



## MULTI-DRUG RESISTANT GONORRHOEA IN GAUTENG PROVINCE

A private laboratory has recently identified two cefpodoxime-resistant *Neisseria gonorrhoeae* isolates, which have been confirmed at the Centre for HIV and STIs (NICD-NHLS) to exhibit high minimum inhibitory concentrations (MIC) to oral cephalosporins.

Both isolates were cultured from urethral specimens collected from male patients who had presented to their GPs with a typical gonococcal urethral discharge. Clinical details are mostly lacking for the first patient, who presented in May 2012 and was treated empirically with single dose of oral azithromycin. The second patient presented in July 2012 and gave a history of persistent urethral gonorrhoea that had not responded to two courses of a single 400 mg dose of oral cefixime, the recommended first-line treatment for gonorrhoea in South Africa. Preliminary reports indicate that the second patient travelled recently to Japan but the dates of travel, and hence relevance of travel to the acquisition of gonorrhoea, are unknown. This patient was subsequently treated with ceftriaxone 500 mg intramuscularly (IM). It is not known if either patient had asymptomatic gonorrhoea at other anatomical sites (i.e. pharynx or ano-rectum) at the time their urethral infection was treated. To date, neither patient has returned for follow-up. Both GPs are actively trying to recall their patients to ensure that they have been successfully treated. By E-test methodology, both gonococcal strains exhibited decreased susceptibility to cefixime and cefpodoxime. Both isolates were also highly resistant to ciprofloxacin and chromosomally resistant to penicillin ( $\beta$ -lactamase negative). Further testing of the first patient's isolate demonstrated chromosomal resistance to tetracycline (and thus doxycycline) and decreased susceptibility to both azithromycin and gentamicin. The ceftriaxone MIC for both isolates was 0.064 mg/l which, whilst still in the susceptible range, is elevated compared to the usual MIC range seen when testing South African gonococcal isolates (0.001-0.004 mg/l). Both isolates were found to have mosaic *penA* genes, which encode penicillin binding protein 2 (PBP-2), which is the most common genetic mechanism associated with decreased susceptibility to oral cephalosporins. The isolates were typed using the highly discriminatory *N. gonorrhoeae* multi-antigen sequence typing (NG-MAST) scheme and found to have identical sequence types. This indicates that there has likely been transmission of a single strain within Gauteng and it is probable that the two cases may be part of the same sexual network.

The scenario described above fits in with the global

spread of multi-drug resistant *N. gonorrhoeae* (MDR-Ng). The first reports of substantial numbers of cases of MDR-Ng came from Japan approximately 10 years ago. MDR-Ng strains have subsequently been reported from other countries in the Western Pacific region, notably Australia and Hong Kong, and more recently from several European countries and the USA. Within the UK, it has been noted from STI clinic-based surveillance that the prevalence of MDR-Ng is substantially higher among men-who-have-sex-with-men (MSM) compared to heterosexual men and women. This likely reflects spread of resistant strains within restricted sexual networks and the practice of oral sexual intercourse. It is thought that the mosaic *penA* genes arose through genetic recombination between commensal *Neisseria* species and *N. gonorrhoeae* isolates present simultaneously in the pharynx. Pharyngeal gonorrhoea is mostly asymptomatic and thus will remain undetected unless pharyngeal swabs are taken prior to treatment of ano-genital gonorrhoea with antibiotics.

Healthcare workers are advised to be vigilant for cases of cefixime treatment failure and to take swabs from all exposed anatomical sites in suspected cases of MDR-Ng (including urethra, vagina, pharynx and ano-rectum as applicable). Cefixime treatment failures should be treated with a single 500 mg IM dose of ceftriaxone - i.e. a higher dose than the normally recommended 250mg. All suspected or confirmed MDR-Ng cases should be followed up and gonococcal cultures taken from all exposed anatomical sites for tests of cure.

Laboratories should also ensure that all gonococci are appropriately screened for cephalosporin susceptibility by testing isolates against both oral cephalosporins (either cefixime or cefpodoxime) and the injectable agent ceftriaxone.

To assist with monitoring of the current situation, microbiologists are requested to send any suspected MDR-Ng isolates to the Centre for HIV and STIs at NICD-NHLS for confirmation and further testing. For further information/advice on issues relating to patient management and diagnostic testing, please contact Professor David Lewis at [davidl@nicd.ac.za](mailto:davidl@nicd.ac.za) (011 555 0468).

