2 VACCINE-PREVENTABLE DISEASES

a An update on the diphtheria outbreak in KwaZulu-Natal Province in March to April 2018: molecular typing results

During March - April 2018, a cluster of three respiratory diphtheria cases was reported from the Ethekwini District in KwaZulu-Natal Province [NICD Communiqué May 2018, Vol 17(5) and June 2018, Vol 17(6)]. Two cases were laboratory confirmed, including a 20-year-old male (who survived) and an epidemiologically-unlinked 10-year-old female, who demised. A third probable case, who demised without specimens being collected for laboratory confirmation, was an 11-year-old male residing in the same household and attending the same school as the 10-year-old confirmed case. Additionally, a 4-year-old male in the same household was identified as an asymptomatic *Corynebacterium diphtheriae* carrier. The three *C. diphtheriae* isolates from the cases and carrier were confirmed to be sequence type 378. This is the same sequence type that caused the KZN diphtheria outbreak in 2015 (du Plessis et al., 2017), two sporadic cases in the same KZN region in 2016 [NICD Communiqué May 2016, Vol 15(5)], and two epidemiologically-linked cases and a carrier in the Western Cape Province in 2017.

Diphtheria is a Category 1 notifiable medical condition (NMC) and we urge clinicians and healthcare workers throughout the country to have a high awareness of the suspected diphtheria case definition: any person who presents with an upper respiratory tract illness characterised by sore throat, low-grade fever and an adherent membrane ('pseudomembrane') of the nasopharynx, pharynx, tonsils or larynx. Cases are to be notified within 24 hours by completing the NMC case notification form (electronically or paper-based). Please e-mail a copy to NMCSurveillanceReport@nicd.ac.za and to your local or district Communicable Diseases Control focal person.

Additionally, we emphasise the need for contact tracing and nasopharyngeal/oropharyngeal swab collection from close contacts prior to the administration of chemoprophylaxis as asymptomatic contacts may be reservoirs of toxigenic *C. diphtheriae*.

Guidelines for diphtheria management and laboratory detection may be accessed at http://www.nicd.ac.za/index.php/diphtheria/

Please contact the NICD for additional information: Clinical queries: Dr Anne von Gottberg (011 555 0316, annev@nicd.ac.za) or NICD Hotline (082 883 9920).
Laboratory queries: Linda de Gouveia (011 555 0327, lindad@nicd.ac.za), Mignon du Plessis (011 555 0387, mignond@nicd.ac.za), or Nicole Wolter (011 555 0352, nicolew@nicd.ac.za)].

Reference
M. du Plessis, N. Wolter, M. Allam *et al*. Molecular characterisation of *Corynebacterium diphtheriae* outbreak isolates from South Africa, March – June 2015. *Emerging Infectious Diseases Journal* Aug 2017; 23(8): 1309-1315.

Source: Centre for Respiratory Diseases and Meningitis; NICD-NHLS; annev@nicd.ac.za

3 ENTERIC DISEASES

a An update on the outbreak of *Listeria monocytogenes*, South Africa

As of 14 August 2018, a total of 1 064 laboratory-confirmed listeriosis cases has been reported to NICD since 01 January 2017 (Figure 3). Most cases have been reported from Gauteng Province (58%, 612/1 064) followed by Western Cape (13%, 139/1 064) and KwaZulu-Natal (8%, 84/1 064) provinces. Cases have been diagnosed in both public (64%, 683/1 064) and private (36%, 381/1 064) healthcare sectors. Outcome is known for 828/1 064 (78%) patients, of whom 218 (26%) have died (Figure 4).

Females account for 56% (576/1 039) of cases where gender is reported. Where age was reported (n=1 043), ages range from birth to 93 years (median 19 years) – Figure 5. Neonates aged ≤28 days account for 43% (444/1 043) of cases. Of neonatal cases, 95% (424/444) had early-onset disease (birth to ≤6 days).

Although outbreak-related cases have declined sharply, sporadic cases (i.e. not epidemiologically linked) continue to be reported, as expected. Therefore, healthcare workers are encouraged to continue providing risk reduction guidance to persons at high risk for developing listeriosis (pregnant women, neonates ≤28 days of age, persons >65 years of age, and persons with immunosuppression (due to HIV infection, cancer, diabetes, chronic renal disease, chronic liver disease, transplantation and immunosuppressive therapy)). Such guidance includes advice on food hygiene (the World Health Organization's five keys to safer food is a useful resource for generic food hygiene advice) and avoidance of at-risk food.

