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Division of the National Health Laboratory Service

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1 INTERNATIONAL ALERTS

a MERS-CoV: update

Background

Middle East respiratory syndrome coronavirus (MERS-CoV) is a recently identified respiratory virus which causes severe respiratory illness. It was first reported in Saudi Arabia in 2012. From September 2012 to date, WHO has been informed of a total of 536 laboratory-confirmed cases of human infection with MERS-CoV including 145 deaths (case fatality ratio 27%). The number of cases reported has increased sharply since March 2014. To date, all the cases reported have been linked to countries in the Arabian Peninsula. Countries in 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 United Kingdom (UK), Tunisia, Egypt, Greece, Germany, Italy, Malaysia, Philippines and United States of America (USA).

Presentation and clinical course

The majority of cases (67%) are male, and the median age is 69 years. Patients with MERS-CoV have presented with respiratory infections ranging from mild upper respiratory tract illness to severe lower respiratory disease. The majority of cases have presented with acute, serious respiratory illness with fever, cough, and shortness of breath. Some patients, especially the immunosuppressed, have presented with fever and diarrhoea. More severe disease has been reported in patients with comorbidities. Primary cases were predominantly symptomatic leading to high rates of admission to the hospital and death, whereas secondary infections led to lower rates of symptomatic illness and death (except in those who were already hospitalised). An increased proportion of mild cases have been detected as more potential contacts are being tested for the presence of the virus. Complications have included severe pneumonia and acute respiratory distress syndrome requiring mechanical ventilation, multi-organ failure, renal failure requiring dialysis, and pericarditis.

Transmission

Although there is growing evidence that the

dromedary camel is a host species for the MERS-CoV and that camels likely play an important role in the transmission to humans, the routes of direct and indirect transmission remain unknown. The virus has spread from person-to-person through close contact, such as caring for or living with an infected person. The majority of secondary cases are healthcare workers (and a small number of patients in hospital) who have likely become infected in the healthcare facility setting. However, there is currently no evidence of sustained spread of MERS-CoV in community settings.

Management

There is no specific treatment for disease caused by MERS-CoV. However, many of the symptoms caused by this virus can be treated and therefore treatment should be based on the symptoms. There is no available vaccine at present.

Precautions and infection prevention and control considerations

The increase in numbers of recently reported cases from healthcare workers and in healthcare facility settings underscores the importance of infection prevention and control. When providing care to all patients with symptoms of acute respiratory infection and whenever specimens are collected from cases under investigation, the appropriate infection prevention and control guidelines should be followed. The WHO Interim Guidelines on Infection prevention and control of epidemic- and pandemic-prone acute respiratory diseases in health care (2014) can be accessed at: http://www.who.int/csr/bioriskreduction/infection_control/publication/en/

Patients should be managed as potentially infected when the clinical and epidemiological clues strongly suggest MERS-CoV, even if an initial test on a nasopharyngeal swab is negative. Repeat testing should be done when the initial testing is negative, preferably on specimens from the lower respiratory tract.

WHO does not advise screening at points of entry or travel or trade restrictions.

Indications for testing

MERS-CoV should be suspected in anyone who develops fever and symptoms of respiratory illness, such as cough or shortness of breath, within 14 days after traveling from countries in or near the Arabian Peninsula. 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: http://www.who.int/csr/disease/coronavirus_infections/en/

NICD website: http://www.nicd.ac.za

WHO website: http://www.who.int/csr/bioriskreduction/infection_control/publication/en/

CDC website: http://www.cdc.gov/coronavirus/index.html

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

b Ebola virus disease outbreak in West Africa: update

Although the outbreak is ongoing, numbers of newly-reported suspected/laboratory-confirmed cases of Ebola virus disease (EVD) are decreasing in Guinea, the epicentre of the outbreak. Fortunately, no further cases have been identified in the capital Conakry; recent cases have only been identified in Guéckédou Prefecture. There have been no further cases reported from Liberia since the last Communique (April 2014). All suspected cases in Sierra Leone and Mali have tested negative for EVD. A summary of case numbers to date is shown in Table 1.

