NATIONAL INSTITUTE FOR COMMUNICABLE DISEASES
Division of the National Health Laboratory Service

Communicable Diseases Communiqué

SEPTEMBER 2015, Vol. 14(9)

CONTENTS

1 ZOONOTIC AND VECTOR-BORNE DISEASES

a Rabies

World Rabies Day – Let's end rabies together.

The 28th of September every year is World Rabies Day - a day dedicated to raising awareness and fostering commitment to global rabies control and elimination. Despite longstanding knowledge on rabies control in animals, and the availability of prophylaxis for humans, rabies remains one of the most formidable zoonoses worldwide. A recent study has shown that an estimated 59,000 persons die of rabies each year, equating to a rabies death every 10 minutes. Economic losses attributed to rabies exceed US$ 8.6 billion globally. These costs are partly ascribed to post-exposure prophylaxis regimens (including human rabies vaccines and immunoglobulin) and losses in livestock (US$ 512 million per year alone). In South Africa, a study published in 2014 calculated the cost of vaccination of a dog at less than US$ 7, and the cost of post-exposure prophylaxis for dog-bite victims US$ 333. In the 2015 the Rabies Advisory Committee of South Africa reported the total cost of human rabies prophylaxis to be ZAR 70 million per annum.

In South Africa rabies in domestic dogs remains the major concern (Figure 1). In the past decade sizeable outbreaks of dog rabies have been reported from Limpopo, Mpumalanga, Gauteng, Free State and the North West provinces. Currently 77% of animal rabies cases are reported form the Eastern Cape, North West, Mpumalanga and Kwa-Zulu-Natal provinces. The highest density of rabies per square kilometre in South Africa is the Ehlanzeni District of Mpumalanga Province. Poor adherence to rabies vaccination schedules by pet owners leads to susceptible dog populations, which are then able to sustain rabies virus transmission when it is introduced. This circumstance led to outbreaks in Vhembe district (Limpopo Province) from 2004 onwards, and in Soweto, Johannesburg in 2010. Concerns were raised this year when a pet dog was diagnosed with rabies in the Roodepoort suburb of Helderkruin in April, and a second infected dog in Kloofendal in August. Complacency regarding pet vaccinations renders any location in South Africa susceptible to rabies. Apart from dog rabies, rabies in livestock including bovine, ovine and caprine animals, and in wildlife including mongoose species and jackal, are also reported. In September 2015, a report of rabies in a the wild

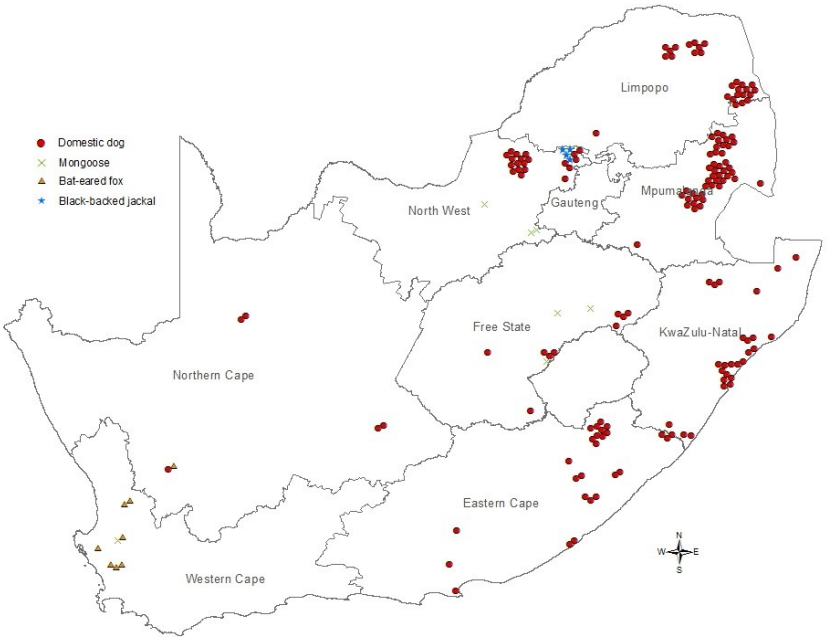


Figure 1. Distribution of confirmed rabies cases in animals in South Africa, 2014. (Source: Data obtained from the Department of Agriculture, Forestry and Fisheries)

dog (*Lycaon pictus*) pack in a private reserve near Hoedspruit, the only pack resident outside of the Kruger National Park, raised conservation concerns.

The past decade has seen advances in rabies control in South Africa. In KwaZulu-Natal and Mpumalanga Provinces, the incidence of dog and human rabies has declined markedly, in part through an increase in funding of anti-rabies efforts by a Bill and Melinda Gates Foundation-funded initiative. In the past fifteen years a total of 171 human rabies cases was laboratory confirmed in South Africa. These cases were reported from KwaZulu-Natal (n=73, 43%); Limpopo (n=42, 24%) Eastern Cape (n=36, 21%); Mpumalanga (n=8, 5%); Free State (n=5, 3%); North West (n=4, 2%); Northern Cape (n=2, 1%) and Gauteng provinces (n=1, ~0.5%) (Figure 2). No human cases of rabies have been confirmed from the Western Cape Province during this period. The majority (80%) of confirmed human cases were directly linked to exposures associated with domestic dogs. Since 2000, 6 human rabies cases were reportedly associated with non-canine exposures as follows: bat (n=1), jackal (n=1), leopard (n=1) and mongoose (n=3). Only two cases of human rabies have been associated with cat exposures in the past fifteen years. Domestic cats are not epidemiologically important for rabies and do not sustain transmission cycles of the virus. Rabies vaccination of cats is however required due to the frequent and possible close contact that these domestic animals have with humans.

For the period of 2008 to 2013, the Department of Agriculture, Forestry and Fisheries reported 304 confirmed bovine cases of rabies. Bovine rabies not only incurs economic losses, but also poses a risk to humans who may have close contact with the saliva and secretions of sick animals.

A review of confirmed human rabies cases from 2000 to date reveals that low community awareness of rabies is a major contributing factor to inadequate post-exposure prophylaxis (PEP), as in about half of cases (52%), victims did not seek medical attention after an exposure event (Figure 3). Amongst cases that did seek medical care, health care workers did not recognise the need for PEP (38% of cases), or gave inadequate PEP (3%). Additional challenges such as unavailability of vaccine at facility level (3%) and loss to follow up for completion of four-dose rabies vaccine schedule (4%) are also reported.