**Source:** Centre for HIV and STIs (NICD-NHLS), Ampath Laboratories.

## INFLUENZA

### Viral watch: influenza-like illness (ILI) surveillance programme

The 2012 influenza season which started in epidemiologic week 21 (week ending 27 May) continues. From mid-June to mid-July the average number of specimens for influenza testing submitted by the Viral Watch influenza surveillance programme was 92 (range 76-105), which rose to 137 and 140 for the last two weeks of July. The

influenza detection rate for these two weeks was 59% and 58% respectively (Figure 1). As at 15 August, a total of 460 influenza cases had been detected for 2012. Of the 434 influenza-positive samples that have been subtyped, 267/434 (62%) have been identified as influenza A(H3N2), 165/434 (38%) as influenza B and 2/434 (<1%) as influenza A(H1N1)pdm09. Influenza has been detected in all provinces.

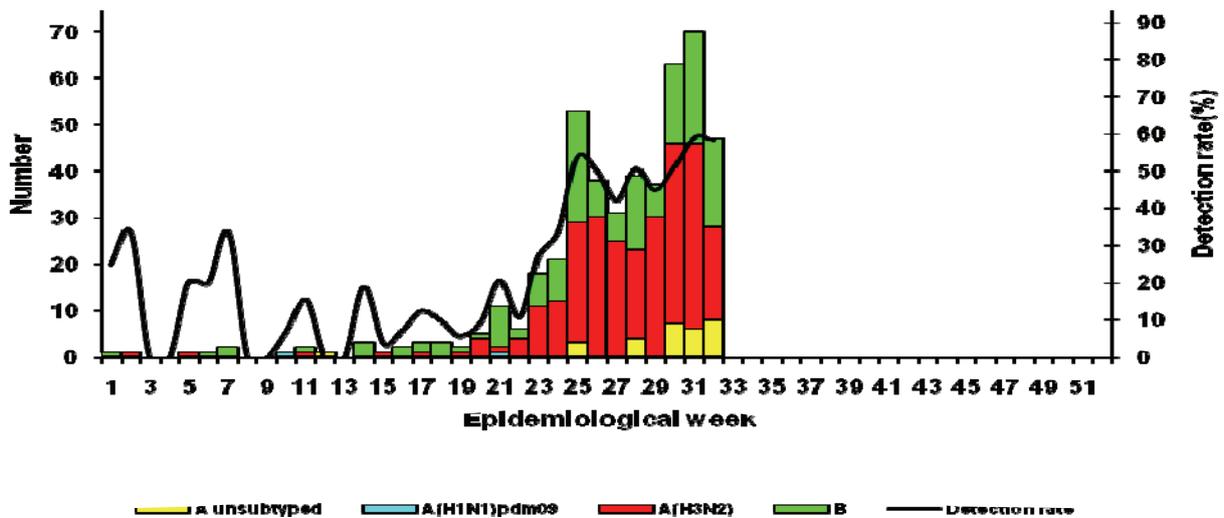


Figure 1: Number of positive samples by influenza types and subtypes, and detection rate by week, Viral watch.

### Severe Acute Respiratory Illness (SARI) surveillance programme

As at 15 August, 3 054 patients admitted with severe respiratory illness at the five SARI sentinel sites during 2012 were tested for influenza. Of

these, 102 (3%) were positive for influenza. Of the 98 influenza-positive samples that were typed, 64/98 (65%) were identified as influenza A(H3N2), 33/98 (33%) as influenza B, and 1/98 (<1%) as influenza A(H1N1)pdm09 (Figure 2).

