oral polio vaccine (OPV) in some public healthcare facilities in certain districts of the country. The shortage of OPV is due to delays in the availability of vaccine vial monitors (VVM). An alternative OPV vaccine which is supplied in ten-dose vials has been procured and tested while waiting for the VVM labels from the manufacturer.

In view of the shortage, healthcare professionals are urged to ensure that their facilities order enough OPV to cater for catch-up doses for infants who missed their scheduled OPV dose. For those infants who did not receive OPV at birth, it is recommended that they receive their OPV doses at 6 and 10 weeks of age to accommodate the required four-week interval between the first and second doses. Healthcare professionals are urged to screen road-to-health booklets to check each child's vaccination status. Facilities are advised to communicate with caregivers to arrange for catch-up doses as soon as the OPV vaccine stock is available.

Good protection against poliovirus is crucial in light of the recent international spread of poliovirus from endemic countries to countries which had not reported wild type poliovirus disease for many years. As we progress towards the global eradication of polio, constant vigilance for imported virus is mandatory. For the year to date, as at 18 June 2014, 103 wild type poliovirus cases have been reported from nine countries globally, as compared to 77 cases from five countries for the same time period in 2013.

In South Africa, the National Department of Health's Expanded Programme on Immunisation introduced inactivated polio vaccine (IPV) in addition to OPV in 2009. IPV is an injectable vaccine given at the age of 6, 10, and 14 weeks and again at 18 months of age. IPV will fortunately afford protection to children who missed their OPV dose, and there have been no shortages of IPV. Regardless of IPV however, any child who missed a dose of OPV must receive their OPV dose/s, since the mucosal gut protection afforded through OPV is higher than that induced by IPV. In populations where IPV has been used in isolation (for example in Israel), circulation of poliovirus within the community has been identified through environmental surveillance, despite the individual protection afforded by the vaccine. Israel has recently introduced supplementary immunisation campaigns with OPV to stop transmission of poliovirus amongst asymptomatically infected people.

References:

http://www.polioeradication.org/Dataandmonitoring/Poliothisweek.aspx

Source: Centre for Vaccines and Immunology, NICD-NHLS; National Department of Health

6 BEYOND OUR BORDERS

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
1. Vector-borne diseases		
Chikungunya Caribbean countries with ongoing transmission: Haiti Dominican Republic Dominica Cuba Guadeloupe St Kitts US Virgin Islands South American countries with ongoing transmission: Guyana	Chikungunya virus infections continue to spread into new countries and cases are increasing in affected countries. Many other countries have reported travel-related cases, mostly ex-Caribbean.	Chiikungunya and dengue fever are mosquito-borne viral infections transmitted by *Aedes* spp. mosquitoes, which bite mostly during the day. Travellers should wear long-sleeved shirts and long pants during the day and stay in well-ventilated (fan/air-conditioned) rooms where possible; use mosquito repellents containing DEET to avoid being bitten.
Dengue fever Asia: Singapore (national) Sri Lanka (national) Malaysia (national) Philippines (national) Middle East: Saudi Arabia (Jeddah) Africa: Tanzania (mainland and Zanzibar) Mozambique Pacific: Australia (northern Queensland) Central America: Mexico (five states) Guatemala (Coatepeque) Honduras (national) Nicaragua (national) Caribbean: Cuba (national) South America: Brazil (national) Venezuela (national)	Of concern is that travellers attending the World Football Cup sporting event in Brazil are at risk for dengue infection given the widespread detection of cases across the country indicating ongoing transmission.	

Disease & countries	Comments	Advice to travellers
1. Vector-borne diseases (continued)		
Malaria Egypt	11 June 2014: more than 100 cases of malaria from a temperate strain of *Plasmodium vivax* with a 6-9 month incubation period.	The most satisfactory theory for the phenomenon of prolonged incubation periods is based on the presumed existence of two populations of sporozoites in *P. vivax*. In temperate strains, sporozoites requiring long incubation periods for development are present in great excess over a much smaller proportion of sporozoites characterized by short incubation periods. This has implications for tracking cases. Prevention of mosquito bites is the best method to prevent acquisition of the infection.
2. Water- and food-borne diseases		
Cholera Africa: Nigeria (17 states) South Sudan Uganda (Namayingo District) Asia: Nepal (Central and Eastern Regions)	18 June 2014: 22 347 cases in 17 states since January 2014 07 June 2014: 1459 cases, 31 deaths 08 June 2014: 94 cases, 3 deaths 13 June 2014: >3 000 cases reported since late April 2014	Drink and use safe water (bottled water with an unbroken seal, boiled water or water treated with chlorine tablets). Wash hands with soap and safe water often. Eat hot well-cooked food, peel fruits and vegetables.
3. Respiratory Diseases		
Measles Americas: USA (National) Europe: Russia Ukraine Kazakhstan Africa: Somalia Oceania: Australia New Zealand	Major outbreaks of measles have been documented in numerous countries during 2014, with many reporting ongoing transmission.	Good hygiene and basic infection prevention practices can minimize risk of respiratory infections in travellers: • cough etiquette • avoiding contact with sick people • avoid handling of animals • frequent hand washing with soap and water or the use of an alcohol-based hand rub. Travellers should contact a medical practitioner if they develop acute respiratory symptoms upon return from a known risk area.

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: 21 June 2014

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