Despite these challenges, it is possible with consistent effort from veterinarians and public health administrators, health care workers and the public to eliminate dog rabies in South Africa. For more information regarding rabies, including the PEP guidelines, please visit www.nicd.ac.za

Source: Centre for Emerging and Zoonotic Diseases, NICD-NHLS

Figure 2 (right). Confirmed human rabies cases per province in South Africa, 2000-to date

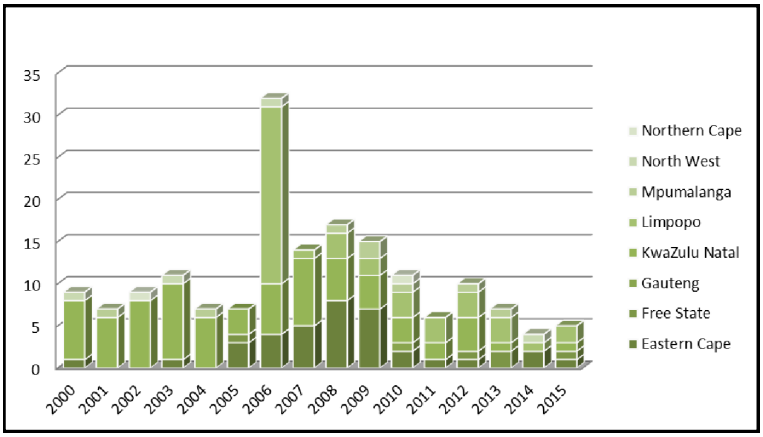
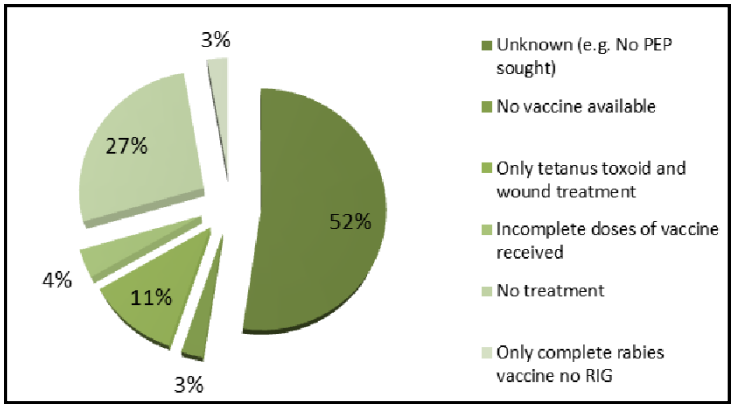


Figure 3 (below). Post-exposure management of confirmed human rabies cases in South Africa, 2000 to date.



b Leptospirosis in a Correctional Services facility in the Western Cape Province

The NICD was requested by the Department of Correctional Services to assist with investigation and management of leptospirosis that had been identified in two awaiting trial prisoners in a facility in the Western Cape Province. A site assessment was done on 2nd of September, by members of the NICD Outbreak Response Unit, Centre for and Zoonotic Diseases, infectious diseases physicians and infection control nurses from local hospitals, the Western Cape Provincial Communicable Diseases Co-ordinator and environmental health practitioners.

Leptospirosis is endemic to South Africa, with a number of case series having been reported from the Western Cape and Gauteng Provinces in the 1950s and 60s. Serological surveys of dogs, that like humans, fall ill from leptospirosis, have revealed that the organisms are more common in the coastal regions of South Africa, particularly Kwa-Zulu Natal. A case of leptospirosis has been reported in the Communiqué as recently as June 2015 (http://nicd.ac.za/?page=archives&id=134). Exposure to *Leptospira* species occurs when humans come into contact with infected rodent urine. The organism survives in moist environments, and infection occurs when the organisms enter through intact mucous membranes, via drinking of contaminated water, or through abrasions or cuts in the skin. In South Africa, most cases of leptospirosis have been sporadic, amongst persons with identified exposures to rodents or other animals. Globally, high-profile outbreaks of leptospirosis have occurred in outdoor recreational events such as triathlons, or open water swimming, when ingestion of contaminated water or exposure to contaminated water sources most likely occurred. Leptospirosis presents as a spectrum of illness from mild or asymptomatic with non-specific symptoms including fever and myalgias, to severe life-threatening Weil's disease with renal and liver failure, presenting as overwhelming sepsis and jaundice. *Leptospira* species are highly susceptible to penicillin, the drug of choice for treating moderate to severe disease. Doxycycline is suitable for treatment of mild disease. Diagnosis is through PCR of blood (positive up to 7 days post-infection) and serology. IgM levels remain high for 3-12 months post-illness.

A review of the facility revealed extensive opportunity for inmate exposure to rodent-contaminated environments through a combination of overcrowding, difficulties in achieving adequate waste management, and blocked drains. Recommendations were made to the Department of Correctional Services regarding elimination of rodent activity in the facility and prevention of further cases. Pre-emptive treatment for leptospirosis amongst persons with non-specific symptoms, and early referral for investigation were advised.

Source: Division of Public Health Surveillance and Response , NICD-NHLS; Infectious Diseases, Groote Schuur Hospital; Victoria Hospital, Wynberg; Communicable Diseases Control and Environmental Health, Western Cape Province

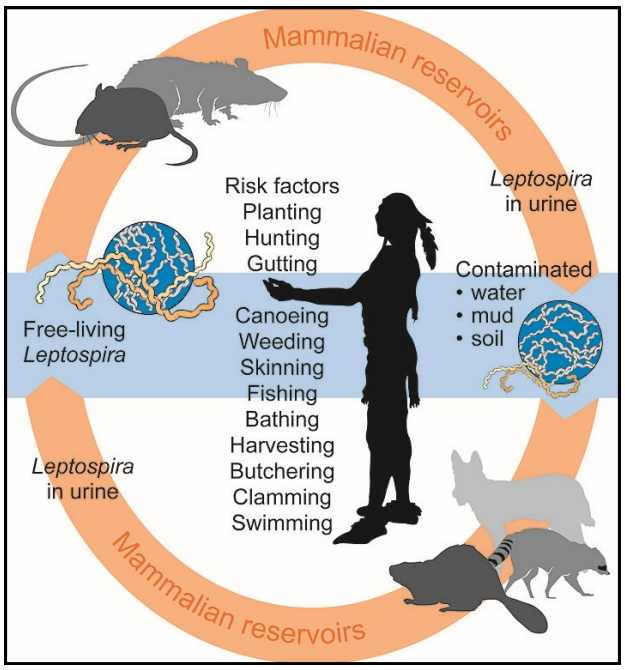
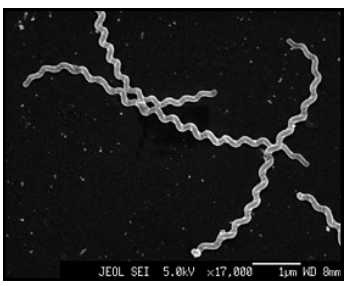


