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

Communicable Diseases Communiqué

DECEMBER 2013, Vol. 12(12)

CONTENTS

Rabies update

No new human cases of rabies have been confirmed since the previous report. A total of seven human cases has been confirmed to date with cases reported from Mpumalanga (n=1), KwaZulu-Natal (n=1), Limpopo (n=3) and Free State (n=2) provinces. In addition, three clinical cases of rabies in humans have been reported for 2013 to date; although the clinical features and outcome of all three cases were suggestive of rabies, laboratory confirmation was not possible. These cases originated from Eastern Cape, KwaZulu -Natal and Mpumalanga provinces. The total number of confirmed human rabies cases for the past five years per province is shown in Table 1.

Table 1: Laboratory-confirmed human rabies cases, South Africa, 2008-2013

Year	Province									Total
	KZN	ECP	MP	NCP	FSP	NWP	LP	WCP	GP	
2008	5	8	1	0	0	0	3	0	0	17
2009	4	7	2	0	0	0	2	0	0	15
2010	3	2	1	1	0	0	3	0	1	11
2011	2	1	0	0	0	0	3	0	0	6
2012	4	1	1	0	1	0	3	0	0	10
2013	1	0	1	0	2	0	3	0	0	7
Total	19	19	6	1	3	0	17	0	1	66

In November 2013 a case of rabies in a domestic cat was reported from Sedibeng District (Vanderbijlpark and surrounds) in Gauteng Province. Ring-vaccination of dogs and cats in the district was done in response to this case. No additional cases of animal rabies in this area have been reported. Further laboratory investigation confirmed that the rabies was of the "mongoose" biotype. Two biotypes of rabies virus circulate in Southern Africa; these biotypes are antigenically and genetically distinct rabies viruses. The canid biotype is commonly associated with domestic dogs and other canids (i.e. jackal). The mongoose biotype is found in members of the *Herpestidae* family which includes different species of mongoose and surricates. Consequently, the geographic

distribution of these biotypes depends on the distribution of the host species, with the mongoose biotype most commonly reported from the central plateau of South Africa. Mongoose rabies is intermittently reported in Gauteng Province, particularly from the periphery which is typically more rural and where mongoose would naturally occur. Mongoose rabies has been reported from rabid cats in several cases. Interestingly, the mongoose rabies biotype is associated with dead-end infections in canid species, so has not been associated with continued transmission in other species (jackals, dogs etc).

Health professionals and members of the public can access more information on rabies through the NICD website: www.nicd.ac.za. The national rabies guideline document may also be downloaded from the NICD website: http://www.nicd.ac.za/?page=guideliness&id=73.

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

Malaria

The malaria season in Southern Africa is from September to May each year, and an increase in both local (from malaria-endemic areas in South Africa) and imported (from other malaria-endemic countries) cases can be expected over the upcoming holiday season.

Malaria is endemic in three South African provinces: Limpopo, Mpumalanga, and north-eastern KwaZulu-Natal. Travellers to malaria-endemic areas within South Africa or other malaria-endemic countries in Southern Africa (notably Mozambique) need to take appropriate preventative measures. Mefloquine (Lariam®, Meflam®), doxycycline, and atovaquone-proguanil (Malanil®) are recommended chemoprophylactic agents for Southern Africa where chemoprophylaxis is indicated, and the choice of agent needs to be individualised. For advice on preventive measures, access the following link: http://www.doh.gov.za/docs/policy/2011/malaria_prevention.pdf.

Malaria must be considered in the differential diagnosis of acute febrile illness in returning travellers; diagnostic tests for malaria should be done urgently, since prompt and appropriate management is critical to improving patient outcomes. Delays in diagnosis, misdiagnosis (most commonly as influenza), and delayed treatment are the most common factors associated with adverse outcomes. Healthcare workers, especially those in non-endemic areas, must ensure that any case of malaria is notified. The South African national guidelines recommend the use of artemether–lumefantrine (Coartem®) or quinine plus doxycycline/clindamycin for uncomplicated falciparum malaria. Severe falciparum malaria is treated using quinine plus doxycycline/clindamycin or intravenous artesunate where available. An initial loading dose of 20 mg/kg of quinine is required for all cases of severe malaria to rapidly reach a therapeutic level. Chloroquine and sulphadoxine-pyrimethamine are not to be used in the treatment of falciparum malaria due to high-level resistance. Non-falciparum malarial infections are less common in sub-Saharan Africa; artemether-lumefantrine or quinine as above can be used for treatment of acute non-falciparum malarial illness. Chloroquine should only be used if there is reliable laboratory confirmation of non-falciparum species. The addition of primaquine to the above initial treatment is indicated for *Plasmodium ovale* or *P. vivax* infections to prevent relapse. The South African malaria treatment guidelines can be accessed through the following link: http://www.doh.gov.za/docs/policy/2011/malaria_treatment.pdf.
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Source: Division of Public Health Surveillance and Response, NICD-NHLS

