

SITUATION REPORT ON LISTERIOSIS OUTBREAK, SOUTH AFRICA, 2017

Date of issue: 04 December 2017

Report issued by: Centre for Enteric Diseases (CED) and Division of Public Health Surveillance and Response, Outbreak Response Unit (ORU), National Institute for Communicable Diseases (NICD)/ National Health Laboratory Service (NHLS).

Note: Data is the best available at time of publication, and is updated on an ongoing basis.

Descriptive epidemiology

As of 29 November 2017, a total of 557 laboratory-confirmed listeriosis cases have been reported from all provinces since 01 January 2017 (Figure 1). Most cases have been reported from Gauteng Province (62%, 345/557) followed by Western Cape (13%, 71/557) and KwaZulu-Natal (7%, 37/557) provinces. In the majority of cases, diagnosis was based on the isolation of *Listeria monocytogenes* in blood culture (69%, 386/557), followed by CSF (26%, 146/557). Where age was reported (n=540), ages range from birth to 93 years (median 26 years) and 37% (203/540) are neonates aged ≤ 28 days (Figure 2). Of neonatal cases, 96% (195/203) had early-onset disease (birth to ≤ 6 days). Females account for 53% (286/538) of cases where gender is reported. Provincial distribution of cases by district is shown in Figure 3.

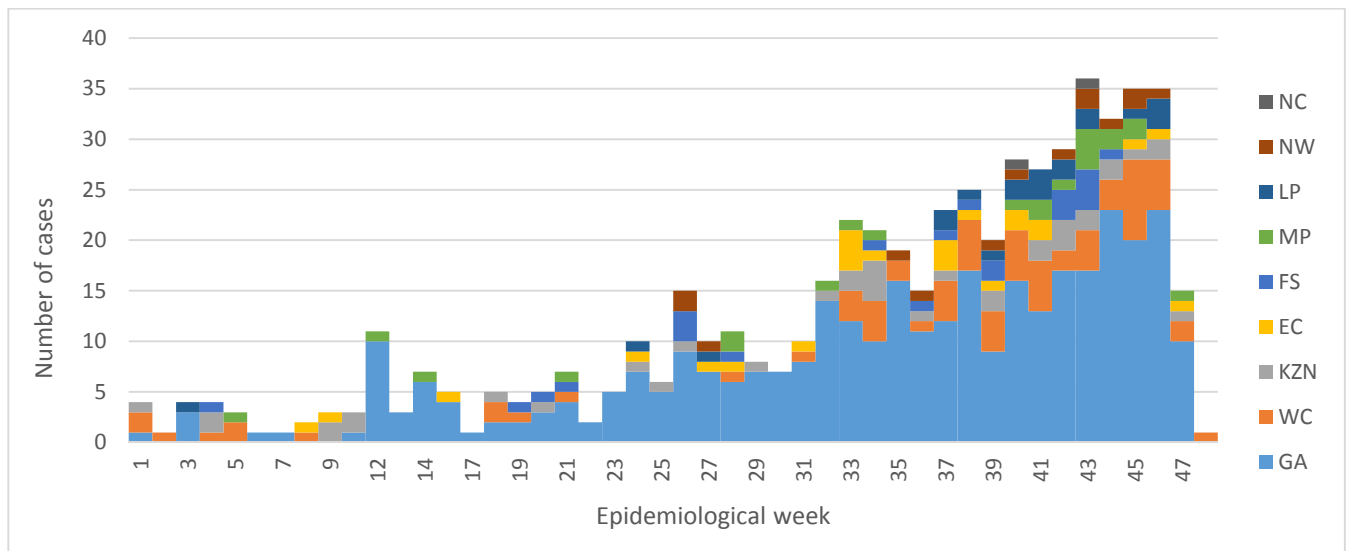


Figure 1: Epidemic curve of laboratory-confirmed listeriosis cases by date of sample collection and province, South Africa, 01 January to 29 November 2017 (n=557)