Figure 4 (left). Diagram illustrating the perpetuation of *Leptospira* species in the environment through contamination with rodent urine. Humans and other mammals are accidentally infected. (photo courtesy wikipedia.com)

Figure 5 (below). Electron micrograph illustrating the thin, helical *Leptospira* bacteria (photo courtesy equestrianoutreach.com)



2 SEASONAL DISEASES

a Influenza

Influenza data from the Viral Watch Programme

The influenza season continues, though the number of specimens submitted by Viral Watch sites has declined as has the number of positive influenza results.

To date (10 September), influenza has been detected in 507/1039 (48.8%) of specimens submitted by Viral Watch sites. Influenza A(H1N1) pdm09 was the predominant type this season and has been detected in 255/507 (50.3%) patients, influenza A(H3N2) in 191/507 (37.7%), and influenza B virus in 61/507 (12%) patients. Since week 30 (week starting 20 July), the season has been dominated by influenza B virus, accounting for 40/49 (82%) influenza detections. Influenza B/ Yamagata strains, similar to the strain included in the 2015 vaccine dominated influenza B virus detections.

Genetic characterisation of influenza virus

Data from the influenza surveillance programmes show that reduced reactivity (4-fold or less) to the vaccine strain-specific antisera was observed for 7% of influenza A(H1N1)pdm09, 38% of influenza B/Yamagata and 72% of A(H3N2) viruses. Almost all influenza A(H3N2) viruses are in the 3C.2a genetic lineage, which is supposed to be cross-reactive with the A/Switzerland/ 9715293/2013 (in the 3C.3a lineage) vaccine strain-specific antisera. Influenza B viruses identified in 2015 are in B/ Yamagata clade 3 and thus genetically similar to the B/Phuket/3073/2013 vaccine strain. Information on the vaccine viruses recommended for the 2016 southern hemisphere influenza season will be available in October 2015.

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

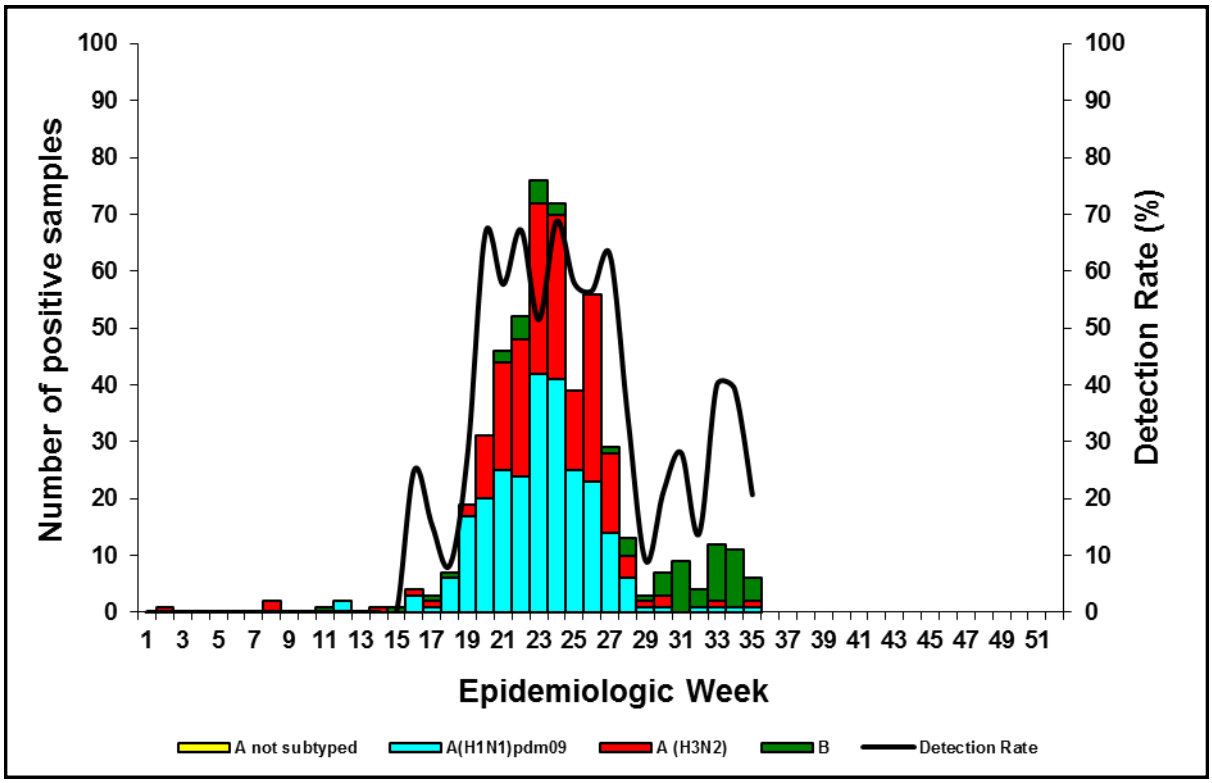


Figure 6. Number of positive samples by influenza types and subtypes and detection rate by week, Viral Watch programme, 2015

3 TB AND HIV

a Microbiologically Confirmed Pulmonary Tuberculosis Incidence Trends in South Africa: 2004-2012

South Africa has one of the highest estimated annual incidences of pulmonary tuberculosis (TB) with an estimated 500 000 new cases a year. HIV infection has contributed to this burden – as many as 70% of TB cases are co-infected with HIV. Despite the scale of this public health problem, there has been no published data on national or sub-national trends of microbiologically-confirmed pulmonary tuberculosis (mPTB).

In a recent paper published in *The Lancet Infectious Diseases* Journal, the Centre for Tuberculosis in collaboration with NHLS Corporate Data Warehouse, reviewed and analysed all mPTB cases of TB diagnosed between 2004 and 2012. The analysis assessed the incidence of TB at the national and provincial level using available population data and specific definitions of 'an episode of TB'. Trends were analysed and compared with TB testing rates, HIV prevalence, ART scale-up and cases notified through the electronic TB databases (ETD) over the study period.