Epidemiologic analysis suggests that the first case of the outbreak was a 2-year-old child in Guéckédou Prefecture (province) who died on 06 December 2013. An infected healthcare worker is thought to have triggered spread of EVD to three other provinces. A businessman who travelled from central Guinea to the capital city Conakry and died there a day later triggered spread of EVD in Conakry. In Liberia, EVD first appeared in the northern town of Foya on the Guinean border when a woman travelled from Guinea to visit family in the town, and infected her sister.

Zaire ebolavirus is responsible for the current outbreak, and full-length genome sequencing and phylogenetic analysis has shown it to belong to a separate clade from the known *Zaire ebolavirus* strains from DRC and Gabon. This suggests that the ebolavirus strain from Guinea was not introduced from DRC or Gabon, but rather that the strain has evolved in parallel and may have been circulating in the West African region for some time.

Further information regarding EVD and the current outbreak, including recommendations for evaluating illness in travellers returning from West Africa and indications for EVD testing can be found on the NICD website (www.nicd.ac.za).

Table 1: Ebola virus disease outbreak in West Africa: summary of cases as at 10 May 2014

Country	Total cases (laboratory-confirmed, probable and suspected)	Total deaths	CFR	Laboratory-confirmed cases	Laboratory-confirmed deaths	Date of illness onset in most recent case	Number of cases in healthcare workers
Guinea	233	157	67.4%	129	83	1 May 2014	25 (including 16 deaths)
Liberia	12	11	91.7%	6	6	06 April 2014	2

References

1. Baize S, Pannetier D, Oestereich L et al. Emergence of Zaire Ebola Virus Disease in Guinea – Preliminary Report. N Engl J Med. 2014 Apr 16 (Epub ahead of print)
2. Gatherer D. The 2014 Ebola virus disease outbreak in West Africa. J Gen Virol. 2014 May 2 (Epub ahead of print)
3. World Health Organization (www.who.int) – last accessed 15 May 2014

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

c Polio

On 05 May 2014, the World Health Organization (WHO) issued a statement regarding the threat of international spread of wild polio virus. The International Health Regulations Emergency Committee advised that this threat constitutes an 'extraordinary event' and a public health risk for which a coordinated international response is essential. During 2014 there has been international spread of wild poliovirus from three regions: central Asia (from Pakistan to Afghanistan), the Middle East (Syrian Arab Republic to Iraq), and Central Africa (Cameroon to Equatorial Guinea).

The Committee provided advice for polio-infected countries with active transmission, which includes recommendations for vaccination of travellers to avoid exportation of wild polio virus to other countries. Residents of polio-infected countries should receive a dose of oral (OPV) or inactivated (IPV) polio vaccine prior to international travel. Long-term visitors or travellers who spend ≥4 weeks in these countries should also receive a dose of OPV or IPV prior to departure from that country, These countries include Pakistan, Cameroon, the Syrian Arab Republic, Afghanistan, Equatorial Guinea, Ethiopia, Iraq, Israel, Somalia and Nigeria. The Committee recommended that travellers from countries that have previously exported polio (Cameroon, Pakistan, Syrian Arab Republic) should further have an International Certificate of Vaccination or Prophylaxis as specified in Annex 6 of the International Health Regulations (2005).

The NICD recommends that South African travellers should have a booster polio vaccination prior to visiting these countries, and should document such vaccination. Vaccination should ideally be performed between 4 weeks and 12 months prior to travel, but can be performed even up until the day of departure. For children this can take the form of OPV or DTaP-IPV-Hib. For adults the available options are OPV or Tdap-IPV.

