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

Communicable Diseases Communiqué

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RABIES UPDATE

A new human case of rabies has been reported this month. Positive fluorescent antibody testing performed on a post-mortem brain specimen by the Centre for Emerging and Zoonotic Diseases (CEZD) of the NICD-NHLS confirmed rabies as the cause of death in a 10-year-old child from Free State Province. The child was bitten by a stray dog on a farm on 23 August 2012, sustaining two category 3 wounds on the face and arm. Medical treatment was sought from a private healthcare facility the same day, where the patient received a tetanus toxoid vaccine and the wounds were sutured. Unfortunately, rabies post-exposure prophylaxis (PEP) in the form of rabies vaccine and rabies immunoglobulin was never administered. Six weeks later (5 October 2012) the child became ill and was referred to a public hospital on 7 October 2012 for treatment. Clinical symptoms included difficulty in swallowing, and inability to swallow water (hydrophobia). The illness progressed rapidly and the child died later the same day. This case unfortunately represents a serious health care system failure, and this death could have been prevented had the child received appropriate rabies PEP.

Healthcare workers (HCW) should maintain a high index of suspicion and think of rabies whenever they are presented with a dog-bite case, and should always perform a thorough assessment for rabies risk. In this case, none of the HCW who saw the child considered rabies, and a rabies risk assessment was not done resulting in failure to administer rabies PEP.

This latest case brings the number of laboratory-confirmed human rabies cases to a total of 9 for 2012. These cases were reported from KwaZulu-Natal (n=4), Limpopo (n=3), Mpumalanga (n=1) and Free State (n=1) provinces.

In addition, two clinical cases of probable rabies have been reported so far this year, one each from Eastern Cape and KwaZulu-Natal provinces. The most recent case is a 4-year-old child in KwaZulu-Natal Province that was bitten by two confirmed rabid dogs, a week apart. The child only received rabies PEP following the second exposure. Before completion of the PEP schedule, the child developed signs and symptoms consistent with rabies. Testing of saliva, nuchal biopsies and cerebrospinal fluid by rabies reverse transcription PCR was repeatedly negative. Testing of serum revealed extraordinarily high anti-rabies IgG and IgM levels. The patient was discharged after 6 months of hospitalisation and continues to suffer from severe neurological sequelae.

Rabies is endemic in dog populations throughout South Africa and in much of the developing world. Rabies was introduced into the South African dog population from Angola during 1940. Annual numbers of rabies cases in humans correlate closely to numbers of cases in dogs, since unvaccinated domestic dogs are the major source of infection in humans. Since 1983, South Africa reports between 5 and 30 laboratory-confirmed human deaths each year, mostly in children, as result of rabies infection.[1] The majority of the cases

are reported from the coastal provinces of KwaZulu-Natal and Eastern Cape. Of considerable concern is the re-emergence of rabies in provinces where it was previously under control, including Limpopo (2006) and Mpumalanga (2008). Human rabies may be easily misdiagnosed as other fatal encephalitides (e.g. cerebral malaria, viral meningoencephalitis) and as a result many cases are not suspected or diagnosed – contributing to the under-reporting of this fatal disease.

Vaccination of dogs is the key to preventing human rabies. The Animal Diseases Act states that pet owners must vaccinate their animals against rabies between the ages of three and seven months, then 12 months later and every three years thereafter. Free mass vaccination campaigns are organised by state veterinarians every year in KwaZulu-Natal Province and three-yearly in other provinces and during occasional outbreaks.
Communities, and particularly children, need to be educated about dog-bite prevention. Rabies is entirely preventable as long as medical care is sought immediately after an exposure and the appropriate rabies PEP is administered timeously. HCW should obtain as much information as possible regarding the exposure and offending animal. Unfortunately, lack of public awareness, obstacles to accessing medical care (including poverty and remote locations) and availability of rabies PEP products at clinics serving underprivileged communities can delay life-saving treatment.

World Rabies Day is a large rabies education and outreach initiative celebrated every year in over 135 rabies-affected countries worldwide, and was held on 28 September 2012.

The South African Department of Health, Department of Agriculture, Forestry and Fisheries and numerous other animal- and human-health organisations supported World Rabies Day by organising events promoting awareness of rabies and its prevention, as well as by mobilising resources to offer free dog vaccination campaigns in different parts of the country.