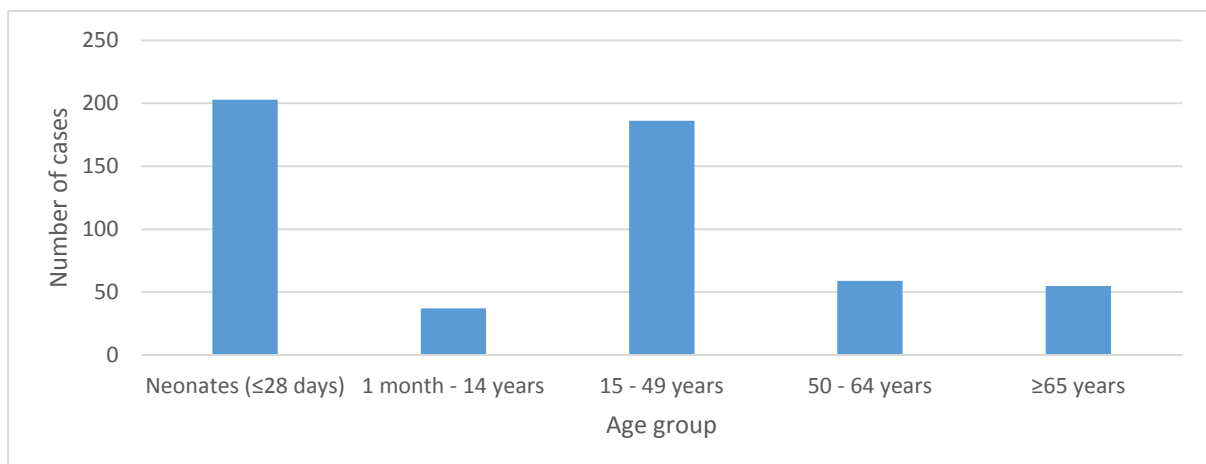


Figure 2: Age distribution of laboratory-confirmed listeriosis cases, South Africa, 01 January to 29 November 2017 (n=540)