Polio is targeted for global eradication. In early 2013 there remained only three countries with endemic wild-type polio transmission – Nigeria, Pakistan, Afghanistan. Polio would be the second human disease, after smallpox, to be eradicated. Recent global successes, including certification of India as polio-free in January 2014, have shown that global polio eradication is within reach. Since late 2013 there have been wild-type polio cases reported from previously polio-free areas in the horn of Africa, the Middle East and Central Africa.

Update on the spread of poliovirus infections

As of 07 May 2014 the number of polio cases reported from January to April 2014 as compared to the year 2013 is shown in Table 2.

Table 2: Wild type poliovirus cases worldwide, January—April 2013 and 2014

Countries	Year-to-date 2014				Year-to-date 2013				Total in 2013	Date of most recent case
	WPV1	WPV3	W1W3	Total	WPV1	WPV3	W1W3	Total		
Pakistan	59			59	6			6	93	20-Apr-14
Nigeria	2			2	18			18	53	24-Mar-14
Afghanistan	4			4	2			2	14	06-Feb-14
Equatorial Guinea	3			3				0	0	19-Mar-14
Iraq	1			1				0	0	10-Feb-14
Cameroon	3			3				0	4	31-Jan-14
Syria	1			1				0	35	21-Jan-14
Ethiopia	1			1				0	9	05-Jan-14
Somalia				0				0	194	20-Dec-13
Kenya				0				0	14	14-Jul-13
Total	**74**	**0**	**0**	**74**	**26**	**0**		**26**	**416**	
Total in endemic countries	**65**	**0**	**0**	**65**	**26**	**0**		**26**	**160**	
Total outbreak	**9**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**256**	

At end-2013, 60% of polio cases were the result of international spread of wild poliovirus, and there was increasing evidence that adult travellers contributed to this spread.

The aim of WHO issuing an alert to declare poliovirus spread as a public health disease of international concern and issuing recommendations was to have measures put in place to prevent the spread of poliovirus. These recommendations should be put into place in conjunction with existing measures to prevent and monitor poliovirus, which include high routine poliovirus vaccination coverage and an increased alert for acute flaccid paralysis (AFP) surveillance used for poliovirus surveillance.

References

http://www.polioeradication.org/Dataandmonitoring/Poliothisweek.aspx
http://www.who.int/ihr/ihr_ec_2014/en/
Last accessed 2014/05/15.

Source: Centre for Vaccines and Immunology and Division for Public Health, Surveillance and Response, NICD-NHLS

d Yellow fever outbreaks in the Democratic Republic of Congo (DRC)

On 24 April 2014 the WHO confirmed that two events of yellow fever (in the north and south DRC) had been reported in March 2014, and that six cases had been laboratory confirmed. A total of 139 suspected, probable and laboratory-confirmed cases (including six deaths) have been recorded to date. Cases have been reported from Orientale Province and Katanga Province. A mass vaccination campaign has been instituted in response to the outbreak.

Vaccination is the most important preventive measure against yellow fever, and the 17D vaccine (a live, attenuated viral vaccine) is the only commercially-available vaccine. This vaccine is highly effective, and a single dose is sufficient to confer sustained immunity and life-long protection; a booster dose of yellow fever vaccine is not needed. The vaccine provides effective immunity against yellow fever within 10 days for 80–100% of people and 99% immunity within 30 days.

The vaccine is generally safe, except for rare cases of vaccine-associated neurotropic and viscerotropic disease. Contraindications include severe egg allergy, severe immunodeficiency, and age <6 months. A risk-benefit assessment should be done in the case of pregnant or lactating women, and persons aged ≥60 years.

Travellers arriving from yellow fever endemic countries must have a valid certificate of yellow fever vaccination. If there are medical grounds for not being vaccinated, the traveller must have a valid yellow fever vaccination waiver as stipulated by International Health Regulations.