Reference:
1. Weyer J, Szmyd-Potapczuk AV, Blumberg LH, Leman PA, Markotter W et al. Epidemiology of human rabies in South Africa: 1983-2007. Virus Research 2011; 155: 283-290

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

MENINGOCOCCAL DISEASE

The meningococcal season is underway and sporadic cases of meningococcal disease continue to be reported across the country. The highest numbers of cases are expected between the months of August to October. There are inherent delays in laboratory-based reporting which lag behind clinical notifications of disease.

By the end of epidemiological week 39 (week ending 30 September), a total of 145 laboratory-confirmed cases was reported to the bacteriology laboratory at the Centre for Respiratory Diseases and Meningitis (CRDM), NICD-NHLS for 2012 (Table). Thirty-five cases have been reported in the <1 year old age group this year so far, which is slightly lower than the number of cases for the equivalent time period and age group in 2011 (n=49).

The reported cases have diverse serogroups, which is in keeping with sporadic endemic disease in the country. Serogroup data were available for 112/145 (77%) of cases. Serogroup B and W135 have been identified most commonly this year (38/112, 34% serogroup B and 41/112, 37% serogroup W135). Other serogroups included: C (14%, 16/112) and Y (14%, 16/112).

An increase in the number of meningococcal cases is usually identified in the winter and spring

seasons, so there should be a high index of suspicion for meningococcal disease in patients who present with non-specific 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 meningococcal disease (meningitis and sepsis) should be notified telephonically to the Department of Health.

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

Table. Number of laboratory-confirmed meningococcal disease cases reported until end of week 39, 2011 and 2012, by province

Province	2011	2012
Eastern Cape	31	20
Free State	20	5
Gauteng	109	59
KwaZulu-Natal	25	17
Limpopo	8	2
Mpumalanga	14	3
Northern Cape	6	0
North West	5	4
Western Cape	37	35
South Africa	**255**	**145**

INFLUENZA

Viral watch: Influenza-like illness (ILI) surveillance programme

The number of specimens submitted for respiratory virus testing by Viral Watch centres has continued to decline, dropping from a high of 146 in week 31 (week ending 5 August) to below 20 in the last week of September. The influenza season started in week 21 (week ending 27 May) when the influenza detection rate rose above 10% and peaked in week 33 (week ending 19 August) with a detection rate of 61.4% (Figure 1). To date this year (10 October), a total of 750 influenza detections has been made from 723 patients. Of the 734 influenza positive samples that have been subtyped, 423/734 (58%) have been identified as influenza A(H3N2), 307/734 (42%) as influenza B and 4/734 (<1%) as influenza A(H1N1)pdm09. Influenza has been detected in all provinces.

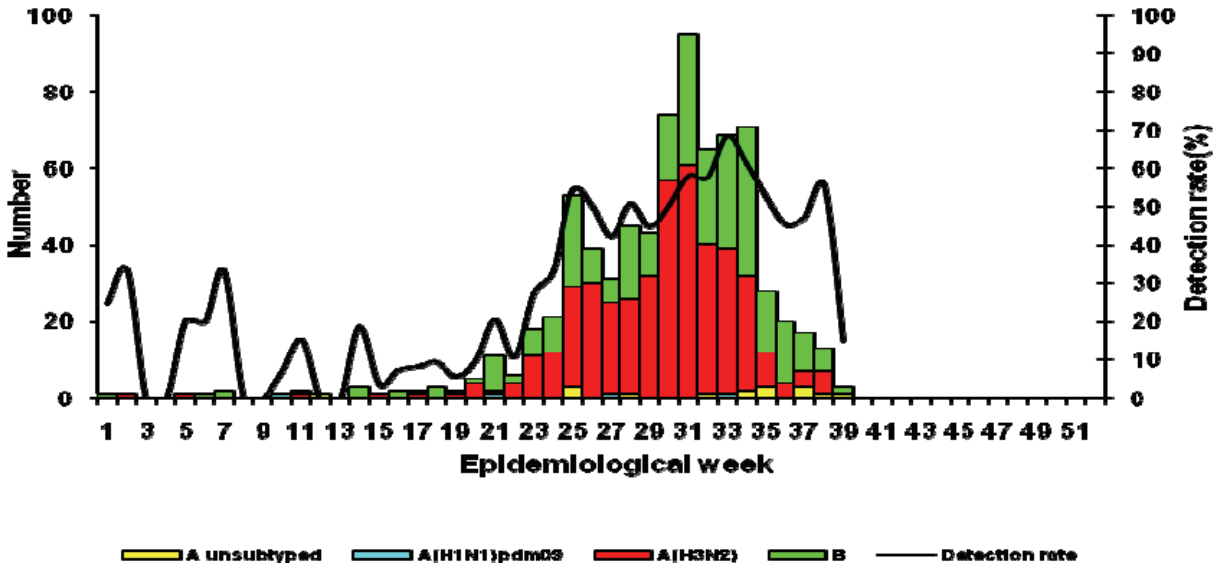

Figure 1. Number of positive samples by influenza types and subtypes, and detection rate by week. Viral watch surveillance programme 2012