During the 9-year period, 3,523,371 cases of microbiologically-confirmed pulmonary tuberculosis were recorded nationally. Annual incidence (per 100,000 population) increased from 650 (95% CI 648–652) in 2004 to 848 (845–850) in 2008, declining to 774 (771–776) by 2012. There was a 9% decline between the peak and 2012. The highest incidence recorded was in males between the age of 25 and 44 years of age with an incidence 1,517/100,000 people in 2008 which has declined to 1,256/100,000 in 2012. This age group also has the highest prevalence of HIV.

Sub-national data reveal that these trends persist in different parts of the country with the TB epidemic peaking earlier in some provinces and later in others, depending on the rate of expansion of ART coverage (Figure 7). In KwaZulu-Natal Province, declines started only in 2011 compared to Western Cape Province which showed the earliest declines in 2006. The largest declines occurred approximately four years after the largest rates of increases in ART coverage. Although the declines are positive evidence of a turn-around, the overall incidence rates are still exceedingly high.

While the trends in cases registered for treatment recorded in the ETD mirrored the trends in mPTB incidence, a clear gap was observed between cases diagnosed and those recorded as being on treatment. As many as 33% of people diagnosed with TB in 2006 were not registered on treatment that year; although this decreased over time, the figure remains high, at 20% in 2012. Thus there is a lot more that needs to be done. Health systems strengthening and other interventions need to be targeted to close the gaps, but these interventions need to be informed by robust surveillance. The work presented represents a landmark as it signals the establishment of a national microbiologically-confirmed TB surveillance platform and the first time that such data have been published for South Africa.

The World Health Organization has set ambitious targets as part of the post-2015 End TB Strategy, requiring countries to reduce TB incidence rates dramatically. Our positive findings demonstrate the important spin-offs of HIV control on TB incidence. However this needs to be accelerated to reach a stage where the risk of TB amongst HIV-positive persons is controlled through global provision of anti-retroviral therapy. Secondly, the gap between diagnosis and treatment needs to be closed. Diagnosed but untreated TB is more common than appreciated and needs to be urgently addressed. Lastly, variation between and within provinces is wide, highlighting the need for targeted interventions to ensure resources are effectively utilized to End TB.

Reference

Nanoo A, Izu A, Ismail NA, Ihekweazu C, Abubakar I, Mametja D and Madhi SA. Nationwide and regional incidence of microbiologically confirmed pulmonary tuberculosis in South Africa, 2004–12: a time series analysis. Lancet Infect Dis 2015; published online June 23. http://dx.doi.org/10.1016/S1473-3099(15)00147-4.

Source: Centre for TB, NICD-NHLS

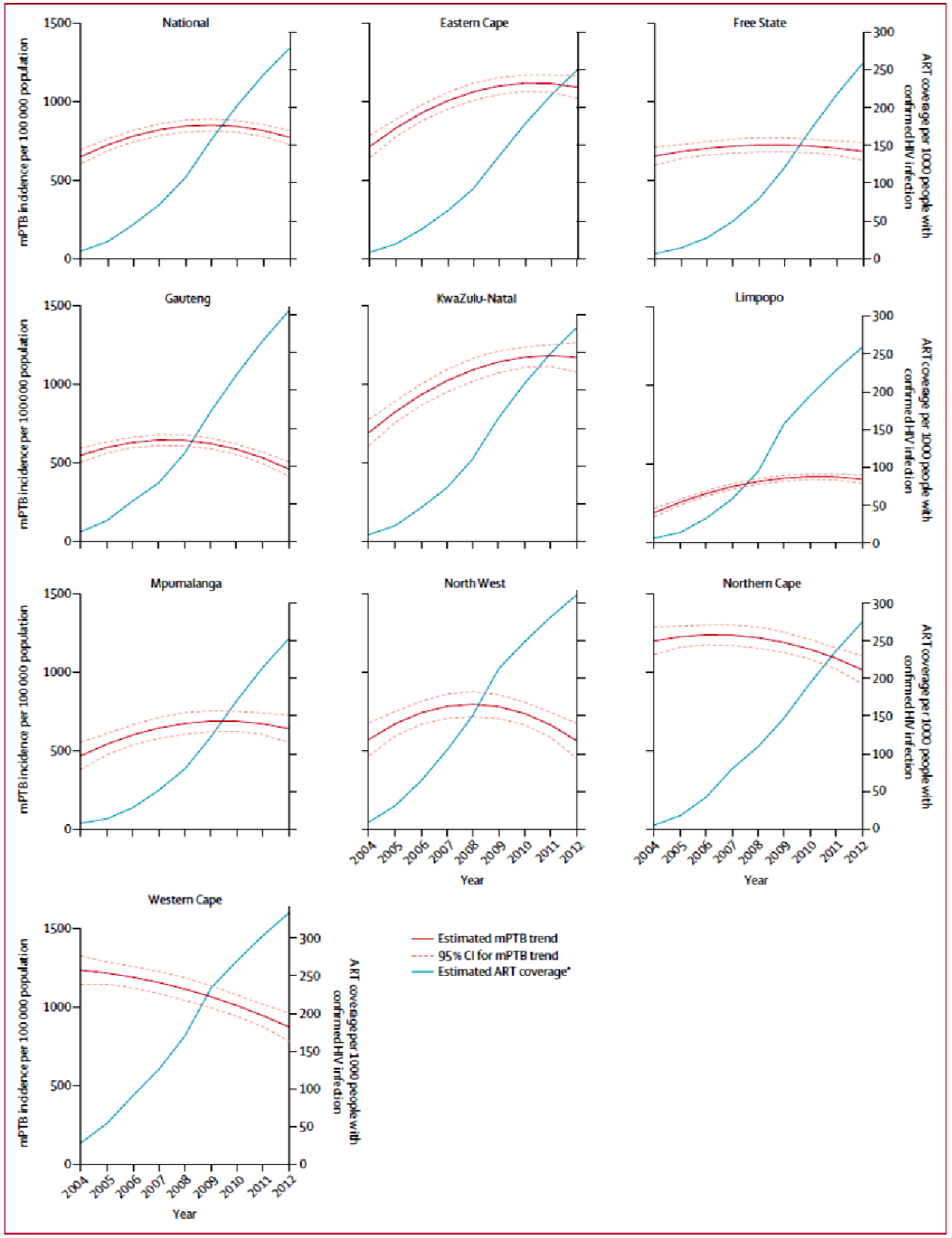


Figure 7. Incidence of microbiologically confirmed pulmonary tuberculosis (per 100,000 population) and anti-retroviral therapy coverage rates in people with HIV infection in South Africa, nationally and provincially from 2004-2012 (based on data from the Actuarial Society of South Africa 2008 model)

b Introduction of Very Early Infant Diagnosis of HIV into the National Consolidated Guidelines

