



Shigellosis outbreak in Tshwane

During April 2012, an outbreak of shigellosis was reported from a residential institution for intellectually and physically disabled individuals in Tshwane District, Gauteng Province. This institution houses approximately 140 residents, and has over 60 staff members. A total of 44 residents and one visiting healthcare student were identified with symptoms in keeping with shigellosis, the first suspected case occurring in early March 2012. *Shigella flexneri* was isolated from stool specimens in 10 of the suspected cases. Seven isolates were forwarded by the testing NHLS laboratory to the NICD-NHLS Centre for Enteric Diseases for further characterisation; all were multidrug-resistant *S. flexneri* type 2a (susceptible to ciprofloxacin and ceftriaxone). Four cases died (case fatality rate 8%) due to shigellosis-related complications, compounded by other co-morbidities and underlying risks for severe disease.

No specific source of the outbreak was identified during the investigation. The introduction of the organism likely occurred via a visitor, new resident or staff member; thereafter, infection was propagated from person-to-person over a period of two months (Figure). Interventions included the segregation of cases in a separate building, treatment of all suspected cases with a three-day course of ciprofloxacin, improved hygiene and infection con-

trol practice throughout the institution, limiting visitors and casual staff, stopping the admission of new residents and a thorough review of food handling practices. Previous experience from institutional outbreaks of shigellosis elsewhere (including highly resourced settings), however, suggested that in such settings transmission may persist for an extended period despite implementing these standard interventions. It was then decided to implement a mass treatment campaign, which would include all residents and staff members within the institution. This decision was supported by other considerations, including the following: the outbreak took place in a closed population; there remained a high probability of ongoing shedding of the bacterium by carriers, asymptomatic cases, or non-reporting symptomatic cases; and, the ongoing inherent challenges with maintaining intensified hygiene and infection control practice amongst intellectually challenged individuals. Following the completion of the mass treatment campaign, no further cases were detected.

Outbreaks of shigellosis still commonly occur in closed population settings (even in well-resourced countries), including: institutions for the intellectually disabled, long-term care facilities, day-care facilities, custodial institutions, and primary/elementary schools. Untreated (or

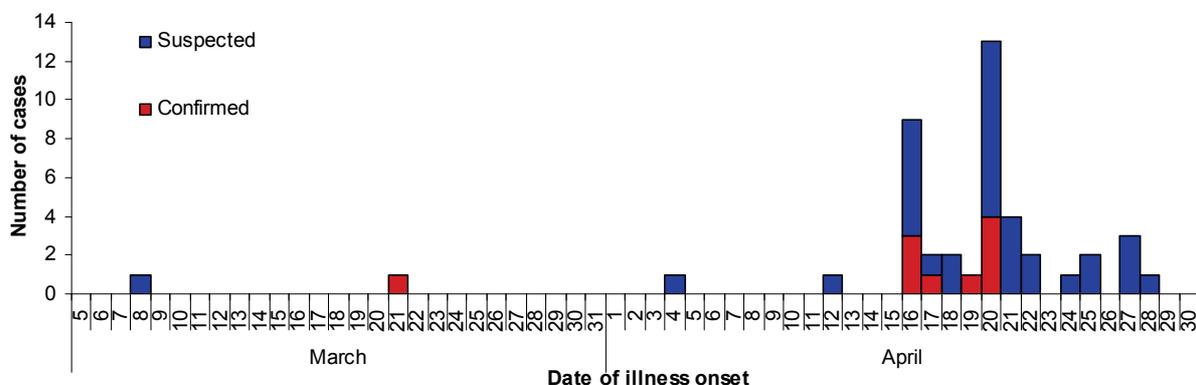


Figure: Epidemiological curve illustrating suspected and confirmed cases of *Shigellosis* by date of illness onset during an outbreak in Tshwane District

inappropriately treated) shigellosis carries a mortality rate of 5-15%; it is therefore important to identify the cause of diarrhoeal outbreaks in such settings in order to implement appropriate interventions and manage cases appropriately.

Source: Department of Health: City of Tshwane Metropolitan Municipality and Gauteng Province; Division of Public Health Surveillance and Response, and the Centre for Enteric Diseases, NICD-NHLS; NHLS Tshwane Academic Division. We acknowledge the attending physician, Department of Family Medicine, University of Pretoria.

Influenza

Both the number of specimens submitted for respiratory virus testing and the number of patients admitted for severe acute respiratory illness have continued to increase. In the Viral Watch programme, which monitors influenza-like illness, sporadic cases of influenza continue to be detected. During April 2012, influenza A (H3N2) was detected in two, and influenza B in seven patients. This brings the total this year to 19 cases of influenza detected in this programme i.e. one unsubtype influenza A, one influenza A(H1N1)pdm09, one influenza A (H3N2), and 12 influenza B infections. In addition, one or more other respiratory viruses have been detected in the specimens of 83 patients who were negative for influenza, including: adenovirus, enterovirus, human metapneumovirus, parainfluenza, respiratory syncytial virus, and rhinovirus.