Severe Acute Respiratory Illness (SARI) surveillance programme

For the same period, 3 910 patients admitted with severe respiratory illness at the five SARI sentinel sites were tested for influenza. Of these, 236 (6%) were positive for influenza: one was positive for influenza A(H1N1)pdm09, 115 were positive for influenza B, 5 were positive for influenza A

unsubtyped and 115 were positive for influenza A (H3N2) - Figure 2. The number of patients admitted with severe respiratory illness has started to decrease. The detection rate for influenza does, however, remain above 10% so clinicians should consider a diagnosis of influenza in patients with severe respiratory illness.

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

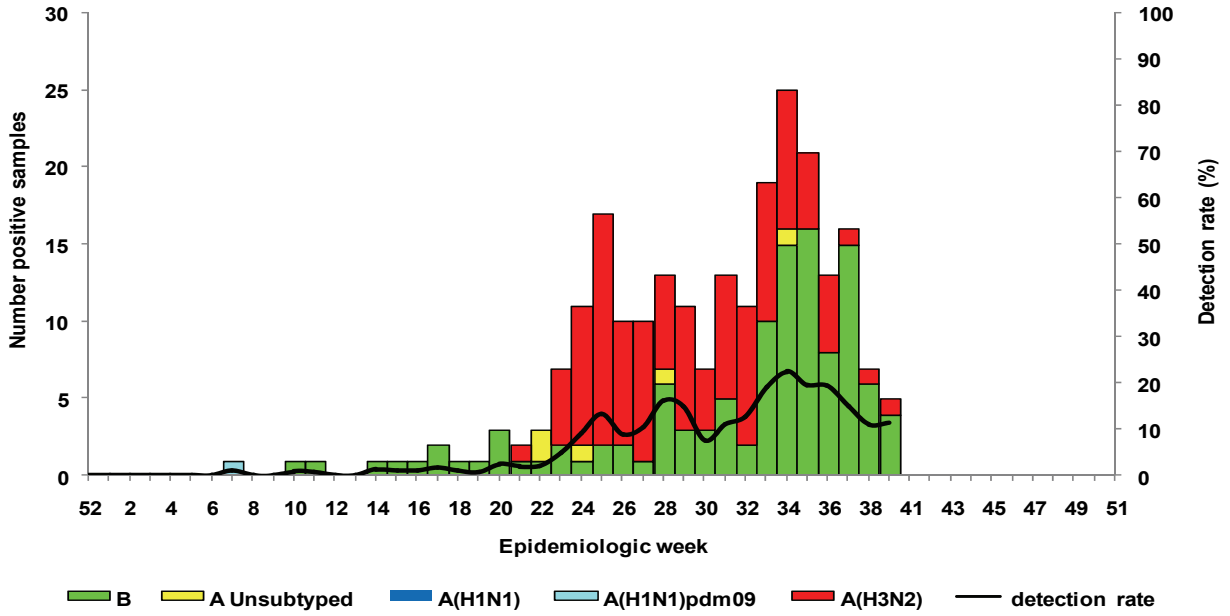

Figure 2. Number of positive samples by influenza types and subtypes and detection rate by week, SARI surveillance programme 2012

MARBURG HAEMORRHAGIC FEVER OUTBREAK, UGANDA

The World Health Organization (WHO) reported on 21 October 2012 that the Ministry of Health (MoH) in Uganda has declared an outbreak of Marburg haemorrhagic fever (MHF) in Kitumba sub-county (Kabale district, neighbouring on the Republic of Rwanda), south-west Uganda. Three cases of MHF have been laboratory confirmed to date. The MoH and WHO have deployed a team to the district to support outbreak investigation and response, including case contact tracing. This MHF outbreak is not related to the recent outbreak of Ebola haemorrhagic fever which occurred in Kibaale district, ±270 km north-east of Kabale district.

The WHO does not recommend any travel or trade restrictions to Uganda.