Update on carbapenemase-producing Enterobacteriaceae (CPE)

The Johannesburg and Cape Town Antimicrobial Resistance Reference Laboratories (AMRRL) of the Centre for Opportunistic, Tropical and Hospital Infections (COTHI) at NICD-NHLS continue to test referred isolates of suspected carbapenemase-producing Enterobacteriaceae (CPE) for the presence of selected carbapenemase genes. For November 2013, a total of 84 isolates were screened, 51 (61%) of which were confirmed as CPE. The most common isolates referred for testing were *Klebsiella pneumoniae* (n=46) and *Enterobacter cloacae* (n=22) (Figure1).

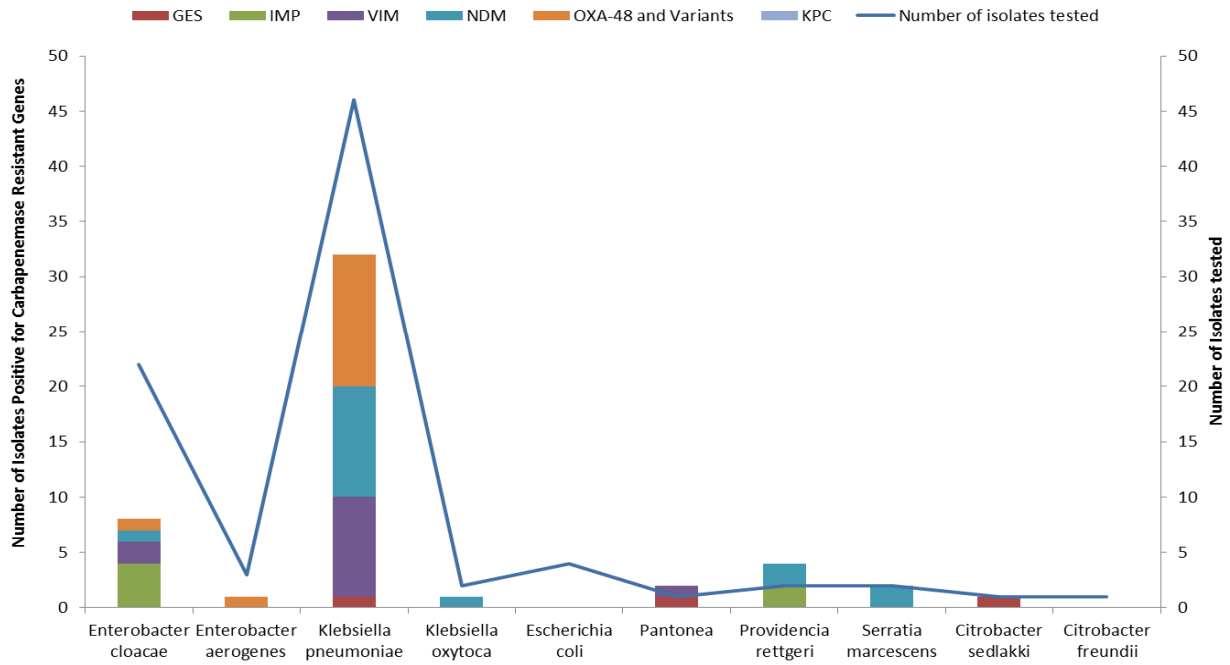

Figure 1. Enterobacteriaceae isolates screened (n=84), and confirmed CPE (n=51) during November 2013, AMRRL (NICD-NHLS)

Sixteen NDM-positive isolates were identified (9 from private laboratories and 7 from public (NHLS) laboratories). Fourteen OXA-48 positive isolates were identified, all from cases at a single private hospital. Six IMP-positive isolates (5 from NHLS laboratories and 1 from a private laboratory), 12 VIM-positive isolates (2 from private laboratories and 10 from NHLS laboratories) and 3 GES-positive isolates (2 from private laboratories and 1 from an NHLS laboratory) were identified respectively. The majority of these isolates were from patients hospitalised in Gauteng (74%, 37/51) and KwaZulu-Natal (22%, 11/51) provinces (Figure 2).