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

2 SEASONAL DISEASES

a Influenza

As at 13 May 2014, 97 specimens have been received from Viral Watch sites since 01 January 2014 compared to 170 over the same time period in 2013. Influenza A(H1N1)pdm09 virus has been detected in five, influenza A(H3N2) in four, and influenza B virus in two patients. Several of the 11 patients were known to have travelled in the northern hemisphere shortly before the onset of symptoms. In addition, 23 specimens have been received from patients at a point of entry into South Africa; influenza A(H1N1)pdm09 was detected in two and influenza B in eight of these patients.

From 01 January to 13 May 2014, 552 patients hospitalised with severe acute respiratory illness were tested at four sentinel sites. Although none of these patients tested positive for influenza, 30% (168/552), 28% (154/552) and 9% (47/552) were positive for respiratory syncytial virus, rhinovirus and adenovirus, respectively.

The 2014 influenza season has not started as yet. The start of the annual influenza season has been defined as the week during which the influenza detection rate has risen above 10% and is sustained for two or more consecutive weeks. To date the influenza detection rate from viral watch sites has sporadically risen above 10% but not been sustained for ≥ two weeks. Over the past 30 years, the average week of influenza season onset has been the last week of May; the range of season onset is from the last week of April to the first week of July.

Influenza vaccination is currently available at public health clinics and private pharmacies. Clinicians are reminded that they should vaccinate individuals in the groups that are targeted for influenza vaccination. 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, 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 the laboratory-based surveillance system excludes disease diagnosed clinically without laboratory confirmation, observed rates represent a minimum estimate of the true burden of disease.

By the end of epidemiological week 18 (week ending 30 April 2014), a total of 36 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 9 (25%) cases have been reported so far. A lower number of cases for the equivalent time period and age group in 2013 (n=7, 16%) were reported. In addition, a small increase in case numbers was noted in some groups when compared to the same period last year: in Eastern Cape Province (where laboratory-confirmed cases are generally poorly reported, so any increase is examined), and in adults 30-39 years of age. Cases from both these groups were reviewed and were not obviously epidemiologically linked.

The reported cases were caused by diverse serogroups, which is in keeping with sporadic endemic disease in the country. Serogroup data were available for 29/36 (81%) of cases. Serogroups B, C and W* have been identified most commonly this year (7/29, 24% serogroup B; 7/29, 24% serogroup C and 10/29, 34% serogroup W*). There were also four cases of serogroup Y and one case of serogroup X disease.

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.

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

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

Table 3: Number of laboratory-confirmed meningococcal disease cases reported until end of epidemiological week 18, 2013 and 2014, by province.

	Year	
Province	**2012**	**2013**
Eastern Cape	8	7
Free State	0	3
Gauteng	20	4
KwaZulu-Natal	8	5
Limpopo	1	1
Mpumalanga	1	1
Northern Cape	0	1
North West	2	1
Western Cape	11	10
	51	33

3 VECTOR-BORNE DISEASES

a Fatal tick bite fever

Another case of fatal tick bite fever was reported to the NICD in the past month. A 56-year-old male was admitted to a Tshwane hospital with a history of fever for one week and confusion. A typical eschar was noted on the patient's chest, and after admission to hospital he developed a generalised maculopapular rash which included lesions on his palms and soles. Thombocytopenia (platelet count of 34 x 10^9/L) was noted, with bleeding from venepuncture sites. Transaminasemia was remarkable, with AST and ALT peaking at 64 000 U/L and 12 000 U/L respectively. The patient suffered three cardiac arrests and died a few days later. He lived on a smallholding located in Kameeldrift, northeast of Pretoria, and reported the presence of many ticks on the property and recent tick infestations of his dogs. He also reported finding a tick in his bed some time before falling ill. Crimean-Congo haemorrhagic fever was considered as a possible diagnosis given the patient's clinical presentation and history of exposure to ticks, but was excluded by serology and PCR tests. Rickettsia serology did not provide definitive evidence for a diagnosis of tick bite fever, with *Rickettsia conorii* IgG testing positive at 1:80 but IgM negative. Rickettsia PCR performed on DNA extracted from a whole blood specimen and the eschar swab tested positive, confirming the diagnosis of tick bite fever.