MHF was first identified in 1967 during a large two-centre outbreak in Marburg (Germany) and Belgrade (former Yugoslavia) following importation of infected monkeys from Uganda. Subsequently, outbreaks and sporadic cases have been reported in Angola, Democratic Republic of the Congo, Kenya, South Africa (in a person with recent travel to Zimbabwe) and Uganda.

Marburg virus is related to Ebola virus, and like Ebola virus, has the propensity to cause dramatic outbreaks with high fatality. As with Ebola virus, the natural reservoir of Marburg virus is as yet unknown. Monkeys are susceptible to infection but are not considered plausible reservoir hosts owing to the similarly high fatality rate of disease, as seen in humans.

Transmission of the virus from person-to-person requires close contact. Infection results from contact with blood or body fluids (including faeces, vomitus, urine, saliva and respiratory secretions). Transmission via infected semen can also occur; virus may be detected up to 7 weeks following clinical recovery. Close contact during care for a patient, either at home or in hospital, and certain burial practices are common routes of infection.

Transmission via contaminated injection equipment or needle-stick injuries has also been documented.

Following an incubation period of 3 to 9 days, initial symptoms of MHF include fever, headache, malaise, and myalgia. Watery diarrhoea with abdominal pain, nausea and vomiting usually start 2-3 days later, and may be accompanied by a non-pruritic rash. Most patients develop haemorrhagic manifestations by days 5 to 7 of illness (for example: fresh blood in vomitus/faeces, epistaxis, bleeding from gums, vaginal bleeding) and fatal cases usually have some form of bleeding (often from multiple sites). Spontaneous bleeding from venepuncture sites is often problematic. During the severe phase of illness, patients often have high fever, and may develop confusion. In fatal cases, death most often occurs 8 to 9 days following the onset of illness.

There is no vaccine or specific treatment for MHF.

References:
1. WHO website: http://www.who.int/csr/don/2012_10_21/en/index.html. Last accessed 22/10/2012.
2. ProMED-Mail (www.promedmail.org). Last accessed 22/10/2012.

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

NOVEL CORONAVIRUS – SAUDI ARABIA AND QATAR

A novel coronavirus has been identified in two patients, both previously healthy adults presenting with severe acute respiratory illness following travel to Saudi Arabia. The first patient, a 60-year-old male from Jeddah, Kingdom of Saudi Arabia, was hospitalised in June 2012 and died. The second patient, a 49-year-old male Qatari national with onset of symptoms in September 2012, was transferred to the United Kingdom for intensive care.

Coronaviruses are a large family of viruses, some of which may cause respiratory infections in humans and animals. Such respiratory infections may range from mild upper respiratory tract illness to severe lower respiratory disease. Genetic sequence data indicate that this new virus is a beta-coronavirus similar to bat coronaviruses, but not similar to any other coronavirus previously described in humans, including the coronavirus that caused severe acute respiratory syndrome (SARS) in 2003.

Transmission of coronaviruses is mainly by large respiratory droplets and direct or indirect contact with infected respiratory tract secretions.
To date only two laboratory-confirmed cases have been reported globally and there is no evidence of person-to-person or health care-associated transmission.

Clinical presentation and case management
Since this novel coronavirus has only been recently described, and only two laboratory-confirmed cases detected so far, there is limited information regarding the mode/s of transmission, clinical features, and severity of disease at this stage. The incubation period is currently considered to be ±7 days. Symptoms in the two confirmed cases included fever, cough and dyspnoea. It is not yet clear whether these are typical presentations or whether the virus could cause milder illness.

Treatment is supportive as no specific therapy has been shown to be effective.

Precautions and infection prevention and control considerations
At present, no vaccine is available for the novel coronavirus. However, travellers are encouraged to be vaccinated against seasonal influenza and to practice good hand hygiene and cough etiquette in order to reduce the risk of infection with respiratory viruses.

People who are ill with respiratory symptoms are advised to stay at home whilst they are unwell and avoid contact with healthy people, as far as possible.

The World Health Organization (WHO) and Centers for Disease Control and Prevention (CDC) have not issued any travel alerts. In addition, no screening at points of entry should be enforced.

For persons planning to travel to the Kingdom of Saudi Arabia to participate in the Hajj scheduled for 24–29 October 2012, requirements and recommendations remain unchanged and can be found at

http://www.cdc.gov/features/Hajj. Travel advice will be reviewed if additional cases occur.

