NATIONAL HEALTH LABORATORY SERVICE
NATIONAL INSTITUTE FOR COMMUNICABLE DISEASES

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Influenza

Data from the two influenza surveillance programmes, the Viral Watch (monitoring the influenza like illnesses) and the Severe Acute Respiratory Illness (SARI) programme (monitoring severe disease in hospitalised patients) show that, although the influenza season has not started, the frequency of patient admissions for respiratory illness and specimen submissions has been steadily increasing. Ninety-eight specimens were received from Viral Watch sites in the first 3 months of 2012; 13 in January, 20 in February and 65 in March. Influenza A(H1N1)pdm09 virus has been detected in one, influenza A(H3N3) in three, and influenza B virus in five patients. Six of the nine patients were known to have travelled in the northern hemisphere shortly before the onset of symptoms. Other respiratory viruses have been detected in the specimens of 33 patients; including adenovirus, enterovirus, human metapneumovirus, parainfluenza, respiratory syncytial virus (RSV) and rhinovirus.

For the same period (January to March 2012), 1 191 patients with SARI were enrolled at the 5 sentinel sites, and three patients from Gauteng Province were positive for influenza – one positive for influenza A(H1N1)pdm09 and two positive for influenza B. The number of patients admitted with severe respiratory tract infection testing positive for RSV continues to increase, with the highest detection rate to date of 29% at week 11 (week starting 12 March 2012). Of the 191 patients positive for RSV, 54% (105/196) were children less than 1 year.

The start of the annual influenza season in South Africa is defined as the week where the influenza detection rate rises above 10% and remains ≥10% for at least two consecutive weeks. To date the influenza detection rate has only sporadically risen above 10% and high detection rates have not been sustained. Clinicians are urged to vaccinate risk groups targeted for influenza vaccination prior to the start of the influenza season. Detailed recommendations on target groups, dosages and contraindications for the 2012 influenza vaccine were recently published in the NICD Communiqué Vol. 11(3) and the South African Medical Journal Vol. 102(2).

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

Focus on Anthrax

Outbreaks of anthrax were recently reported in the neighbouring countries of Zimbabwe and Lesotho. In the NICD Communiqué Vol. 11(1), we reported an outbreak affecting the four Zimbabwean provinces of Mashonaland Central, Mashonaland East, Mashonaland North and Midlands Province. Between 24 November and 31 December 2011, 149 suspected human cases were reported following outbreaks in wild game animals and domestic livestock. No further updates on the outbreak have been published.

On 6 March 2012, the World Health Organization (WHO) reported an outbreak of anthrax in Berea District in northwest Lesotho (bordering Free State Province). The report indicated approximately 300 suspected human cases including 3 deaths. Cases presented with painless black eschar skin lesions, swelling of the jaw, neck and limbs, abdominal pain, fever and diarrhoea – consistent with cutaneous and gastrointestinal anthrax. Unconfirmed media reports indicate as many as 7 people may have died due to anthrax following consumption of contaminated meat from cattle that died of the disease. A separate report to the World Organisation for Animal Health (OIE) from Lesotho Livestock Services confirmed a diagnosis of anthrax as the cause of death in 18 cattle, 8 donkeys and 7 dogs in the village of Ha Mabaleng between 27 February and 12 March 2012.

Bacillus anthracis is a spore-forming bacterium that can survive for extended period in the environment. It may be transmitted to humans via direct contact with infected animals or their products (e.g. wool, hides, animal hair products, leathers); by inhalation of aerosolised spores from infected animal products; or, by ingestion of undercooked meat from an infected animal. Depending on the respective mode of transmission, disease usually manifests as one of three forms. Cutaneous anthrax, the most common accounting for >95% of infections, occurs when the bacterium enters a cut or abrasion on the skin – typically on the hands, arms or face. Disease is initially characterised as a raised itchy bump resembling an insect bite, which within 1-2 days develops to form vesicles and then a painless ulcer, 1-3 cm in diameter, with a black necrotic centre and marked local swelling. Lymph glands adjacent to the area may swell and, without appropriate antimicrobial therapy, case fatality rates (CFR) may reach 20%. Symptoms of inhalational anthrax initially resemble an influenza-like illness that, after several days, progresses to severe respiratory distress and shock, and frequently results in death (CFR≈75%). Gastrointestinal (GI) anthrax, following consumption of contaminated meat, is relatively rare and is characterised as an acute inflammation of the intestinal tract. Symptoms include nausea, loss of appetite, vomiting (with blood in some instances), fever, and severe diarrhoea, with a CFR ranging from 25-60%. Oropharyngeal infection may rarely occur following consumption of contaminated meat and results in cervical oedema, lymphadenopathy, and dysphagia. Invasive disease following cutaneous, GI or inhalational anthrax is also rare, but can result in clinical meningeal symptoms, neurological degeneration and death.