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

b Odyssean malaria – Western Cape Province

The patient was a 44-year-old married man from Laingsburg, previously well. He was self-employed as a vehicle mechanic, working from home as well as call-outs within a 70km radius. Work activities included servicing taxis and long-haul trucks travelling along the N1, a major route between Cape Town and provinces and territories to the north. On Saturday 19 April he felt tired and feverish, with generalised body aches. He self-medicated for what he thought was influenza, but his clinical condition deteriorated. On Tuesday 22 April, he was too weak to walk, and his son took him to a GP who referred him to Laingsburg Hospital. He was treated with ceftriaxone for a suspected respiratory tract infection. Blood tests revealed a leukocyte count of 4.7 x 10^9/L, Hb 13.3 g/dL, and platelets 42 x 10^9/L. Because of the low platelet count, the laboratory performed a malaria antigen test, which was positive. The patient was referred to Worcester

Hospital and was treated with Coartem. He had no other signs of severe malaria and made an uneventful recovery. Microscopic examination of the blood film confirmed *Plasmodium falciparum* with a parasitaemia of <1% and a follow-up film showed complete clearance of parasites. Given that his last travel outside the Laingsburg area was more than 18 months before and the fact that he works on vehicles coming from up north and outside our borders, this is most likely a case of odyssean malaria (OM). This type of transmission involves importation of an infected vector mosquito from malaria endemic areas by means of motor vehicles, aircraft, trains etc. In South Africa most OM cases have been described in Gauteng Province, because of its position as the centre of economic activity in South Africa, attracting large volumes of traffic from areas that include malaria transmission zones. Two OM cases in the south of Johannesburg were recorded early in 2014,[1] and 7 cases, including one fatality, in early 2013.[2] OM has a high mortality rate because of delayed diagnosis and frequent severe clinical presentation.[3] The combination of febrile illness and thrombocytopenia should be a 'red flag' warning to check for malaria infection.

References

1. Communiqué January 2014
2. Communiqué January 2013
3. Frean J, Brooke B, Thomas J, Blumberg L. Odyssean malaria outbreaks in Gauteng Province, 2007-2013. South African Medical Journal (2014) 104: 335-338. [doi: 10.7196/SAMJ.7684]

Source: Department of Medicine, Worcester Hospital, Western Cape Province; Parasitology Reference Laboratory, Centre for Opportunistic, Tropical and Hospital Infections, NICD-NHLS

4 ZOONOTIC DISEASES

Rabies

Rabies was confirmed as the cause of death in a five-year-old girl from Cabazi village, near Mount Frere (KwaBhaca), Eastern Cape Province. She presented to hospital on 10 April 2014 with fever, headache, confusion, autonomic instability and insomnia, and died four days later. The child was attacked by a dog in the village and sustained 'scratches' on her right lower leg. No history of rabies post-exposure prophylaxis was reported. Rabies was confirmed on a post mortem-collected brain sample (using the direct fluorescent antibody test and RT PCR) and cerebrospinal fluid (using RT PCR).

Two cases of human rabies have been confirmed for 2014 to date - the case reported here, and a previously-reported case involving an elderly male from Limpopo Province.

A further three suspected rabies cases originating from Mpumalanga (n=1) and Limpopo (n=2) provinces have also been reported for 2014 to date. These cases could not be verified by laboratory testing, but clinical and exposure histories were compatible with a diagnosis of rabies. This compares to seven laboratory -confirmed human rabies cases in 2013, reported from Mpumalanga (n=1), KwaZulu-Natal (n=1), Limpopo (n=3) and Free State (n=2) provinces. Health 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 test referred isolates of suspected carbapenemase-producing Enterobacteriaceae (CPE) for the presence of selected carbapenemase genes. For April 2014, a total of 49 Enterobacteriaceae isolates were screened, 47% (23/49) of which were confirmed as CPE. The most commonly referred isolates were *Klebsiella pneumoniae* (25/49, 51%) followed by *Enterobacter cloacae* (13/49, 27%) (Figure1).