For the same period (January to April 2012), 1586 patients admitted with severe acute respiratory illness at the six Severe Acute Respiratory Illness (SARI) sentinel hospitals were enrolled. Of the 1571 specimens that were tested for influenza, nine were positive; one for influenza A(H1N1)pdm09 and eight for influenza B.

The average onset of the influenza season in South Africa over the past 28 years has been week 23 (the first week in June), but has ranged from as early as week 17 (last week in April) to as late as week 28 (second week in July). As the influenza season approaches, healthcare workers are reminded to encourage vaccination amongst persons in the target groups. Influenza vaccination recommendations (including description of target groups), dosages and contraindications for the 2012 influenza vaccine were published in the [NICD Communiqué Vol. 11\(3\)](#) and the [South African Medical Journal Vol. 102\(2\)](#).

The [NICD-NHLS Healthcare Workers Handbook on Influenza](#) has been updated for 2012 and may be accessed via the NICD website. All healthcare workers are encouraged to familiarise themselves with the recommendations for influenza diagnosis, laboratory testing, clinical management including use of antiviral agents, and the appropriate infection prevention and control practices ahead of the upcoming influenza season in South Africa.

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

An overdue national survey of multidrug-resistant TB in South Africa

In June 2012 the National Department of Health and the NICD-NHLS Centre for Tuberculosis will launch a nationwide TB drug-resistance survey to determine the prevalence of multidrug resistant TB (MDR-TB) nationally and in all nine provinces. The rates of HIV prevalence among TB cases will also be measured. This survey was prompted by the lack of data on trends of TB drug resistance in South Africa. Data from the only national survey of TB drug resistance to date suggests that South Africa has one of the highest MDR-TB burdens in the world in terms of absolute numbers.^{1,2}

The survey will be conducted in accordance

with the guidelines of the Global Project on Anti-tuberculosis Drug Resistance Surveillance (GPDRS).³ An estimated 160 000 sputum specimens will be collected from persons with suspected TB at the selected study sites over a 12-month period. Healthcare workers will collect additional information from the participants, including: demographics, previous history of TB, social and occupational risk factors for MDR-TB.

Microscopy, culture and drug sensitivity testing will be performed on all sputa, including smear-negative cases; this will enable a more accurate estimation of the burden of MDR-TB

due to the high proportion of smear-negative cases in the context of HIV-coinfection. Cases will be classified as either new or previously treated, which will allow for determination of proportions of primary- versus acquired- MDR-TB. HIV testing will also be performed on all sputa.

Data from this survey will provide a baseline from which the national TB control programme can be monitored and improved, in order to minimise the burden of drug-resistant TB. Molecular studies may be conducted on MTB isolates identified in the survey to better understand transmission patterns and potential deficiencies in infection prevention and control.

The survey will be piloted in selected sites in Gauteng Province in early June, and then rolled out from July to one extra province per month.

References:

1. Weyer K. National Survey of Tuberculosis Drug Resistance in South Africa, 1999-2001. Final Report, MRC December 2004.
2. WHO: Anti-tuberculosis drug resistance in the world: Report 4. Document no. WHO/HTM/TB/2008.394. Geneva: WHO, 2008.
3. WHO/IUATLD/ Global Working Group on Anti-Tuberculosis Drug resistance Surveillance. Guidelines for surveillance of drug resistance in tuberculosis. WHO/TB/2003.320

Source: Centre for Tuberculosis, NICD-NHLS.

Foodborne disease update

Foodborne diseases have a major impact on public health. Early and correct identification of the cause of a foodborne illness outbreak enables specific interventions and case management to be instituted timeously, which can substantially limit morbidity and mortality and halt the outbreak. Foodborne disease is a notifiable medical condition in South Africa, and is also one of the notifiable conditions that has to be telephonically reported to the Department of Health (DoH) in order to effect timely public health action.

For the month of April 2012, ten foodborne disease outbreaks were reported to the NICD-NHLS arm of the National Outbreak Unit (three in Mpumalanga Province, two each in KwaZulu-Natal and Limpopo provinces, and one each in Eastern Cape, Free State and Gauteng provinces). Whilst seven outbreaks were related to microbial agents or their toxins, three were due to chemical contamination of food (two related to organophosphates and one to rat poison). Here we describe a very unfortunate incident of organophosphate foodborne illness.