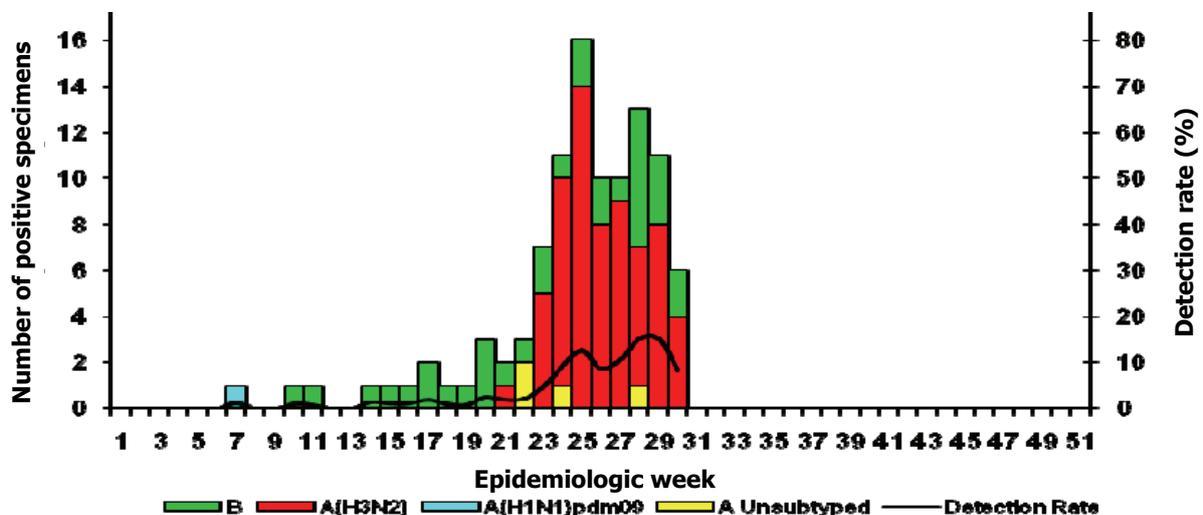
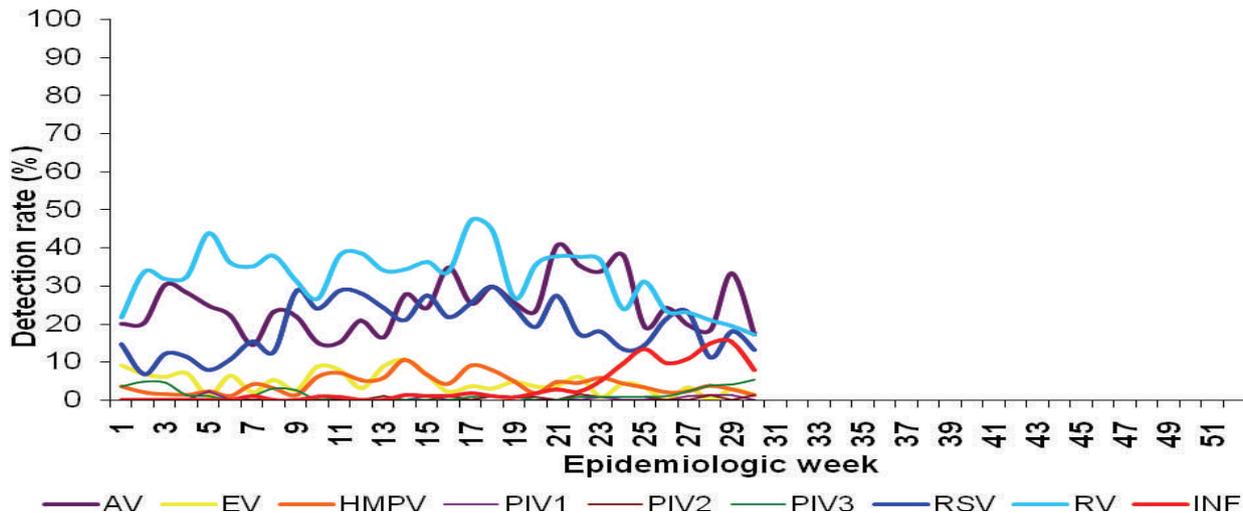


Figure 2. Number of positive samples by influenza types and subtypes and detection rate by week, SARI.



**Figure 3 :Detection rate for respiratory viruses by epidemiologic week, SARI.**

AV- Adenovirus, EV-enterovirus, HMPV-human metapneumovirus, PIV1,2,3 – parainfluenza virus 1,2 and 3, RSV- respiratory syncytial virus, RV-rhinovirus, INF-influenza

Although it is the influenza season, for the week starting 21 May 2012 (epidemiologic week 21) to 6 August 2012 (epidemiologic week 31), circulation of other respiratory viruses has been high, with an average detection rate as follows: 28% for adenovirus, 18% for respiratory syncytial virus (RSV) and 27% for rhinovirus (Figure 3). RSV is an important cause of pneumonia hospitalisations in children aged <5 years. The RSV season generally occurs before the influenza season but they may coincide. Both RSV and influenza virus infection should be considered in children <5 years hospitalised with acute lower respiratory tract infection. Adenovirus and rhinovirus may also cause severe respiratory disease requiring hospitalisation, but they can also be detected in asymptomatic patients. For this reason identification of these viruses should be correlated with the patient's signs and symptoms. Detection of

a viral pathogen should not preclude consideration of other aetiologies as co-infections are common, particularly in HIV-infected persons.