A suspected case of anthrax requires an immediate telephonic notification to your local Department of Health. Veterinary and agriculture authorities should also be informed to initiate control measures in the affected herds. We also request that cases be reported via the NICD Hotline (082-883-9920) to facilitate laboratory investigations and public health responses. The laboratory investigations for anthrax are dependent on clinical presentation of disease. Vesicular fluid swabbed from previously unopened vesicles or skin, or swabs from under the edge of the eschar, are the preferred specimens for cutaneous anthrax. Other forms require the collection of blood for culture and serology. Sputum or gastric washings may be submitted for inhalational anthrax, and cerebrospinal fluid for anthrax meningitis. Human testing is solely performed by the Centre for Emerging and Zoonotic Diseases, NICD-NHLS in South Africa, and consists of a combination of microscopy, culture and PCR for direct detection of the antigen, and/or ELISA for serological diagnosis. See the NICD-NHLS Quick Reference Guide for the Laboratory Diagnosis of Priority Communicable Diseases for further details. On chest X-ray, a patient with inhalational anthrax will have a widened mediastinum, with or without pleural effusion or pneumonic changes. Laboratory parameters to look for are decreased levels of sodium, calcium and albumin; elevated liver enzymes (AST and ALT); and a high haematocrit.

A high index of clinical suspicion and rapid administration of effected antimicrobial therapy (preferably following specimen collection) is essential for the treatment of suspected anthrax illness. Cutaneous anthrax may be treated with oral amoxicillin, ciprofloxacin or doxycycline. Treatment of systemic anthrax (i.e. bloodsteam, GI or inhalation anthrax) should include a 3-drug intravenous antibiotic course including ciprofloxacin and one or two other agents predicted to be effective, such as ampicillin, clindamycin, vancomycin, penicillin, chloramphenicol, imipenem, rifampicin or clarithromycin.

Routine vaccination of livestock is the most effective preventative measure against anthrax in South Africa. Human vaccines are not available to the general public, and are only recommended for persons in high-risk occupations – laboratory personnel who frequently work with the pathogen and veterinary workers. Prolonged post-exposure chemoprophylaxis (PEP) following exposure is highly effective and should be started immediately if there is a strong suspicion of inhalation of aerosolised spores in a deliberate release scenario (bioterrorist attack). Screening tests following anthrax exposure are costly and ineffective, and thus are not recommended; however, PEP may be stopped following a negative finding from laboratory investigation of the implicated package/material. See the NICD-NHLS Health-

care Workers Handbook on Bioterrorism for additional details. PEP is generally not recommended in the event of most "natural" exposures and the public health response consists of close monitoring for the development of symptoms in persons exposed, and prompt treatment. Nonetheless, a short course of PEP (e.g. 10 days) may be considered in substantial exposures in a natural exposure situation; for example, the consumption of poorly cooked meat from an anthrax carcass. Where possible exposures are anticipated, but have not yet happened, animal carcasses should be disposed of appropriately (i.e. incinerated, or buried deeply and covered in lime to prevent spore formation). Personal protective equipment should be donned when working with anthrax carcasses and contaminated materials. Travellers to areas with current outbreaks should be advised to avoid contact with animals and high-risk animal-products such as hides. Additional information can be found in the WHO Anthrax in Humans and Animals Guideline.

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

Foodborne illness outbreaks

Foodborne illness outbreaks are an important cause of diarrhoeal diseases in South Africa. A foodborne disease outbreak is defined as the occurrence of two or more cases of a similar illness resulting from eating the same food, which may be due to enteric bacteria, viruses, parasites, toxins or chemical agents. Foodborne illness incidents are notifiable disease events and should be reported to your local Department of Health. It is important that foodborne illness outbreaks are reported and investigated to allow for control measures to be implemented and to prevent similar occurrences in future.