A group of 27 children (aged 9-15 years) were reported to the Fezile Dabi District DoH (Free State Province) as presenting with symptoms of organophosphate poisoning (acute onset of cholinergic excess) after eating honey. All the children were seen at a nearby hospital; 24 were treated in casualty and discharged, 2 were admitted to hospital (one requiring ICU care) and one child was dead on arrival at the

hospital. The children who had eaten the honey reported that it smelt of petrol/diesel. Further investigation revealed that a group of children were stealing honey from a nearby farm and had used a combination of diesel, oil and pesticides in order to remove the bees from the hive. The investigating team (comprising DoH personnel and the South African Police Service [SAPS]) obtained a sample of the honey for further testing. In response to the incident, the district DoH and SAPS planned health awareness activities (targeting schools in the area) regarding the dangers of chemical poisoning.

Organophosphates and carbamates are readily available chemicals, used primarily as insecticides both in the home and agricultural settings. Poisoning can occur by ingestion, inhalation or cutaneous exposure, and clinical features depend on the type of exposure and the specific agent's chemical characteristics; there is great variability in toxicity and treatment response among agents. Three major syndromes following poisoning are identified: acute toxicity, intermediate syndrome and delayed neurotoxicity. Acute toxicity (which occurred in this outbreak) is characterised by cholinergic excess, primarily affecting the autonomic nervous system, neuromuscular junction and CNS. Dominant features include bradycardia (or sometimes tachycardia), miosis, lacrimation, salivation, bronchorrhoea and bronchospasm, urination, emesis and diarrhoea; fasciculations, muscle weakness, paralysis, and

cardiac arrhythmias may also occur. Fatalities from acute toxicity are usually due to respiratory failure or cardiovascular collapse. Diagnosis is by measurement of red blood cell acetylcholinesterase activity; where this test is not available, plasma (or pseudo-) cholinesterase activity can be used as a surrogate. Management includes appropriate resuscitation, and judicious use of atropine and pralidoxime.

Health education regarding the dangers of chemical poisoning, particularly in areas where use of agricultural stock remedies are common, is paramount in preventing such incidents. Insecticides should be stored where children

cannot access them, and community members should be advised to urgently consult a health-care professional when any chemical poisoning is suspected.

Healthcare workers should also take note that any poisoning due to agricultural stock remedies is in itself a notifiable medical condition.

Source: Division of Public Health Surveillance and Response, NICD-NHLS; Fezile Dabi District Municipal Health Service; and Free State Province Department of Health.

West African trypanosomiasis

West African trypanosomiasis (WAT) was confirmed on a peripheral blood smear and cerebrospinal fluid in a 40-year-old woman from West Africa referred to a Johannesburg hospital. The patient had previously been a forester in Gabon, and presented with headache and progressive decrease in level of consciousness over a 2-month period. She developed a hemiplegia and aphasia and was referred as a possible cerebral tumour after a lesion was noted on a CT scan. In Johannesburg, the cerebral lesion was confirmed on repeat imaging. Trypomastigotes were observed on a blood sample submitted for a routine full blood count prior to performing a diagnostic biopsy of the cerebral lesion. By this stage she was deeply comatose and experiencing convulsions. Cervical lymphadenopathy was not noted.

A biopsy of the lesion confirmed the presence of non-specific encephalitis with a mononuclear cell infiltrate; no malignancy was noted, and morula (Mott) cells typical of WAT were not seen. Eflornithine was commenced as treatment for WAT. Examination of the CSF confirmed the presence of stage 2 trypanosomiasis with numerous trypomastigotes, several Mott cells, lymphocytes and raised protein.

The patient received supportive care in the intensive care unit and completed a 14-day course of intravenous eflornithine. Response to treatment has been promising; the patient's mental state has improved significantly, and at

present has some residual weakness and speech difficulties.

West African trypanosomiasis is well described in Gabon and working in a forest would be identified as a particular risk. Late-stage trypanosomiasis with CNS involvement is invariably fatal unless adequately treated, and may present as an inflammatory cerebral mass. The traditional arsenical drug, melarsoprol, is highly effective but also highly toxic, causing encephalopathy in up to 15% of patients and death in up to 6%. Eflornithine as a 14-day course (as used in this patient) is 95% effective; side effects, most commonly pancytopenia, are usually not clinically significant. Nifurtimox, a treatment for Chagas' disease, can be added to improve efficacy but is not essential if not readily accessible, as in this case. The World Health Organization Neglected Tropical Diseases Programme has made essential drugs for treating East and West African trypanosomiasis available in South Africa through the NICD-NHLS.