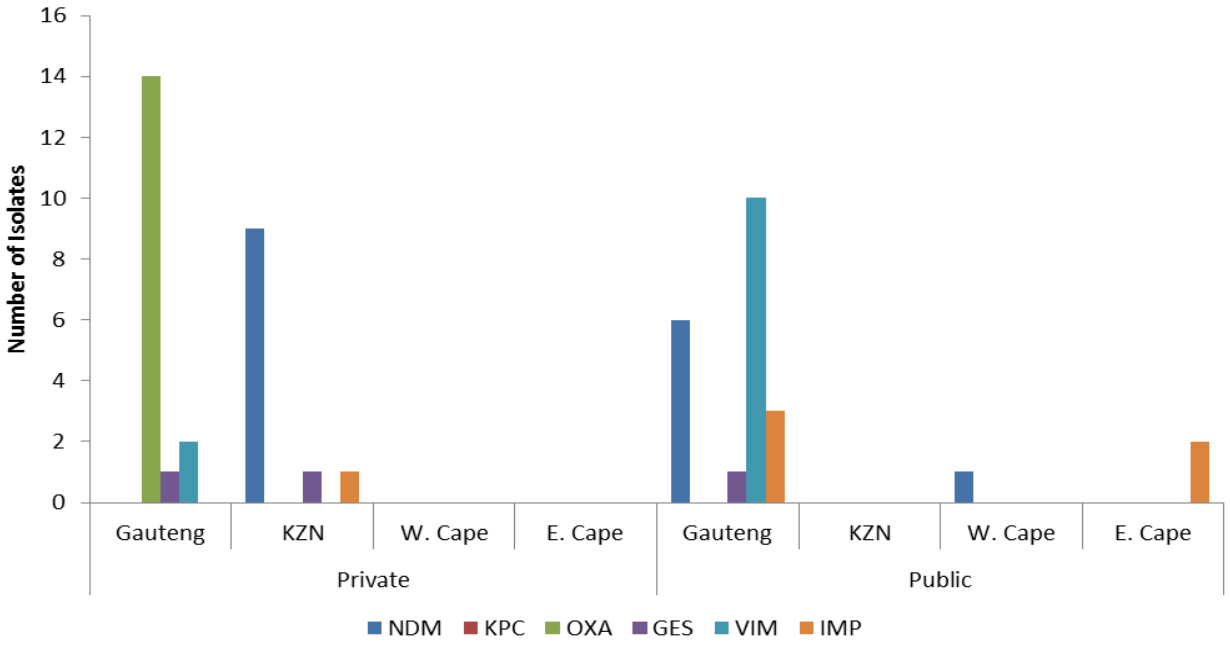

Figure 2. Laboratory-confirmed CPE per province and health sector, November 2013 (n=51),

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 reporting 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: clintonmoodley@yahoo.com; and colleen.bamford@nhls.ac.za.

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

Legionnaires' disease

A 54-year-old male resident of Cape Town was hospitalised on 23/11/2013 following a four-day history of fever, drenching sweats, confusion and unsteady gait. On admission he was noted to be febrile (temperature of 38.2°C) and tachypnoeic. There was clinical and radiological evidence of pneumonia, and no focal neurological deficit was found on examination. Empiric antimicrobial therapy included ceftriaxone, clarithromycin and oseltamivir. However, his condition deteriorated and he subsequently required ventilatory support in ICU; the pneumonia was also complicated by renal dysfunction.

Amongst the microbiological investigations done, urine was submitted to Groote Schuur NHLS for *Legionella* urinary antigen testing (UAT); the UAT was positive, confirming Legionnaires' disease in this patient. He fortunately responded to antibiotic therapy and supportive care and is recovering. Two suspected epidemiologically-linked cases are under investigation.

Legionella spp are increasingly reported as a significant cause of sporadic and epidemic community-acquired and hospital-acquired pneumonia worldwide. The majority of Legionnaires' disease cases are caused by *Legionella pneumophila* serogroup 1, but other serogroups and other species are also pathogenic and able to cause sporadic and epidemic disease.