As a means of identifying intra-uterine HIV-infected infants earlier, birth testing of all HIV-exposed infants was introduced into the National Consolidated Guidelines on 1 June 2015.[1] Prior to this, routine HIV PCR testing was performed in infants at 6 weeks of age, with allowance for earlier testing in symptomatic infants. Additionally, the targeted testing of high-risk infants at birth has been practiced with varying intensity since 2013, most notably in Gauteng, KwaZulu-Natal and Western Cape provinces. We report the number and results of HIV PCR tests done during the first week of life* from 1 June 2015 to 31 August 2015 and compare the findings with those for the same periods in 2013 and 2014. This analysis has been performed to determine the immediate uptake and impact of birth testing after its implementation at a national level.

Since 1 June, there has been a dramatic increase in the total number of HIV PCR tests performed in the first week of life in all 9 provinces compared to the same periods in 2013 and 2014 (Figure 8), providing a total of 35 400 HIV PCR tests within the first week of life for the period 1 June 2015 to 31 August 2015.[†] Surveillance to monitor the national coverage of HIV birth testing is on-going.

The uptake of birth testing has been associated with a substantial increase in the absolute number of HIV-positive infants detected during the first week of life, with a total of 430 HIV-positive results reported from 1 June 2015 to 31 August 2015 (Figure 9). Whereas the absolute number of very early detected HIV-infected infants has increased, the percentage positivity has decreased from 3% in 2014 to 1% in 2015, most likely on account of the low volumes and targeted nature of testing prior to 1 June 2015.

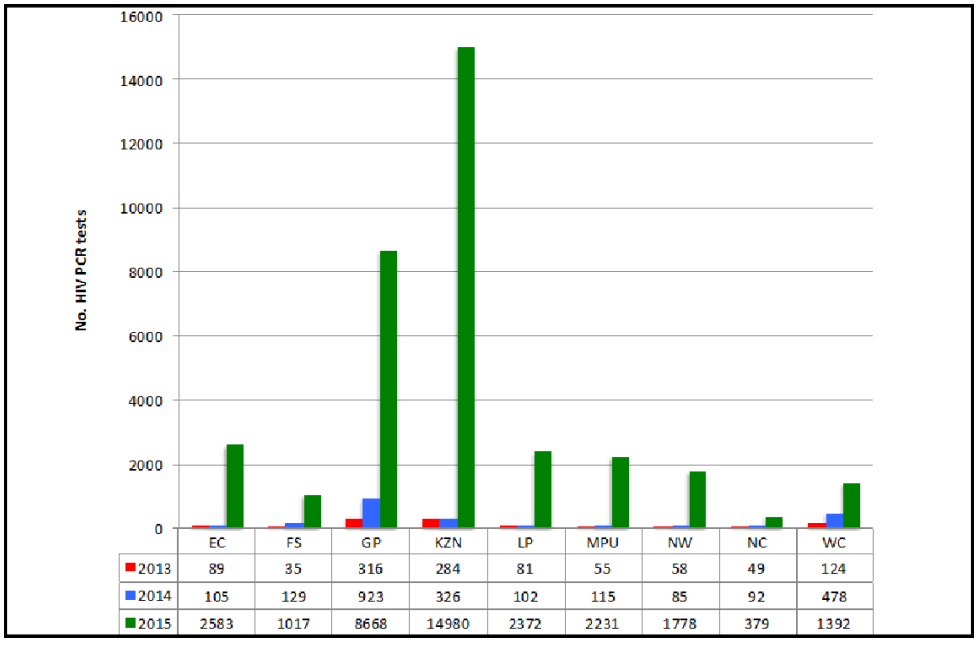
These results reflect the immediate uptake of birth testing within the first 3 months of the national implementation of the new testing guidelines, and suggest that birth testing can successfully be scaled up and will assist in the earlier detection of intra-uterine HIV-infected infants. Priorities remain the successful linkage into care for those infants who test HIV PCR-positive at birth, and to ensure repeat testing at 10 weeks of age for those infants who test HIV PCR-negative at birth.

1. South African National Department of Health. National Consolidated Guidelines for the prevention of mother-to-child transmission of HIV (PMTCT) and the management of HIV in children, adolescents and adults. Pretoria: National Department of Health, 2015. (Accessed September 11, 2015 at http://www.health.gov.za/index.php/2014-03-17-09-09-38/policies-and-guidelines/category/230-2015p)

*Whereas National Guidelines stipulate birth testing, this analysis was performed in infants within the first week of life to account for those neonates who were tested on follow up to a healthcare facility.

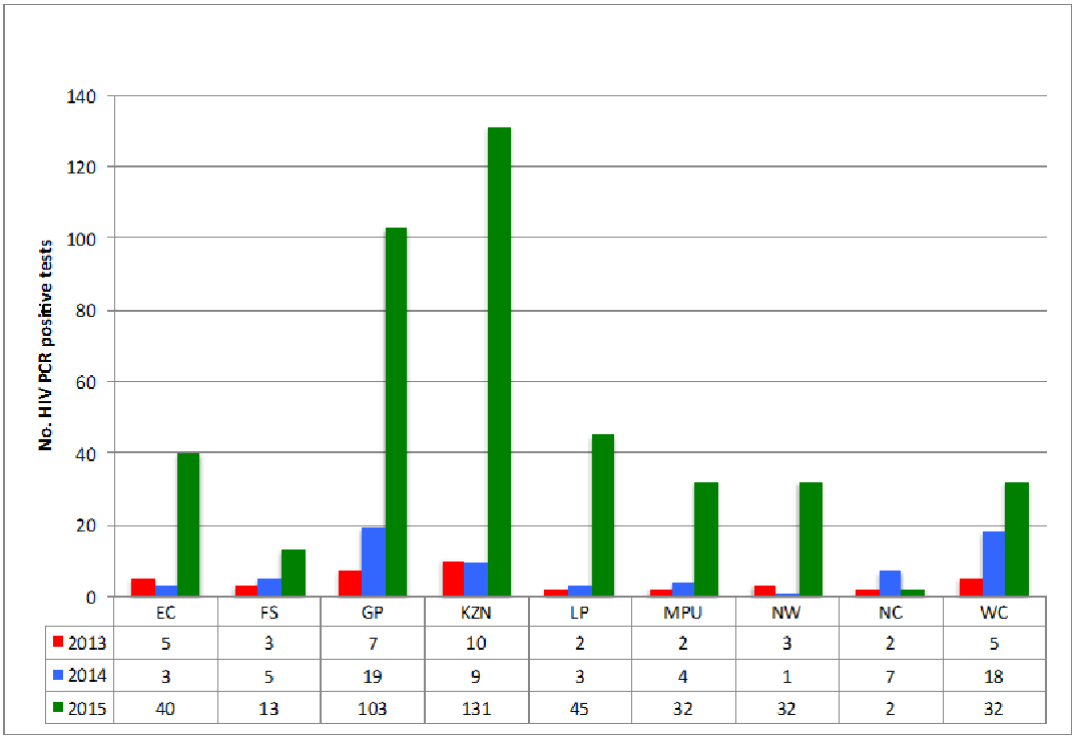
[†]These results are likely an under-estimation of uptake of birth testing on account of maternal details, such as age, reflecting on the HIV PCR request forms of newborn infants.