The end of the outbreak is approaching, and the

activities of the listeriosis Incident Management Team are nearing completion. The following actions have been taken to strengthen health and environmental systems to ensure prevention and early detection of future outbreaks, particularly in ready-to-eat processed meat:

1) Listeriosis has been declared a notifiable medical condition under an amendment to the National Health Act;
2) The NICD has developed a system of surveillance and investigation of listeriosis cases including whole genome sequencing (WGS) of all isolates from laboratory-confirmed cases. This allows timeous identification of clusters which may represent outbreaks;
3) The NHLS has strengthened capacity to conduct food and environmental testing for *Listeria monocytogenes*;
4) Almost 900 environmental health practitioners in all health districts have been re-trained in inspection procedures, food safety systems, legislative aspects of food control and tools to support inspections including risk assessment tools and inspection checklists;
5) All production facilities that manufacture ready-to-eat processed meat in South Africa have been identified (n=158) and all but nine have been inspected by district environmental health practitioners, supported by a core incident management team;
6) An amendment to the Regulations pertaining to the application of the hazard analysis and critical control system (HACCP), (R908 of 2003) was published on 14 June 2018 requiring all producers of ready-to-eat processed meat to be HACCP certified by externally accredited agencies within nine months of publication of this act;
7) Risk communication activities including the dissemination of information pertaining to food safety, avoidance of certain foodstuffs by persons who are at risk for listeriosis, and training of health promotors have been conducted.

Further resources on listeriosis can be found on the NICD website at www.nicd.ac.za, Diseases A-Z, under 'Listeriosis'.

Source: Centre for Enteric Diseases, and Division of Public Health Surveillance and Response, NICD Provincial Epidemiology Teams; NICD-NHLS; Provincial CDCs; (junot@nicd.ac.za; outbreak@nicd.ac.za)

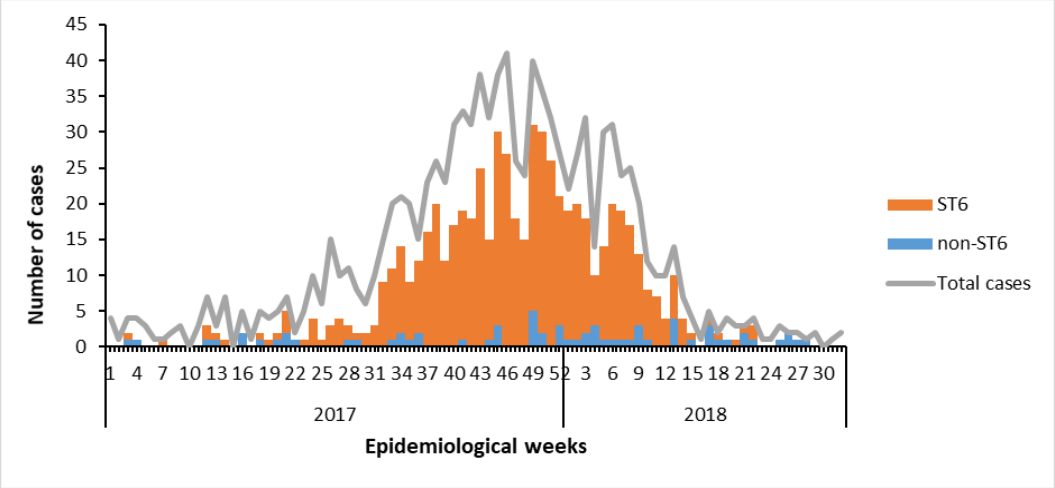

Figure 3. Epidemic curve of laboratory-confirmed listeriosis cases by date of clinical specimen collection (n = 1 064) and sequence type (ST) (n = 645) South Africa, 01 January 2017 to 14 August 2018.

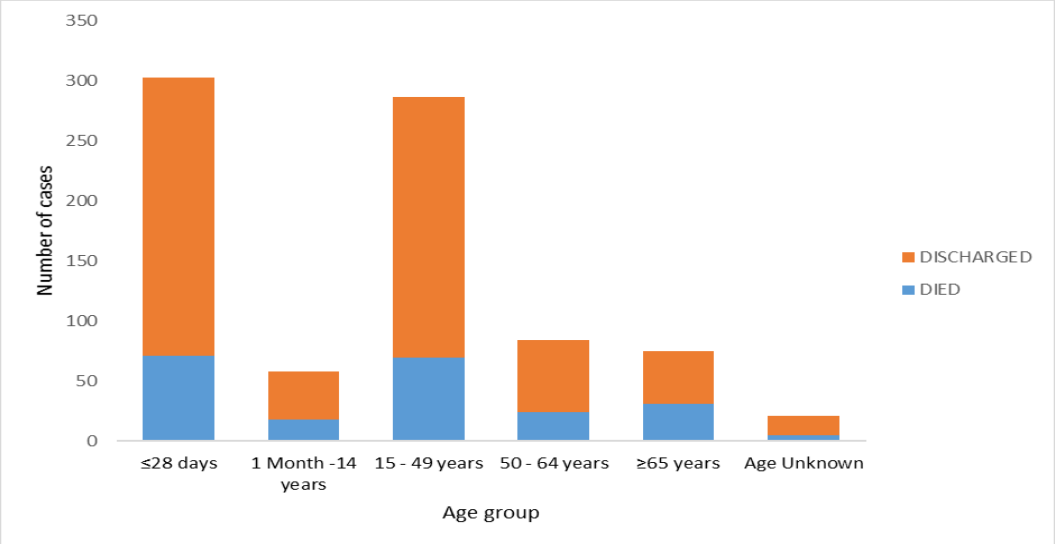

Figure 4. Outcome of laboratory-confirmed listeriosis cases by age group South Africa, 01 January 2017 to 14 August 2018 (n= 828, where outcome is known).