During the first quarter of 2012, 29 foodborne illness incidents were reported to NICD-NHLS Division of Public Health Surveillance and Response. In March 2012, ten foodborne illness outbreaks were reported; two in Eastern Cape, one in Gauteng, four in KwaZulu-Natal and three in Mpumalanga. During these incidents, 275 cases of gastroenteritis were recorded, including nine patients requiring hospitalisation and two deaths. Of the outbreaks reported, three were linked to catered functions and two to food served in an institutional setting (i.e. one in a hospital and one in a school). Three outbreaks were linked to eating beef unfit for human consumption (i.e. meat from cattle that were not slaughtered specifically for human consumption, but rather died due to illness or other causes and butchered thereafter). In one incident, illness was due to the consumption of home-brewed marula beer, and in another, poisonous fruits from a *Jatropha sp.* tree eaten by children were implicated. A number of foodborne pathogens and toxins were identified from stool specimen and/or food samples collected during four investigations. These include non-typhoidal *Salmonella* spp., *Staphylococcus aureus*, *Clostrium perfringens* and *Bacillus cereus* and *B. cereus* enterotoxins.

The findings show that there is an ongoing need for community-level health promotion on the prevention of foodborne illness in South Africa. Practices highlighted in the WHO Five Keys to Safer Food are proven to be effecting in reducing the risk of food-related illnesses; namely, the practices of good hand hygiene, separation of raw and cooked foods, thorough cooking, storing foods at safe temperatures, and using safe water and raw materials when preparing foods. Additional concern has been raised by the high frequency of foodborne illness outbreaks related to the eating of meat from livestock not fit for human consumption. Decay and contamination of meat may occur rapidly following the death of an animal, and large volumes of meat will seldom be refrigerated or cooked immediately, and may be distributed widely in a community leading to widespread illness. Despite poverty in rural areas being recognised as a driving-factor in the butchering and consumption of animals that are found dead due to illness or other causes, such practices should be discouraged through targeted health promotion campaigns.

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

Rabies

On 29 March 2012, the Tshilidzini Hospital in Thohoyandou, Limpopo Province, reported a possible rabies fatality in a woman aged 17 years. The patient presented to hospital on 20 March with symptoms of fever, confusion, left side haemiparesis and suffered mild renal failure, which led to her death three days later. The patient had no history of animal exposure and did not seek previous medical care for post-exposure prophylaxis (PEP). Given the clinical presentation and rapid progression to death, rabies was suspected and a post-mortem brain biopsy sample was collected on 29 March and transported to the NICD-NHLS. A diagnosis of rabies was confirmed by immunoflorescent antigen detection.

This is the second laboratory-confirmed report of human rabies in South Africa during 2012, of which both were acquired in Limpopo Province. Another clinical case of human rabies was reported from the Eastern Cape in February. In 2011, a total of six human rabies cases were confirmed in South Africa. These numbers are regarded as a conservative minimum estimate of the disease burden as many cases of human rabies likely go unreported and untested. There remains an ongoing need for improving awareness amongst the public, as well as health professionals upon patient consultation, on timely and adequate PEP treatment to prevent human cases of rabies. See the 2010 Rabies Guide for Medical, Veterinary and Allied Professions for details.

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

Malaria

Travellers and healthcare workers are reminded that we are still in the peak malaria transmission season, which in southern Africa extends from September to May each year. Travellers are urged to take malaria prophylaxis as prescribed by a medical doctor when visiting malaria risk areas. In addition, they should take preventive measures to reduce mosquito bites, including: wearing long sleeves and trousers during the afternoon, evening and early morning, using insect repellents containing DEET, using insecticide-treated bed nets, and keeping windows and doors closed or screened. Healthcare workers throughout the country should maintain a high index of suspicion for malaria in febrile patients post-travel to a malaria risk area, as well as in patients with unexplained fever, even in the absence of a travel history. For detailed information on the prevention, clinical presentation, diagnosis and management of malaria cases, as well as the South African malaria risk areas, see the Department of Health's Guidelines for the Prevention of Malaria and the Guidelines for the Treatment of Malaria in South Africa.