Although spring is just around the corner, we would like to remind healthcare workers (HCWs) that the influenza season is still ongoing. HCWs should have a high index of suspicion for a diagnosis of influenza in patients with respiratory tract infection. Antiviral agents should be considered for use in all patients with complicated or severe disease due to suspected influenza. Detailed information on the management of patients with influenza can be found in the healthcare workers handbook for influenza available at [www.nicd.ac.za](http://www.nicd.ac.za).

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

## MENINGOCOCCAL DISEASE

Sporadic cases of meningococcal disease continued to be reported across the country, with numbers expected to peak between August and October. There are inherent delays in laboratory-based reporting of cases, which may lag behind numbers of clinically suspected cases reported or notified to date.

By the end of epidemiological week 31 (week ending 5 August), a total of 110 laboratory-confirmed cases was reported to the bacteriology laboratory at the Centre for Respiratory Diseases and Meningitis (CRDM), NICD-NHLS for 2012 to date (Table). Thirty cases had been reported in the <1 year age

group this year so far, similar to the number of cases for the equivalent time period and age group in 2011 (n=26).

The reported cases have diverse serogroups, which is in keeping with sporadic endemic disease in the country. Serogroup data were available for 90/110 (82%) of cases. Serogroup B and W135 have been identified most commonly this year (30/90, 33% serogroup B and 33/90, 37% serogroup W135). Other serogroups included: C (14%, 13/90) and Y (16%, 14/90).

An increase in the number of meningococcal cases is usually identified in winter and spring, so there should be a high index of suspicion for meningococcal disease in patients who present with 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 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 31, 2011 and 2012, by province.**

Province	2011	2012
Eastern Cape	21	14
Free State	11	2
Gauteng	81	46
KwaZulu-Natal	11	12
Limpopo	4	1
Mpumalanga	11	3
Northern Cape	5	0
North West	1	3
Western Cape	25	29
<b>South Africa</b>	<b>170</b>	<b>110</b>

## RABIES: UPDATE

A case of rabies was confirmed in an eight-year-old boy from Mpumalanga Province. The patient was bitten by a dog on 27 June 2012, then presented to a local clinic where he received wound treatment but did not receive rabies post-exposure prophylaxis (PEP). A second child was also bitten by the same dog, but did receive rabies PEP and remains healthy to date. The patient was admitted on 29 July 2012 to Themba Hospital but died shortly thereafter. A post-mortem brain specimen was submitted to the NICD-NHLS for confirmation of rabies infection, and tested positive for the presence of rabies virus antigen with the rabies direct fluorescent antibody test.

This is the first laboratory-confirmed human rabies case from Mpumalanga since 2010. The number of rabies cases in dogs in the Nkomazi district of Mpumalanga has increased since 2008.

A total of seven human rabies cases has been laboratory confirmed for South Africa for 2012 to date. These include three cases each from Limpopo and KwaZulu-Natal provinces in addition to the case reported above. A case of clinical rabies was reported in January 2012 from Eastern Cape Province, but could not be confirmed as no clinical specimens were available for testing. A suspected case of rabies in a 4-year-old child from Umlazi in KwaZulu-Natal Province is still under investigation.

A total of 209 dog rabies cases has been confirmed for South Africa from January to June 2012 (Agriculture Research Council – Onderstepoort Veterinary Institute and Allerton Veterinary Laboratory). Almost half of these cases originate from

KwaZulu-Natal Province (n=143), where an outbreak of rabies has been reported from the Winterton area.

There has recently been an increase in the number of rabies cases in dogs and jackals in the Rustenburg and Brits areas of North West Province, where rabies has historically been endemic in jackal and mongoose populations. To date, there has been one human exposure to a rabid dog on a farm in the Rustenburg area; this person did receive appropriate rabies PEP, including rabies vaccine and rabies immunoglobulin (RIG). Healthcare workers in North West Province must familiarise themselves with the rabies management guidelines, which can be accessed at: <http://www.who.int/rabies/human/postexp/en/>.

There have been no recent cases of rabies in dogs in the Johannesburg area. Healthcare workers must take care to perform thorough rabies risk assessments when managing animal exposures, in order to avoid inappropriate use of rabies vaccine and RIG which are in short supply.

Further information regarding rabies in South Africa is available in the national guidelines document available at: <http://nicd.ac.za/assets/files/Rabies-Guide-2010-small.pdf>.