Source: Centre for HIV and STI, NICD-NHLS



	EC	FS	GP	KZN	LP	MPU	NW	NC	WC
2013	89	35	316	284	81	55	58	49	124
2014	105	129	923	326	102	115	85	92	478
2015	2583	1017	8668	14980	2372	2231	1778	379	1392

Figure 8. Number of HIV PCR tests done in the first week of life during the period June to August in the years 2013, 2014 and 2015



	EC	FS	GP	KZN	LP	MPU	NW	NC	WC
2013	5	3	7	10	2	2	3	2	5
2014	3	5	19	9	3	4	1	7	18
2015	40	13	103	131	45	32	32	2	32

Figure 9. Number of Positive HIV PCR tests in the first week of life during the period June to August in the years 2013, 2014 and 2015

4 *INTERNATIONAL OUTBREAKS OF IMPORTANCE TO SOUTH AFRICAN TRAVELLERS AND HEALTHCARE WORKERS*

a Middle East Respiratory Syndrome Coronavirus (MERS-CoV) update

Background:
The Middle East respiratory syndrome (MERS) is an emerging infectious disease caused by a MERS coronavirus (MERS-CoV). It was first reported in Saudi Arabia in 2012. Since September 2012 and as of 18 September 2015 WHO has been notified of a total of 1 569 laboratory-confirmed cases of human infection with MERS-CoV, including 554 related deaths. To date all the cases reported from outside the Middle East have either had a recent travel history to the Middle East or could be linked to a chain of transmission originating from a case with a travel history to the Middle East. In May 2015, South Korea reported the largest outbreak outside Middle East, namely 186 cases including 36 deaths. The last case of MERS-CoV infection from this outbreak was laboratory confirmed on the 4th of July 2015. In the Middle East, specifically Saudi Arabia, the number of cases continues to increase. Of the 26 countries that have reported cases, Saudi Arabia has reported the highest number of cases to date.

In South Africa, 61 samples have been tested for MERS CoV in 2015 and none of these have tested positive. The majority of specimens 75% (43/61) were received from the viral watch sentinel influenza surveillance site at OR Tambo International Airport, where all suspected influenza patients are also tested for MERS CoV. Among these individuals, 25 (58%) tested influenza positive. An additional 18 patients were individuals suspected by the attending clinician to have MERS CoV. Among these individuals, 4 (22%) tested influenza positive. Although no cases have been identified in South Africa so far, travellers returning from countries where MERS-CoV cases have been reported are advised to seek medical attention if they develop a respiratory illness with fever and cough during the two weeks after their return, and to report their recent travel history to their healthcare provider.

Transmission
The majority of human cases reported to date have resulted from human-to-human transmission in health care settings. This underscore the importance of following appropriate infection-

control measures. To date, there is no evidence of sustained human-to-human transmission.

Travel

WHO does not advise screening at points of entry or travel or trade restrictions with regards to MERS. Mass gathering events such as the Hajj provide a basis for communicable diseases to spread easily among humans. This year, Hajj will take place from approximately 20–25 September. Because people with pre-existing medical conditions (e.g. chronic diseases such as diabetes, chronic lung disease, renal failure immunodeficiency) and the elderly, are more likely to develop severe disease from MERS-CoV infection; the WHO is advising that pilgrims should consult a health care provider before travelling to review the risk and assess whether making the pilgrimage is advisable.

More detailed information on travel to Saudi Arabia during Hajj can be accessed from the NICD website at: http://www.nicd.ac.za/?page=alerts&id=5&rid=575

Additional resources and updates:

World Health Organization website: http://www.who.int/csr/disease/coronavirus_infections/en/index.html

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

http://apps.who.int/iris/bitstream/10665/174652/1/

Source: Centre for Respiratory Diseases and Meningitis; Division of Public Health Surveillance and Response, NICD-NHLS

b Surveillance for respiratory pathogens amongst pilgrims attending Hajj 2015

Every year, more than 2 million Muslims from all over the world, embark on the holy pilgrimage of Hajj. This is the largest annual religious mass gathering in the world and all able Muslims are required to do so at least once in their lifetime. The timing of Hajj is based on the Islamic lunar calendar and therefore changes annually. This year Hajj will take place from 20-25 September (Georgian calendar) and according to the Islamic lunar calendar, from the 8th through the 12th days of Dhu al-Hijja, the last month of the Islamic year.

Hajj involves a series of Muslim prayer rituals and rites. Pilgrims fulfil these by visiting holy sites in Makkah in a particular order, commencing at Ka'aba. Although the actual distances travelled by pilgrims are not far, the immense congestion of people increases the health risks exponentially, creating the so called epidemiological 'amplifying chamber'. Emerging infectious diseases have the potential to quickly become epidemics, especially airborne agents. The risk of spreading infections during Hajj is further enhanced by the physical requirements to perform certain rituals, specifically when using the pedestrian tunnels leading to the Jamarat Bridge in Medina and during the circumambulation of the Ka'aba inside the Great Mosque. Well-structured and organized mass gatherings such as Hajj present many opportunities to generate evidence-based recommendations for prevention, management and control of infectious diseases and improving safety of future travellers.