Source: Division of Public Health Surveillance and Response, 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.

Mumps: Spain

Alert: An outbreak of mumps affecting 106 people in Girona, northern Spain, has been ongoing since December 2011 to date.

The disease: Humans are the only known natural host for mumps virus. Disease is characterised by fever, headache, muscle weakness, stiff neck, loss of appetite, swelling and tenderness of one or more of the salivary glands including the parotid gland. Mumps is transmitted by direct contact with saliva discharges from infected individuals. Patients are usually contagious from approximately five days before, until five days after, symptom onset.

Advice to travellers: The most effective form of prevention is vaccination. The mumps vaccine is not part of the South African vaccination schedule, but the measles, mumps and rubella (MMR) vaccine, administered as a 2 dose schedule, is available in the private sector. Travellers to the area should be advised to minimise contact with persons who are ill and use good hygiene practices, such as hand

washing, cough etiquette, and not sharing eating utensils.

Leishmaniasis: Spain
Alert: Leishmaniasis is endemic in Spain; however, the Spanish Ministry of Health is investigating the largest recorded outbreak in humans to date in Fuenlabrada, Madrid. The number of cases has rapidly increased from 15 cases throughout 2009, to 118 throughout 2011, and now 228 in the first two months of 2012 alone. Dogs are known reservoirs to the protozoa subspecies responsible for the current outbreak in Spain; *Leishmania infantum*. Visceral leishmaniasis is most common in the southern region – notably Andalusia, Palma de Mallorca, Valencia and Catalonia.

The disease: Leishmaniasis is a vectorborne disease caused by more than 20 subspecies of *Leishmania* protozoa. It is transmitted by various species of sandflies predominately in the tropics, sub-tropics and the Mediterranean basin. There are several forms of disease in humans depending on the geographic location and species. The cutaneous form is characterised by skin ulcers on exposed areas, such as the face, arms and legs; typically self-healing with a few months, possibly leaving scars. In few cases, chronic skin lesions resembling lepromatous leprosy may develop. Destruction of mucous membranes, in mucocutaneous forms, results in malformation of the nose, mouth and throat cavities and surrounding tissues. Visceral leishmaniasis is characterised by fever, weight loss, hepato- and spleenomegaly, and anaemia, and may often be fatal if untreated.

Advice to travellers: There are no vaccines or drugs to prevent infection. Travellers should be advised to protect themselves from sandfly bites by avoiding outdoor activities from dusk to dawn (when sandflies are the most active); stay in well-screened and air-conditioned areas; when outdoors, minimise exposed skin by wearing long-sleeved clothing and apply insect repellents containing DEET; sleep under insecticide-treated bed nets.

Legionellosis: New Zealand
Alert: In the last six weeks, 11 cases (including one death) of Legionnaires' disease have been recorded in the Auckland region. Two cases would typical be detected in a six week period. The outbreak has impelled calls for building owners, mainly within the Central Business District (CBD), to shock-dose cooling towers and similar systems.

The disease: Legionellosis is caused by the bacterium *Legionella pneumophila* and other legionella species. These bacteria are found naturally in the environment and may thrive in warm water and warm damp places such as hot tubs, cooling towers, hot water tanks, and plumbing and air-conditioning systems of large buildings. Infection is acquired through the inhalation of aerosols from mist/vapour-producing water systems. The incubation period is typically 2-10 days. Initially, symptoms may include fever, loss of appetite, headache, malaise, lethargy, and an initially mild cough that may present phlegm. Disease may complicate rapidly with progressive pneumonia and death through respiratory failure, shock and multi-organ failure. Elderly persons, current or former smokers, persons with chronic lung diseases, and persons with weakened immune systems, are at increased risk of disease.

Advice to travellers: There is no vaccine available for legionellosis. Primary prevention relies on good maintenance of systems to prevent bacterial growth. Travellers, especially those at high-risk, should be advised to avoid aerosol producing water systems, and seek prompt treatment following the development of any symptoms.

References and additional reading: ProMED-Mail, World Health Organization, US Centers for Disease Control and Prevention, European Centres for Disease Prevention and Control.

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

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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, Sandringham, 2131, South Africa