Infection with *Legionella* spp can present as a spectrum of disease. Many persons exposed to *Legionella* spp will seroconvert but are asymptomatic; symptomatic disease (legionellosis) classically presents as two distinct clinical entities: Legionnaires' disease and Pontiac fever. Pontiac fever is a mild, self-limited influenza-like illness (without pneumonia) whilst Legionnaires' disease is a severe multisystem disease with pneumonia, associated with a high mortality rate (15-25%). *Legionella* spp are ubiquitous in virtually all sources of fresh water, including natural sources as well as man-made water systems. Transmission of *Legionella* occurs via inhalation of aqueous aerosols dispersed by environmental sources. Recognised potential sources of infection include domestic hot- and cold-water systems, cooling towers and evaporative condensers, spa pools (Jacuzzis)/ natural pools/thermal springs, fountains/sprinklers, humidifiers for food display cabinets, car wash water jets, compost/potting soil, and respiratory therapy equipment. Recognised risk factors associated with infection include older age (>50 years), male gender, having a chronic underlying disease with or without an associated immunodeficiency, and being a heavy smoker.

It is not possible to clinically distinguish patients with Legionnaires' disease from patients with other types of pneumonia. Features of Legionnaires' disease include fever, non-productive cough, headache, myalgia, rigors, dyspnoea, diarrhoea and confusion. Hyponatraemia, high CRP levels and renal dysfunction have been noted in some studies to occur more often in patients with Legionnaires' disease than in patients with other types of pneumonia. The diagnosis of Legionnaires' disease depends on a high index of suspicion and special laboratory tests. The definitive diagnosis of legionellosis is based on culture of *Legionella* spp from respiratory tract specimens on appropriate selective media; this remains the gold standard. However, culture is not very sensitive (10-80%), and there is considerable inter-laboratory variation and expertise in performing the specialised culture. At present, the most commonly used and recommended diagnostic test worldwide is the *Legionella* urinary antigen test (UAT). It is a relatively inexpensive rapid test that detects antigens of *L. pneumophila* serogroup 1 in urine, and allows a diagnosis to be made early in the course of illness. The major disadvantage with this test is the inability to reliably detect other serogroups of *L. pneumophila* or other *Legionella* spp. Diagnosis by serology requires a four-fold rise in antibody titres in acute and convalescent sera.

A single high titre (≥1:256) does not discriminate between cases of Legionnaires' disease and other causes of community-acquired pneumonia; in addition, some studies have shown that 5-10% of the general population has titres ≥1:256. PCR-based assays for the detection of *Legionella* spp in clinical samples are available in an increasing number of laboratories and show promise in providing a rapid diagnosis. Although PCR has repeatedly shown to have a sensitivity equal to or higher than culture, the occurrence of false-positive results is problematic and more experience is needed to guide the clinical use of PCR.

Azithromycin or the fluoroquinolones levofloxacin/ moxifloxacin are recommended for treating Legionnaires' disease.

Legionellosis is a notifiable disease in South Africa. It is likely under-recognised in our country, owing to a lack of awareness and low index of suspicion for disease, as well as the diagnostic vagaries. *Legionella* spp will not be detected through any of the routine investigations performed on patients with community- or hospital-acquired pneumonia (blood cultures, routine sputum/other respiratory tract sample cultures etc), and unless a health professional submits appropriate specimens specifically for *Legionella* testing (respiratory tract specimens for *Legionella* spp culture or urine for *Legionella* UAT), Legionnaires' disease cases will go unrecognised. Legionella UAT is offered by a few NHLS laboratories, and certain private laboratories also offer the test. Health professionals are urged to consider Legionnaires' disease in patients with severe pneumonia who have underlying risk factors, and to request the appropriate tests.

Source: Division of Public Health Surveillance and Response, NICD-NHLS; Western Cape Province Department of Health; Groote Schuur NHLS

BEYOND OUR BORDERS: INFECTIOUS DISEASE RISKS FOR TRAVELLERS

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
MERS-CoV Middle East: Jordan, Qatar, **Saudi Arabia**, and the United Arab Emirates (UAE). France, Germany, Spain, Tunisia and the United Kingdom	As of 09 December 2013, WHO has been informed of a total of 163 laboratory-confirmed cases of infection with MERS-CoV, including 71 deaths. The majority of the cases, 127 including 53 deaths have been reported from Saudi Arabia. Travel to the Middle East has been associated with all these cases	Infection prevention and control measures include good cough etiquette, avoiding contact with sick people, and 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.
Avian Influenza (H7N9) Hong Kong China	As of 09 December 2013, two human case of avian influenza H7N9 in Hong Kong have been confirmed. As of 10 December 2013, 141 confirmed cases including 45 deaths have been reported.	No vaccine is currently available for avian influenza (H7N9) virus. Antiviral treatment is most effective when started as soon as possible after influenza illness onset. WHO does not advise special screening at points of entry, nor does it currently recommend any travel or trade restrictions.