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

## FOODBORNE DISEASE OUTBREAKS

Foodborne disease outbreaks are an under-recognised cause of gastro-intestinal/diarrhoeal disease in South Africa. A foodborne disease outbreak is defined as the occurrence of two or more cases of a similar gastro-intestinal (or neurological in the case of botulism) illness where epidemiological analysis implicates food as the source of illness. Foodborne disease can be due to a range of enteric bacteria, viruses, parasites, toxins and chemical agents. A foodborne disease outbreak constitutes a notifiable medical condition, which requires immediate notification (within 24 hours) by telephone or fax to the relevant district or provincial Department of Health officer. Reporting suspected foodborne disease outbreaks timeously ensures that these outbreaks are promptly investigated, in order to identify the underlying cause of the outbreak and institute appropriate control measures.

From 1 January 2012 to date, 53 suspected foodborne disease outbreaks were reported to the Outbreak Response Unit, NICD-NHLS. Four foodborne disease outbreaks were reported in July 2012, two from KwaZulu-Natal Province (KZN) and one each from Limpopo and Mpumalanga provinces. Three of the outbreaks were associated with food prepared and consumed at home (including consumption of meat not fit for human consumption, i.e. meat from an animal slaughtered due to illness) whilst one was associated with catered food consumed at a religious event.

Approximately 11 000 people attended a religious event in KZN, where two caterers provided meals. Caterer A provided meals for the VIPs and mission officials, while Caterer B provided food for the general public attending the event. Thirty people complained of diarrhoea and abdominal cramps at the event, nine of whom were treated on-site. Food from Caterer A was prepared off-site and brought to the event, whilst Caterer B prepared all meals on-site. Food samples from both caterers

were sent to the NHLS Public Health Laboratory for analysis, but unfortunately no clinical specimens were collected from the cases. *Staphylococcus aureus* was isolated from one of the food samples (ox tripe) provided by Caterer A.

Investigation by environmental health officers established that the event organizer was not aware of the environmental health and legal requirements for organizing a mass gathering event. Both caterers were not aware of the environmental health requirements for a catering concern, and as a consequence were non-compliant.

These outbreaks raise a number of issues which are cause for concern:

- The importance of involving relevant stakeholders when organizing mass gathering events. This ensures that necessary measures are put in place to prevent foodborne disease outbreaks, as well as other potential communicable disease incidents.
- An increase in foodborne disease outbreaks linked to food prepared at home. This highlights an urgent need for health promotion and education targeted at the general public – focusing specifically on food handling practice, hand hygiene practices and appropriate food storage practice.
- Consumption of meat not fit for human consumption. In many communities, particularly where subsistence farming is the norm, it is common practice to consume meat from sick animals that have died or have been slaughtered. Again, health promotion and community education is necessary to sensitise communities to the potential health hazards of such practice.

**Source:** Division of Public Health Surveillance and Response, NICD-NHLS; Department of Health, KwaZulu-Natal, Limpopo and Mpumalanga Provinces; NHLS Public Health Laboratories (Infection Control Service Laboratory, Johannesburg and Prince Street Laboratory, Durban).

## TETANUS

A 44-year-old male patient presented to a hospital in Mpumalanga Province in July 2012 with difficulty in swallowing and spasms of the neck and face, two weeks after sustaining a penetrating injury to his foot from a shard of glass. He had not sought medical attention for the injury, and there was no history of recent tetanus toxoid immunisation.

The clinical syndrome of tetanus is caused by tetanospasmin, a toxin produced by the Gram-positive bacterium *Clostridium tetani*. Infection is usually introduced through acute injuries (punctures/lacerations). Person-to-person transmission does not occur. The incubation period is usually 3-21 days. The diagnosis is clinical, and laboratory testing is unhelpful. There are four clinical types of tetanus: generalized, neonatal, local, and cephalic.

Generalised tetanus is the most common form, and often presents with a descending pattern; characteristic trismus (lockjaw) and risus sardonicus (facial spasms) are followed by generalized painful spasms, which may be associated with fever and other systemic symptoms. There may be a positive spatula test (spatula placed on the posterior pharyngeal wall results in biting down rather than the usual gag reflex). Onset is typically acute and case fatality rates range from 10% to 90% (highest in infants and the elderly).