More information on the novel coronavirus can be accessed at the following websites:

1. http://www.hpa.org.uk/webw/HPAweb&HPAwebStandard/HPAweb_C/1317136202755
2. http://www.who.int/csr/disease/coronavirus_infections/faq/en/index.html
3. http://www.cdc.gov/coronavirus/ncv

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

THE NICD-NHLS ANTIMICROBIAL RESISTANCE REFERENCE LABORATORY

The Antimicrobial Resistance Reference Laboratory (AMRRL) within the Centre for Opportunistic, Tropical and Hospital Infections (NICD-NHLS) performs surveillance of hospital-associated infections. For the past two years, the focus has been on characterising invasive hospital-associated *Staphylococcus aureus* and *Klebsiella pneumoniae* isolates. All isolates are identified and antimicrobial susceptibility testing performed. Molecular characterisation is then undertaken to identify the offending antibiotic resistance gene/s. For *S. aureus*, a total of 1 234 isolates identified as methicillin-resistant *S. aureus* (MRSA) on the VITEK automated microbial identification system has been screened for methicillin resistance genes (*mec*A) using real-time PCR. Of these, 1 151 isolates (93%) were positive for the *mec*A gene. A total of 922 MRSA (*mec*A-expressing) isolates have been typed thus far (SCC*mec* typing). SCC*mec* type III accounts for 49.8%, type IV accounts for 33.2% type II accounts for 5.2%, and type VI accounts for 0.5%. No SCC*mec* types I or V have been detected thus far.

For the *K. pneumoniae* isolates, a total of 173 (10%) of all extended-spectrum beta-lactamase (ESBL)-producing isolates received in the laboratory to date have been screened for various ESBL-producing genes using real-time PCR. The antibiotic resistance genes of interest include CTX-M, SHV and TEM. All samples tested harbour ≥1 of these genes. Most (97%) of these samples are positive for SHV, 83% are positive for TEM and 88% are positive for CTX-M.

In addition to routine surveillance, the AMRRL also accepts any *Enterobacteriaceae* isolates for further characterisation should they be suspected to harbour any of the following antimicrobial resistance genes: NDM-1, KPC and OXA-48. A total of 44 isolates have been received since November 2011, from both NHLS and private laboratories. Of these, nine isolates from private laboratories were positive for NDM-1, but none were positive for KPC or OXA-48.

Source: Centre for Opportunistic, Tropical and Hospital Infections: Antimicrobial Resistance Reference Laboratory , NICD-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
Cholera: Sierra Leone	As of 2 October 2012 the national cumulative number of cholera cases for all twelve districts in Sierra Leone is 20 736, including 280 deaths with a case fatality rate (CFR) of 1.35%. The cumulative CFR declined from an average of 3.2% in July 2012 to below 0.5% in September 2012. Two deaths have been reported since 23 September 2012. The western area of the country where the capital city of Freetown is located has been the most affected locale with >50% of total cases.	Cholera is a bacterial disease that can cause diarrhoea and dehydration. Cholera is most often spread through the ingestion of contaminated food or drinking water. The following are important measures for preventing cholera in travellers: • Drink bottled water or water brought to a rolling boil for 1 minute before you drink it. • Avoid ice or popsicles made from contaminated water. • Eat food that has been thoroughly cooked, and eat it while still hot and steaming. Eat fruit and vegetables that can be peeled, peel them yourself after washing hands and do not eat the peels. • Avoid foods and beverages from street vendors.