Disease & countries	Comments	Advice to travellers
Dengue fever Africa (Burkina Faso)	Dengue fever is considered to be endemic to many countries in all regions of Africa, but surveillance is poor and the disease under diagnosed. As of 06 December 2013, 33 hospitalised cases have been reported in Burkina Faso.	Dengue fever is a mosquito-borne viral infection transmitted by the *Aedes* mosquito species. Dengue fever symptoms can take up to two weeks to develop from being bitten, and the symptoms include: sudden onset of fever, headache, pain behind the eyes, joint and muscle pain, rash, nausea and vomiting. Severe or complicated dengue fever is uncommon but can occur in the form of dengue haemorrhagic fever and dengue shock syndrome. This is more common in the young and elderly. 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. The burning of mosquito coils at night and sleeping under a mosquito net in a well-ventilated room are also helpful at preventing other infections transmitted through mosquito bites.
Pakistan (Punjab Province, Sindh Province)	As of 06 December 2013, 2 385 cases including 6 deaths have been reported in Punjab Province. In Sindh Province 5 058 cases including 30 deaths have been reported.	
India (Delhi, Karnataka State, Maharashtra State)	As of 06 December 2013, 5 212 cases including 6 deaths have been reported in Delhi. In Karnataka State 6 023 cases including 12 deaths have been reported. In Maharashtra State 741 cases have been reported.	
Honduras	As of 06 December 2013, 832 cases have been reported.	
Nicaragua	As of 06 December 2013, 8 105 cases including 22 deaths have been reported.	
Mexico (Baja California Sur State, Sonora State)	As of 06 December 2013, 2 024 cases including 78 DHF/serious cases have been reported in Baja California Sur State. In Sonora State 647 cases including 128 DHF/ serious cases have been reported.	
Chikungunya India (Ahmedabad City)	As of 19 November 2013, compared with 24 cases from September to November 2012, 369 cases were reported from September to 16 November 2013.	A mosquito-borne viral infection transmitted by *Aedes* mosquito species, which bite mostly during the day. The disease shares some clinical signs with dengue; however, the joint pain is often debilitating. Complications are uncommon but can cause death in the elderly. Onset of illness occurs usually between 4 and 8 days, but can range from 2 to 12 days.
Micronesia	As of 29 November 2013, more than 340 suspected cases have been identified on the main island of Yap and several of the smaller islands.	

Disease & countries	Comments	Advice to travellers
Chikungunya (continued)		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. The burning of mosquito coils at night and sleeping under a mosquito net in a well-ventilated room are also helpful at preventing other infections transmitted through mosquito bites.
Singapore	As of 06 December 2013, 924 cases have been reported.	
Philippines	As of 06 December 2013, 1 609 cases have been reported. This is nearly triple the total of 561 cases recorded this time last year.	
Caribbean (Saint Martin)	As of 10 December 2013, two confirmed, four probable and twenty suspected cases have been reported.	
Yellow fever		
Sudan (West Kordofan State)	Between 3 October and 24 November 2013, a total of 44 confirmed cases including 14 deaths have been reported. A total of 12 localities in West and South Kordofan are affected by the current outbreak. The communicable disease surveillance system has been strengthened in White Nile, Gezira, Kassala, Gedarif and Khartoum	There is no specific treatment for yellow fever. For travellers to yellow fever risk areas, it is recommended for the unvaccinated or those whose vaccination status is unknown that they receive yellow fever vaccination 10 days prior to departure. Travellers should wear long-sleeved pants and shirts during the day and stay in well-ventilated (fan/air-conditioned) rooms where possible; use mosquito repellents containing DEET to avoid being bitten. The burning of mosquito coils at night and sleeping under a mosquito net in a well-ventilated room are also helpful at preventing other infections transmitted through mosquito bites.
Cholera		
Angola (Southern Provinces)	As of 09 December 2013, over 1000 cases including 48 deaths have been reported.	Drink and use safe water (bottled with unbroken seal, boiled or treated with a chlorine tablet). Wash hands with soap and safe water often. Eat hot well-cooked food, peel fruits and vegetables. Use latrines or bury faeces.
Zimbabwe (Masvingo Province)	As of 09 December 2013, 5 cases have been reported.	
Togo (Lome, Central Region)	As of 30 November 2013, 130 cases including 7 deaths have been reported.	