Tetanus is a vaccine-preventable disease, and is included in the Expanded Programme of Immunisation (EPI). The diphtheria, acellular pertussis and tetanus vaccine (DTaP) is given at 6 weeks, 10 weeks, 14 weeks and 18 months of age. Tetanus and reduced-strength diphtheria (Td) vaccine is given at 6 and then 12 years of age. Adults should receive routine boosters of tetanus toxoid (TT) vaccine at 10-year intervals, and it has been advocated that women should

receive vaccination with TT, as this has shown a reduction in the incidence of neonatal tetanus. Primary immunisation is indicated after recovery from tetanus, as disease does not necessarily result in immunity. Tetanus is fortunately uncommon in South Africa at present, however this case illustrates the need for awareness regarding prevention of disease. Treatment for minor wounds should include cleaning and TT unless the individual is up to date with immunisations and has had their last TT booster within the past 5 years. Surgical debridement is required if there is much devitalized tissue. Tetanus immunoglobulin (TIG) should be given if the wound is high-risk and the immune status of the patient is not known, or if the patient has not completed a course of TT with a booster within the past five years.

**Source:** Division of Public Health Surveillance and Response, NICD-NHLS; Public Health Medicine Department, University of Limpopo.

## 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
<p><b>Cholera:</b> Cuba, Angola, Guinea, Sierra Leone</p>	<p><b>Cuba:</b> The first cholera outbreak in Cuba in more than a century has been confirmed, with 257 cases to date. Currently, cases are limited to Granma Province, mostly in Manzanillo.</p> <p><b>Angola:</b> Luanda Province recorded two suspected cases of cholera during the period of 23-29 July 2012. Since January 2012, Luanda Province has reported a total of 37 cases with 3 deaths.</p> <p><b>Guinea:</b> A total of 2 054 cases with 60 deaths have been reported in the ongoing outbreak. The worst affected areas are the capital Conakry and the South Western City of Forecariah.</p> <p><b>Sierra Leone:</b> Since 23 June 2012, cholera has so far claimed the lives of 105 people, with 35 deaths recorded in the Western Area alone.</p>	<p>Cholera is a bacterial disease that can cause diarrhea 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:</p> <ul style="list-style-type: none"> <li>• Drink bottled water or water brought to a rolling boil for 1 minute before you drink it.</li> <li>• Avoid ice or popsicles made from contaminated water.</li> <li>• 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.</li> <li>• Avoid foods and beverages from street vendors.</li> </ul>

Disease & Countries	Comments	Advice to travellers
<p><b>Ebola haemorrhagic fever:</b> Uganda and Democratic Republic of Congo (DRC)</p>	<p><b>Uganda:</b> There is currently an outbreak of laboratory-confirmed Ebola haemorrhagic fever in Kibaale district, western Uganda. As of 22 August 2012, officials have reported a total of 24 suspected cases, including 16 deaths, since the beginning of July 2012. To date, all cases have been in persons from, or healthcare workers attending to cases from Kibaale district (a forested area ±170 km west of the capital Kampala).</p> <p><b>DRC:</b> As of Monday 20 August 2012, a total of 15 cases has been reported (of which 13 are probable and 2 are confirmed), with 10 deaths to date. In Isiro, there have been 12 cases with 5 deaths (3 of the fatal cases were healthcare workers); in Pawa there are 2 cases with 1 death, and in Dungu there has been one death. Overall, the outbreak is still contained in the Orientale district of north-eastern DRC.</p>	<p>The World Health Organization (WHO) does not recommend any travel restrictions to Uganda or the DRC.</p> <p>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.</p> <p>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.</p> <p>More information regarding Ebola haemorrhagic fever and updated alerts can be found on the NICD website (<a href="http://www.nicd.ac.za/?page=current_outbreaks&amp;id=156">http://www.nicd.ac.za/?page=current_outbreaks&amp;id=156</a>).</p>
<p><b>West Nile Virus:</b> United States of America</p>	<p>For 2012 to date, 43 states have reported West Nile virus (WNV) infections in people, birds, or mosquitoes. A total of 693 cases of WNV disease in people, including 26 deaths, have been reported to the Centers for Disease Control and Prevention (CDC). Over 80% of the cases have been reported from 6 states (Texas, Mississippi, Louisiana, Oklahoma, South Dakota, and California), and almost half of all cases have been reported from Texas.</p>	<p>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.</p> <p>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.</p>

**References and additional reading:**

ProMED-Mail ([www.promedmail.org](http://www.promedmail.org));

World Health Organization ([www.who.int](http://www.who.int)),

Centers for Disease Control and Prevention ([www.cdc.gov](http://www.cdc.gov)). Last accessed: 21 August 2012.

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