Ten NDM-positive isolates were identified (six from private hospitals in KwaZulu-Natal Province and four from public hospitals in Gauteng Province). Twelve OXA-48 positive isolates were identified (five from private hospitals in Gauteng Province, five from public

hospitals in Eastern Cape Province, and one each from public hospitals in Western Cape and Gauteng Provinces). One VIM-positive isolate from the public sector in Gauteng Province was identified (Figure 2).

It is important to note that these figures do not represent the current burden of CPEs in South Africa. CPE infections are currently not reportable or notifiable in South Africa, and this report does not represent surveillance and consequently no locally representative data is available, except those based on referral isolates. 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: Source: Centre for Opportunistic, Tropical and Hospital Infection, NICD-NHLS

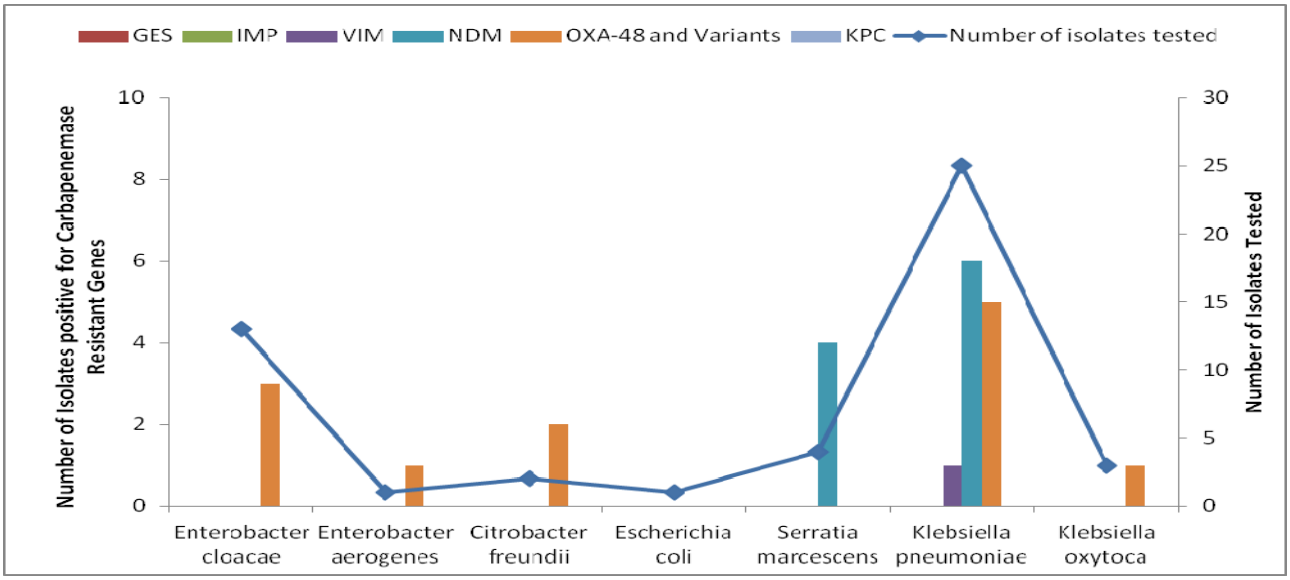

Figure 1. Enterobacteriaceae isolates screened (n=49) and confirmed CPE (n=23) during April 2014 at AMRRL (NICD-NHLS)