Disease & countries	Comments	Advice to travellers
Cholera (Continued) Cuba (Cienfuegos Province)	As of 26 November 2013, 64 cases including 1 death have been reported. An undetermined number of patients is in critical condition and more than 100 persons affected by profuse diarrhoea are awaiting test results. This is the second outbreak in the province so far in 2013.	Vaccines offer delayed and incomplete protection and should therefore not be used to substitute infection prevention and control measures.
Mexico (Veracruz, Hidalgo, Federal District, San Luis Potosi, Mexico State)	As of 26 November 2013, 184 cases including 1 death have been reported. Of these, 160 cases are from Hidalgo, 11 from Veracruz, 9 from Mexico State, 2 from Federal District and 2 from San Luis Potosi. The outbreak has been ongoing since September 2013.	
Polio (wild- type) Cameroon (Ouest Region)	As of 04 December 2013, 4 cases of wild poliovirus type 1 (WPV1) have been reported.	Travellers are advised to ensure that they have completed the recommended age appropriate polio vaccine series. It is recommended for the unvaccinated, incompletely vaccinated, or those whose vaccination status is unknown that they receive 2 doses of IPV administered at an interval of 4–8 weeks, a third dose should be administered 6–12 months after the second. Vaccinated travellers to the area should receive a booster (ideally the inactivated polio vaccine (IPV) or alternatively oral polio vaccine (OPV) booster.
Nigeria	As of 04 December 2013, 50 cases of WPV1 have been reported.	
Horn of Africa (Somalia, Kenya, Ethiopia)	As of 04 December 2013, 203 cases of WPV1 have been reported (183 from Somalia, 14 from Kenya and 6 from Ethiopia).	
Pakistan (Federally Administered Tribal Area)	As of 04 December 2013, 11 cases of WPV1 have been reported.	
Syrian Arab Republic (Deir-Al-Zour Province, rural Damascus, Aleppo)	As of 04 December 2013, 70 cases of WPV1 have been reported	
Israel, West Bank and Gaza	As of 04 December 2013, no case of paralytic polio has been reported in either Israel or West Bank and Gaza. However, environmental surveillance has detected WPV1 in 27 sites in Israel, 2 sites in West Bank and 1 site in the Gaza Strip. This suggests that the virus is circulating in the environment.	

Disease & countries	Comments	Advice to travellers
Measles DR Congo (Bandundu) Canada (Alberta) Australia (South Australia) Russia (Astrakhan Region, Dagestan)	As of 24 November 2013, 300 cases have been reported. As of 09 December 2013, 32 cases have been reported. As of 09 December 2013, 10 cases have been reported in the past month linked to Bali holiday-makers. As of 09 December 2013, 148 and 120 cases have been reported in Astrakhan Region and Dagestan, respectively.	Adolescents and adults (unless pregnant) who have not been vaccinated should be vaccinated. Children should be up to date with their routine measles immunisation schedule.
Plague Madagascar	On 10 December 2013, the Pasteur Institute of Madagascar confirmed bubonic plague as the cause of death in villagers near Mandritsara. At least 20 villagers were reported to have died the previous week. There are concerns that the disease could spread to towns and cities where living standards have deteriorated over recent years.	*Yersinia pestis* is a zoonotic disease of wild rodents. Humans become infected through the bite of an infected rat flea or, less commonly, through contact with/ inhalation of infectious droplets. Bubonic plague manifests as an acute illness with fever, headache, weakness and swollen, tender lymph nodes. Complications include septicaemic or pneumonic plague, which both carry high mortality rates. Bubonic plague per sé does not pose a risk for human-to-human transmission; however, pneumonic plague has been associated with human-to-human transmission.

References and additional reading:

ProMED-Mail (www.promedmail.org)
World Health Organization (www.who.int)
Centers for Disease Control and Prevention (www.cdc.gov)
Global Polio Eradication Initiative (http://www.polioeradication.org/Dataandmonitoring/Poliothisweek.aspx)

Last accessed: 12 December 2013

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