Disease & Countries	Comments	Advice to travellers
Ebola haemorrhagic fever: Uganda and Democratic Republic of Congo (DRC)	**Uganda**: The Ebola virus outbreak in Uganda has come to an end. On 4 October 2012 the Ugandan Ministry of Health declared the Ebola haemorrhagic fever (EHF) outbreak in Kibaale district as over. The last case was confirmed on 3 August 2012 and was discharged from the hospital on 24 August 2012. This is double the maximum incubation period (21 days) for EHF as recommended by WHO. In the outbreak, a total of 24 probable and confirmed cases was recorded, of which 11 were laboratory-confirmed. A total of 17 deaths were reported in this outbreak. **DRC**: As of 7 October 2012, 49 cases (31 laboratory-confirmed, 18 probable) of EHF have been reported in the Democratic Republic of Congo (DRC). Of these, 24 have been fatal (10 laboratory-confirmed, 14 probable). The cases reported are from Isiro and Viadana health zones in Haut-Uele district in Province Orientale.	The World Health Organization (WHO) does not recommend any travel restrictions to Uganda or the DRC. The Ebola virus is transmitted by direct contact with the blood, secretions, organs or other body fluids of infected persons. Healthcare workers have frequently been infected while treating patients with Ebola virus infection, through close contact without appropriate infection prevention and control precautions and inadequate barrier nursing procedures. The incubation period is 2 to 21 days, and disease is characterised by the sudden onset of fever, intense weakness, muscle pain, headache and sore throat. This is often followed by vomiting, diarrhoea, rash, impaired kidney and liver function, and in some cases, both internal and external bleeding. Laboratory findings show low counts of white blood cells and platelets as well as elevated liver enzymes.
West Nile virus: United States of America (USA)	As of 25 September 2012, 3 545 cases and 147 deaths caused by West Nile virus (WNV) were reported. About 38% of all cases have been reported from Texas. Other states with large numbers of cases include Mississippi, Michigan, South Dakota, Louisiana, Oklahoma, and California.	Although only 20% of WNV infections are symptomatic, severe disease (including meningitis and encephalitis) is well described. The incubation period is 2 to 14 days. Typical clinical features of West Nile fever include fever, headache, fatigue, and occasionally truncal skin rash, lymphadenopathy and orbital pain. No human vaccine against WNV is currently available. Mosquito-biting hours for many of the species that are important vectors of WNV are from dusk to dawn. Travellers should be advised to take preventive measures to reduce mosquito bites, including wearing long sleeves and trousers during the late afternoon, evening and early morning; use of insect repellents (containing 30-50% DEET); sleeping under insecticide-treated bed nets; keeping windows and doors closed/screened, and use of insecticide aerosol and/or coils at night.

Disease & Countries	Comments	Advice to travellers
***Salmonella* Thompson outbreak:** Netherlands, USA	An outbreak of salmonellosis due to contaminated smoked salmon has caused illness in hundreds of consumers in the Netherlands (300 cases) and USA (100 cases). The implicated salmon is produced by a company called Foppen in the Netherlands.	Travellers to Netherlands and USA should avoid eating smoked salmon. Should they eat salmon and develop diarrhoea, fever and abdominal cramps 12 to 72 hours after eating they should seek medical attention or advice. The illness lasts ±4 to 7 days and most people recover without treatment. However, in some cases diarrhoea may be severe or disease may become invasive and such cases will require hospitalisation.
Malaria: Greece	As of 5 August 2012, eight cases of *Plasmodium vivax* malaria have been reported from the Attica and Laconia regions of Greece. Cases have occurred in the cities of Marathon, Markopoulo, and Evrotas. No cases have been reported in Athens. Surveillance for malaria cases is being strengthened. In affected areas, mosquito control has been intensified, healthcare providers have been educated, and the public has been informed.	Travellers should be advised to take preventive measures to reduce mosquito bites, including wearing long sleeves and trousers during the afternoon, evening and early morning; use of insect repellents (containing 30-50% DEET); sleeping under insecticide-treated bed nets; keeping windows and doors closed/screened, and use of insecticide aerosol and/or coils at night.
Dengue fever: Asia and Americas	There has been an increase in dengue fever cases across Asian countries, including India, Pakistan, Thailand and Cambodia. At least 34 483 dengue fever cases were reported in Cambodia during the first 9 months of this year, compared to 12 972 cases in the same period last year. In the Americas, dengue fever is currently being reported in Mexico, El Salvador, Honduras, Dominican Republic, Cuba, Barbados, Ecuador, Paraguay and the Madeira Islands.	Dengue viruses are transmitted by *Aedes* spp. mosquitoes, which usually bite during the daytime. There are no available vaccines. When travelling to a dengue fever risk area, use mosquito repellents with DEET to avoid being bitten. Wear long-sleeved pants and shirts during the day and stay in well ventilated (fan/air-conditioned) rooms where possible. Burning mosquito coils at night and sleeping under a mosquito net in a well ventilated room is also advised.

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: 19 October 2012.

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

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

This communiqué is published by the National Institute for Communicable Diseases (NICD), a division of the National Health Laboratory Service (NHLS), on a monthly basis for the purpose of providing up-to-date information on communicable diseases in South Africa. Much of the information is therefore preliminary and should not be cited or utilised for publication. Questions and comments may be addressed to the Division of Public Health Surveillance and Response: outbreak@nicd.ac.za; Private Bag X4,