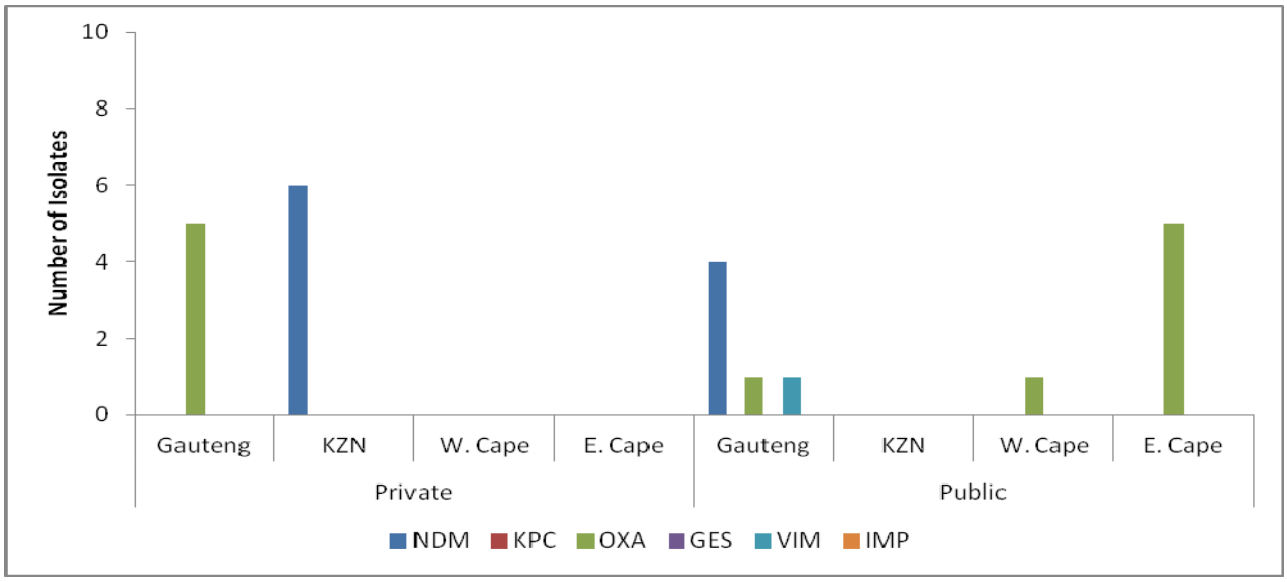

Figure 2. Laboratory-confirmed CPE (n=23) by province and healthcare sector

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 Basin	07 May 2014: 4 108 probable cases in 14 countries in the region	Chikungunya 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: Malaysia	At 21 April 2014: 28814 cases; 66 deaths	
Africa: Mozambique	26 April 2014: 22 suspected cases; 16 confirmed cases	
Tanzania (Dar es Salaam)	10 May 2014: At least 305 cases	
North America: Mexico	08 May 2014: 111 cases	
Central America: El Salvador	08 May 2014: Alerts issued in 58 municipalities	
Panama	08 May 2014: More than 3000 cases; 8 deaths	
South America: Brazil	08 May 2014: Aracatuba: 754 confirmed cases; 1 death Barin: 227 cases; 1 death Compinas: 17136 cases; 1 death Jau: 2673 cases; 5 deaths Votuporanga: 1476 cases; 1 death	
Peru:	08 May 2014: Lambayeque: 60 cases Piuru: 622 suspected cases; 192 confirmed cases; 3 deaths	

Disease & countries	Comments	Advice to travellers
2. Water-and food-borne diseases		
Cholera Africa: Nigeria Phillipines	 12 April 2014: 1 117 cases 13 May 2014: >200 suspected cases	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.
Hepatitis E Asia: Nepal	08 May 2014: approximately 6 000 suspected cases	The hepatitis E virus is transmitted mainly through contaminated drinking water. 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.
3. Respiratory Diseases		
Avian influenza A China H7N9, H5N6	 Ongoing outbreak	Good hygiene and basic infection prevention practices can minimise 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.
Measles USA Asia: Singapore	 07 May 2014: 189 cases from 15 states; no deaths Since January 2014: 99 cases	

References and additional reading:

ProMED-Mail (www.promedmail.org)

World Health Organization (www.who.int)

Centers for Disease Control and Prevention (www.cdc.gov)

Last accessed 15 May 2014.

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