Source: Division of Public Health Surveillance and Response, and Centre for Opportunistic, Tropical and Hospital Infections, NICD-NHLS. We acknowledge the physicians and neurosurgeon, pathologists and technologists of the Donald Gordon Medical Centre, Ampath Laboratories and Dr. Thatcher and Partners respectively.

Rabies

Despite its under-reporting, rabies causes many thousands of human deaths in Africa annually, and continues to increase throughout much of the continent. Excellent human and animal post-exposure and preventive vaccines exist but vaccine and rabies immunoglobulin shortages do occur and compromise rabies prevention and control programmes. Based on contact-tracing studies in Tanzania, for every ten rabid animal bite victims that do not develop rabies because of receiving appropriate post-exposure prophylaxis, one death from rabies occurs.¹ South Africa is rabies-endemic and since 2006 has experienced resurgence of disease, with ± 10-30 confirmed cases annually. Challenges with obtaining appropriate specimens (both ante- and post-mortem) hamper laboratory confirmation of clinical rabies cases; healthcare workers should maintain awareness of rabies as a possible diagnosis in cases of encephalopathy with no apparent cause, and also familiarise themselves with appropriate specimen collection procedures. Healthcare workers are encouraged to obtain the rabies [Specimen Collection Guide and Submission Form](#), as well as the [South African](#)

[Rabies Guidelines](#) to ensure that persons with animal exposures are assessed and managed appropriately.

In 2012, there have been two cases of laboratory-confirmed rabies (both from Limpopo Province) and two clinical rabies cases to date. The most recent clinical rabies case was reported from the Bergville area, KwaZulu-Natal Province. The patient, a seven-year-old male, sustained a dog bite on 7 April 2012 and sought medical attention at a local clinic; however, PEP was not administered as the dog was reportedly vaccinated against rabies. The dog subsequently became ill and was killed without testing for rabies. On 16 May, the patient developed symptoms in keeping with furious rabies and was admitted to Emmaus Hospital. The patient died the following day; laboratory testing for rabies is currently underway.

Source: Centre for Emerging and Zoonotic Diseases, and 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.

Disease & Countries	Comments	Advice to travellers
Trypanosomiasis: Kenya	From 2000-2010, cases of human African trypanosomiasis were reported in travellers to national parks, wildlife reserves and game parks in Tanzania, Malawi, Zambia and Zimbabwe. Recently, two European tourists who visited the Masai Mara National Reserve in Kenya were diagnosed with East African trypanosomiasis.	Trypanosomiasis is transmitted through the bite of the tsetse fly. There is no vaccine and, therefore, prevention is mainly through avoidance of tsetse fly bites. Recommendations include wearing long, neutral coloured protective clothing made of medium-weight material; inspecting vehicles for tsetse flies before entering; and, avoiding dense bushy areas.
Lassa fever: Nigeria (Edo, Bauchi, Plateau and Taraba)	As of 13 April 2012, 818 suspected cases and 113 confirmed cases were reported by the Nigerian Federal Ministry of Health. Of the 84 deaths were reported, 7 were healthcare workers.	Lassa fever is transmitted through inhalation or direct contact with faeces/urine of infected rodents. Prevention is focused on avoiding food contamination by rats' urine and faeces; keeping the home environment clean and rodent-proof; washing hands and surfaces with soap; not sharing eating or drinking utensils; and avoiding close contact with sick people.

Disease & Countries	Comments	Advice to travellers
Typhoid fever: Zambia and Zimbabwe	<p>Zambia: 222 cases were reported in Bwacha, Chimanimani and Ngungu townships of Kabwe since the beginning of April.</p> <p>Zimbabwe: The outbreak that began in October 2011 in Harare is still ongoing, with most of the cases in Dzivarasekwa and Kuwadzana suburbs. Numbers have decreased from 90 cases per day in January 2012 to less than 20 cases per day at present.</p>	<p>Transmission is through the faecal-oral route, and travellers need to take precaution when consuming food and drink in these affected areas. Vaccination may be considered, however effectiveness is limited and precautionary measures must still be reinforced.</p>
Malaria: Madagascar	<p>A severe outbreak of malaria has left seven people dead and 60 others requiring hospitalisation since the beginning of May 2012.</p>	<p>Malaria is transmitted through the bite of the Anopheles mosquito. Travellers should avoid mosquito bites by using insect repellents, wearing light-coloured clothing and using insecticide-treated bed nets.</p>

References and additional reading:

[ProMED-Mail](#), [World Health Organization](#), [US Centers for Disease Control and Prevention](#), [European Centres for Disease Prevention and Control](#).

Source: South African Field Epidemiology and Laboratory Training Programme (SA-FELTP), and Division of Public Health Surveillance and Response, NICD-NHLS; visiting registrars, School of Public Health, University of the Witwatersrand.