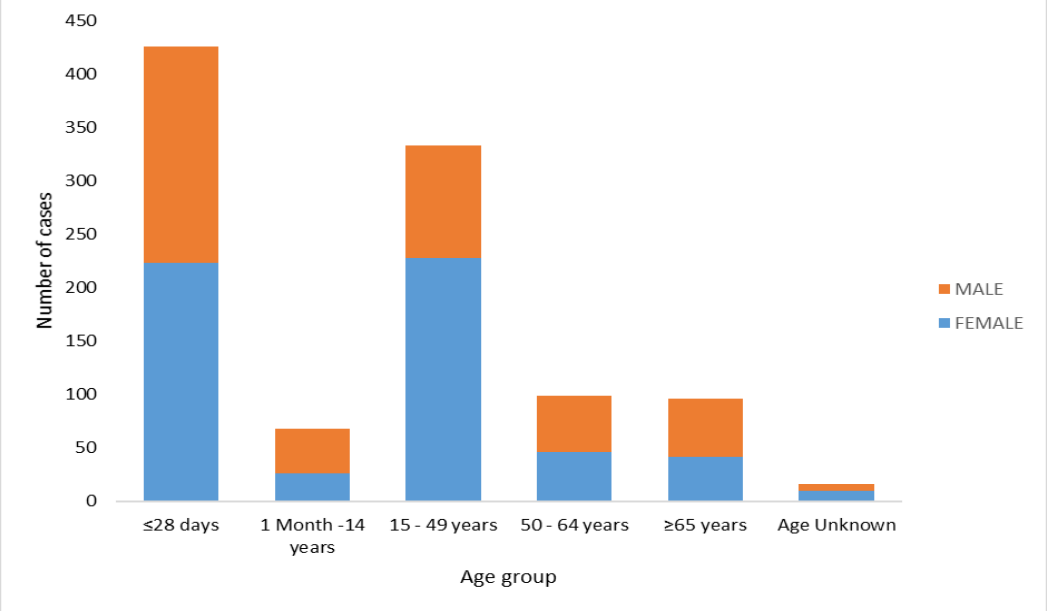

Figure 5. Age distribution of laboratory-confirmed listeriosis cases by gender, South Africa, 01 January 2017 to 20 July 2018 (n = 1 039, where gender is known).

b Increase in diarrhoeal cases, Mbombela Sub-district, Mpumalanga Province

On Sunday 22 July 2018, the Ehlanzeni Communicable Disease Coordinator (CDC) received a notification from the Tekwane South Clinic about an increase in diarrhoeal cases seen at the clinic. Approximately 53 diarrhoeal cases were seen by the clinic on 22 July 2018. Tekwane South Clinic is located in the Mbombela Sub-district, Ehlanzeni District, Mpumalanga Province.

The Tekwane South Clinic reported that the increase in diarrhoea cases started on Friday, 20 July 2018 (14 cases). After verification of the increase of diarrhoeal cases, the District Outbreak Response Team (DORT) was activated. Cases were predominantly from Tekwane South and Entokozweni areas in Mbombela Sub-district. As from 26 July 2018; more facilities started to report that they were exceeding their diarrhoea thresholds. All health care facilities (HCFs) in the Mbombela Sub-district were then requested to do zero reporting of diarrhoea cases daily.

An investigation was conducted with the aim to identify case patients, identify the aetiology, determine the magnitude of the outbreak, document exposures, identify risk factors and to suggest measures for long-term prevention. Activities conducted included epidemiological, environmental and laboratory investigations.

A total of 3 584 diarrhoeal cases was seen from health care facilities from 20 July 2018 – 20 August 2018 in Mbombela Sub-district (Figure 6). Among all the cases where age is known, 43% (1 499/3 489) were in children under the age of five. Cases were interviewed to identify possible exposures and risk factors. No common event attended by the cases could be identified. The cases complained about the intermittent water supply to the community, as well as the high turbidity of the water.

Results received for stool specimens indicate a multi-pathogen outbreak; the predominant pathogens detected include: rotavirus, *Shigella sonnei*, norovirus and adenovirus. Water specimens were taken after remedial actions were done. These were negative for coliforms and *Escherichia coli.* More results from stool and water specimens are still pending.

The outbreak investigation is still on-going. Health promotion teams are visiting the affected communities to educate the community about safe food preparation, good hygiene and boiling of water. Residual chlorine is continuously monitored at the water treatment plant and distribution system.

Source: Mpumalanga Department of Health, Division of Public Health Surveillance and Response, NICD Provincial Epidemiology Team, South African Field Epidemiology Training Programme and Centre for Enteric Diseases , NICD-NHLS (outbreak@nicd.ac.za)