The aim of the Hajj Surveillance study is twofold: to investigate the knowledge, attitude and practices of travellers with regards to recommendations for safe travel (including vaccination recommendations); and to identify respiratory tract pathogens, infection and colonisation, amongst South African citizens participating in the Hajj pilgrimage.

Surveillance will take place at the Oliver Tambo International Airport (ORTIA) in Johannesburg. Participants will be invited to answer questionnaires to evaluate knowledge, attitudes and practices. Oropharyngeal swabs will be taken to identify pre- and post-travel organisms. Due to logistical difficulties, it might not be possible to collect swabs from the same travelers pre- and post-travel; therefore two analytical cross-sectional studies will be done, allowing for a comparison of cohort data collected pre- and post-travel.

Data will be used to describe the association between practice of travel recommendations (including vaccination recommendations) and infection or colonisation with respiratory tract pathogens, and travel advice for pilgrims can be adjusted accordingly. The current outbreak of MERS -CoV in Riyadh is raising concerns of possible importation of the virus. The surveillance done at the airport as part of the study would further provide the opportunity to safeguard the health of pilgrims and their families.

Source: Division of Public Health Surveillance and Response, NICD-NHLS; Centre for Respiratory Diseases and Meningitis, NICD-NHLS

c Ebola virus disease (EVD) outbreak

The incidence of new EVD cases appears to be declining. The outbreak in Liberia was declared over for the second time on 3 September 2015. In Guinea and Sierra Leone the case incidence has declined with only 5 confirmed cases reported in the week to 13th September, all of which were in Sierra Leone. In Guinea no new laboratory-confirmed cases have been reported since 1 September 2015. Nonetheless still of concern is the detection of new cases from unknown chains of transmission. In Sierra Leone, a new confirmed case was reported from the central Sierra Leonean district of Bombali, which has not reported a case for over 5 months. The case, a 16-year-old girl, had severe symptoms in the community for several days before being admitted to an Ebola treatment centre (ETC).

As at 13 September 2015, a cumulative total of 28,220 cases (laboratory-confirmed, probable and suspected) including 11,291 deaths with a case fatality rate of 40% has been reported in Guinea, Liberia and Sierra Leone. In the past 21 days, transmission has been occurring in Conakry and Dubreka while in Sierra Leone, mostly in Kambia and Bombali. A summary of case numbers and deaths reported is shown in Table 1.

Interim results from the Guinea vaccine trial have been released. The trial began in March 2015 to evaluate the efficacy, effectiveness and safety of a single dose of the vesicular stomatitis virus-based vaccine expressing a surface glycoprotein of Zaire Ebolavirus (rVSV-ZEBOV). The study used a novel cluster-randomised 'ring' methodology, in which contacts of index cases were randomised to immediate vs delayed (after 20 days post contact) vaccination, and study endpoint was the development of EVD amongst contacts after 7 days following exposure. More than 7,600 eligible consenting individuals aged ≥18 years (close contacts and contact of contacts of laboratory-confirmed EVD case-patients) participated in the trial and were randomly assigned to either the immediate or delayed vaccination group. The vaccine has shown to be highly efficacious (vaccine efficacy of 100%) as there were no EVD cases from the immediate recipient group at least 10 days after randomisation. However more research is needed to determine its ability to protect populations through herd immunity. Assessment of serious adverse events following vaccination is ongoing. However to date, 43 serious adverse events have been reported and one was judged to be casually related to vaccination. The study design is described in BMJ 2015;351:h3740 (http://www.bmj.com/content/351/bmj.h3740) and results in the Lancet 2015; 386,9996; 857-866.

Situation in South Africa

As at 17 September 2015 there have been no EVD cases in South Africa associated with the current outbreaks in West Africa. In addition, there are no suspected cases of EVD in South Africa at present. The risk of Ebola being introduced into South Africa still remains low. However a high index of suspicion is necessary given on-going EVD transmission in West Africa.

Testing for viral haemorrhagic fever viruses (including Ebola virus) in South Africa is only available at the NICD. Requests for testing (with a detailed clinical, travel and exposure history) should be directed to the NICD Hotline at 082 883 9920 (a 24-hour service, for healthcare professionals only)

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

Table 1: Number of Ebola virus disease cases and deaths in Guinea, Liberia and Sierra Leone (as at 13 September 2015)

Country	Total cases (laboratory-confirmed, probable and suspected)	Total deaths	Case fatality rate	Number of cases among healthcare workers (Number of deaths)
Guinea	3 792	2 530	67%	196 (100)
Sierra Leone	13 756	3 953	29%	307 (221*)
Liberia (as at 9 May)	10 666	4 806	45%	378 (192)
Liberia (from 29 June)	6	2	33%	
Totals	**28 220**	**11 291**	**40%**	**881 (513)**

Source: World Health Organization Global Alert and Response: Ebola situation report of 16 September 2015 (www.who.int); *Data as at 17 February

5 ANTIMICROBIAL RESISTANCE

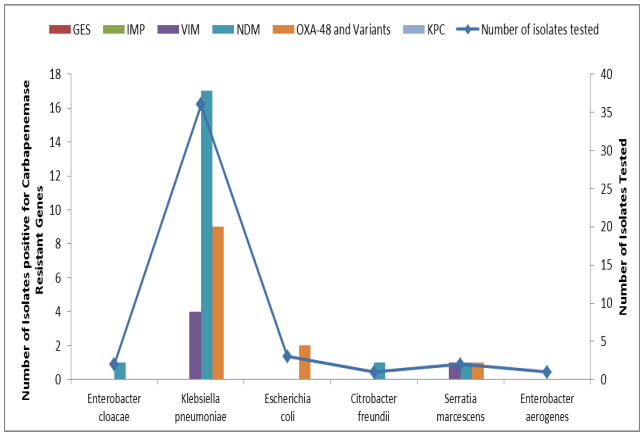
Update on carbapenemase-producing enterobacteriaceae

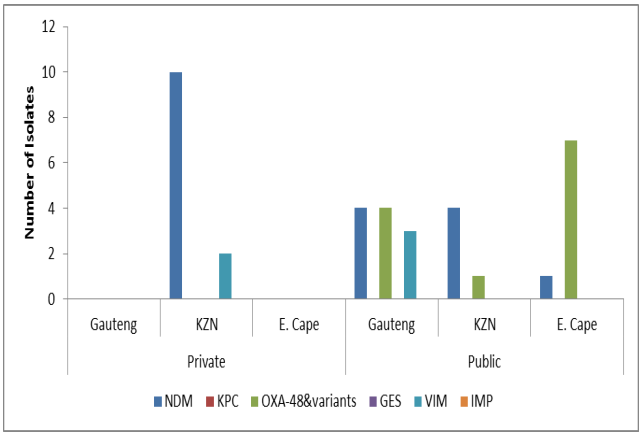
The Johannesburg Antimicrobial Resistance Laboratory-Culture Collection (AMRL-CC) of the Centre for Opportunistic, Tropical and Hospital Infections (COTHI) at the NICD/NHLS have been testing referred isolates of suspected carbapenemase-producing Enterobacteriaceae (CPE) for the presence of selected carbapenemase genes. CPEs 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. CPE surveillance is required to determine the extent of the problem as a first step in order to restrain the emergence and spread of CPE. For August 2015, a total of 49 Enterobacteriaceae isolates were received. Forty-five carbapenem-resistant isolates were screened, 35 of which were CPE isolates. The majority of the isolates were *Klebsiella pneumoniae* (36) followed by *E. coli* (3) (Figure 10).

Twenty *bla*$_{NDM}$-positive isolates were identified; 10 from private hospitals (all from KwaZulu-Natal) and 10 from public hospitals – four from Gauteng, four from KwaZulu-Natal (KZN), one from Eastern Cape and one from Free State. Twelve *bla*$_{OXA-48}$-positive isolates were identified; all twelve isolates were from public hospitals; four from Gauteng Province, seven from Eastern Cape and one from KZN. Five *bla*$_{VIM}$-positive isolates were identified from public hospitals in Gauteng (3) and two from private hospitals in KZN. No other CPE enzyme types were identified in August (Figure 11).

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 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





GES: Guiana extended-spectrum; IMP: imipenemase; VIM: verona integron-encoded metallo-beta-lactamase; NDM: New Delhi metallo-beta-lactamase; OXA: oxacillinase; KPC: Klebsiella pneumonia carbapenemase

Figure 10. Enterobacteriaceae isolates screened (n=45) and confirmed CPEs (n=35) at the Antimicrobial Resistance Laboratory-Culture Collection, COTHI (NICD-NHLS), August 2015

Figure 11. The total number of CPEs (n=35) in the public and private sectors from three provinces, August 2015

6 BEYOND OUR BORDERS

Disease & countries	Comments	Advice to travellers
1. Water-borne disease		
Cholera Haiti Cuba Dominican Republic	Haiti has reported a total of 20 043 cases of cholera and 171 deaths from January up to 25 July 2015. The last confirmed case was reported in January 2015; a Canadian traveller. Between EW1 and EW 28 of 2015 344 suspected cases, including 11 deaths. Since the beginning of the epidemic in November 2010 to EW 28 of 2015 there have been 32 764 suspected cholera cases, including 489 deaths.	Cholera is an acute diarrhoea illness that causes severe dehydration. Drink lots of safe water (bottled water with an unbroken seal, boiled water or water treated with chlorine tablets). Strict washing of hands with soap and safe water must be practiced. Food must be well cooked before eating. Peel fruit and vegetables before eating.
2. Vector-borne diseases		
Dengue fever Taiwan Brazil Colombia	Taiwan has reported a total of 3507 cases , 10 confirmed and 7 deaths due to dengue fever as of 3 September 2015. As of 2 September 32 850 cases, DHF/serious 78 cases and 15 deaths. Dengue 61 451 cases, DHF/serious 788, deaths 225 (probable) and 488 (confirmed).	Dengue fever (like chikungunya) is a mosquito-borne viral infection transmitted by *Aedes spp*. mosquitoes, which bite mostly during the day. Travellers can protect themselves from getting dengue fever by preventing mosquito bites. To protect against mosquito bites they should use insect repellent and sleep in an air-conditioned room. For those sleeping in an area that is exposed to the outdoors, they can use mosquito nets.
Chikungunya Honduras, El Salvador and Panama Mexico and USA French Guiana, Puerto Rico Colombia, Ecuador, Venezuela, Paraguay	Honduras has reported 71,835 cases with 0 deaths. El Salvador reported 36,140 with 0 deaths. Panama reported 123 cases and 0 deaths, all in the week ending 4th September 2015 Mexico reported 4,570 cases and 0 deaths. USA reported 325 cases and 0 deaths n the week ending 4th September 2015. French Guiana reported 6,450 cases and 2 deaths. Puerto Rico reported 641 cases and 15 deaths all in the week ending 4th September 2015. Columbia reported 603, 323 cases and 44 deaths. Ecuador reported 28,463 cases and 2 deaths. Venezuela reported 14,340 cases and 0 deaths. Paraguay reported 2,385 cases in the week ending 21/08/2015.	Chikungunya is a mosquito-borne viral infection transmitted by *Aedes spp*. mosquitoes, which bite mostly during the day. The most common symptoms of chikungunya virus infection are fever and joint pain. Other symptoms may include headache, muscle pain, joint swelling, or rash. Since its discovery in Tanganyika, Africa, in 1952, chikungunya virus outbreaks have occurred occasionally in Africa, South Asia, and Southeast Asia, but recent outbreaks have spread the disease over a wider range. Outbreaks have occurred in countries in Africa, Asia, Europe, and the Indian and Pacific Oceans. In late 2013 chikungunya virus was found for the first time in the Americas on islands in the Caribbean and in Mexico the virus was reported at the beginning of 2014. Travellers should wear long-sleeved shirts and long pants during the day and stay in well-ventilated (fan/air-conditioned) rooms.
Plague USA Madagascar	Three adults in New Mexico state developed septicaemic plague. There was 1 fatality. As of 19/08/2015 14 cases have been reported, of which 10 died, all from the township Moramanga in the Toamasina province. All cases were pneumonic plague. No new cases have been reported since 27/08/2015. Active case finding, contact tracing, provision of chemoprophylaxis , infection control and vector control managed to contain the outbreak.	Plague is caused by a zoonotic bacteria, *Yersinia pestis*. It occurs in rodents and their fleas. It is transmitted to humans by bites of infected fleas, direct contact, inhalation and rarely, consumption of infected material. Plague is endemic in many countries in the Americas, the former Soviet Union, Asia and Africa. The most endemic countries are Madagascar, Congo, Peru and the Democratic Republic of Congo. Plaque can be prevented by avoiding flea bites, contact with animal carcasses and infected material.