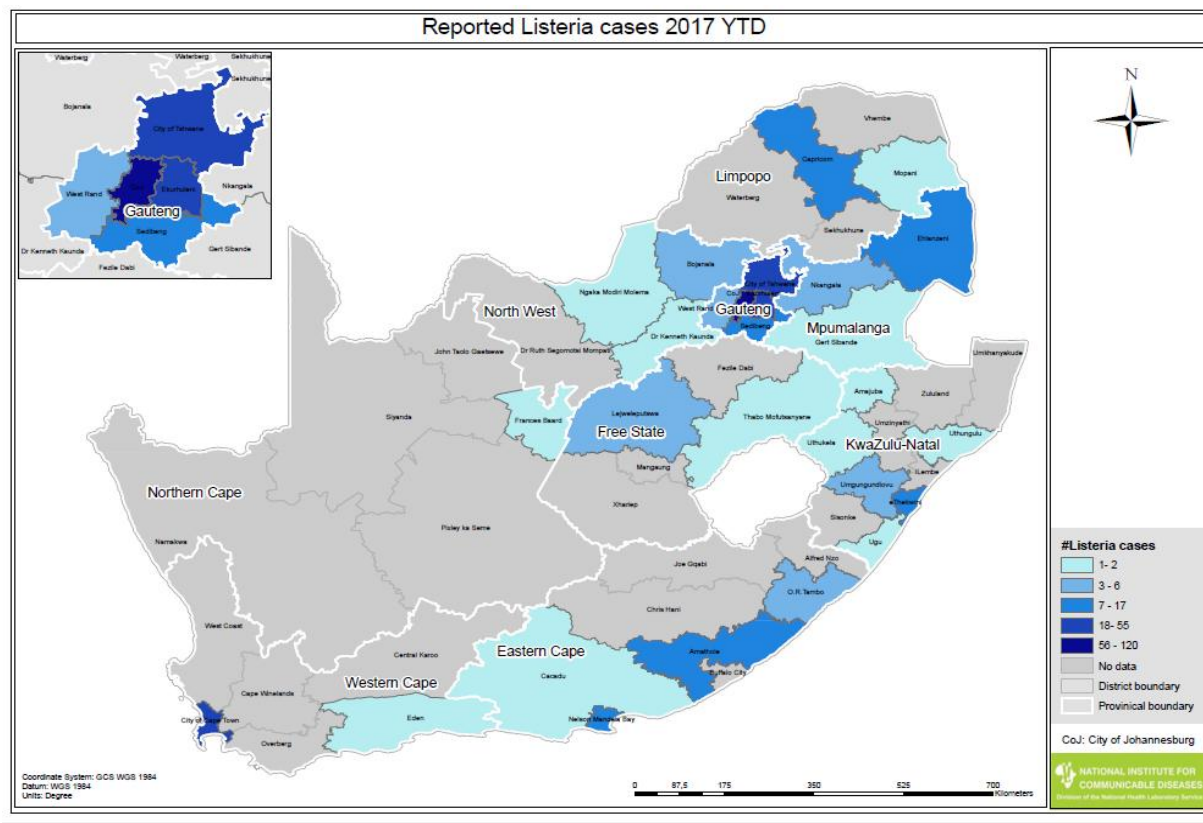


Figure 3. Provincial distribution of laboratory-confirmed cases of listeriosis, South Africa, 01 January to 31 October 2017

Clinical findings

As of 29 November 2017, case investigation forms (CIFs) of variable completeness have been received for 192 cases. Apart from neonates (≤ 28 days) and the elderly (>65 years), additional risk factors for listeriosis reported include pregnancy (10/39 females aged 15-49 years) and HIV infection status. In non-neonatal cases where HIV status was known ($n=63$), 62% (39/63) were HIV positive. Maternal HIV status is known for 57 neonatal cases, of which 22/57 (38%) were HIV positive. Final outcome data is available for 12% (70/557) of cases, of which 51% (36/70) died. Limited food consumption history data are available, and indicate that a wide variety of food items documented to have caused previous outbreaks/clusters of listeriosis (including dairy products, meat products, vegetables, fruit, and ready-to-eat products) were commonly consumed, and no specific food item/s or food consumption patterns that could guide targeted environmental investigations have been identified as yet.

Reference laboratory findings

To date, whole genome sequencing has been performed on 189 clinical *L. monocytogenes* isolates. Fifteen sequence types (STs) have been identified; however, 71% (134/189) belong to a single ST (ST6). Isolates in this ST6 cluster are very closely related, showing <20 single nucleotide polymorphism (SNP) differences. This suggests that most cases in this outbreak have had exposure to a widely available, common food type/source.

Narrative summary of actions to date

Epidemiology and surveillance

- The line list database of listeriosis cases is updated daily with data from NHLS Central Data Warehouse (CDW) downloads as well as direct reports of listeriosis cases detected at private sector laboratories.
- Case investigations forms (CIFs) are currently being completed by numerous healthcare workers in public and private sectors, including GERMS-SA surveillance officers at enhanced surveillance site hospitals (public sector), clinical microbiologists (public sector), IPC practitioners at private sector hospitals, and Department of Health officials. Data from CIFs are entered into the database.

All healthcare practitioners (clinicians, nurses, IPC practitioners, pathologists, Department of Health officials etc) are encouraged to complete CIFs where possible, since identification of possible contaminated food types/sources will be guided by analysis of this data. The CIF with accompanying instruction sheet can

be found on the NICD website at www.nicd.ac.za, and completed CIFs emailed to outbreak@nicd.ac.za.

- A team of NICD epidemiologists has compiled a comprehensive food item checklist and is conducting in-depth interviews of case-patients in Gauteng Province when feasible, in order to ascertain detailed food consumption histories. To date, five such interviews have been conducted. This information will hopefully assist us in drafting a concise food consumption questionnaire which can easily be administered by an interviewer or completed by case-patients themselves.

Clinical management

- Clinical listeriosis management guidelines have been drafted and are currently under review. If you would like to view the draft and provide comment, please email outbreak@nicd.ac.za.

Laboratory diagnostics and investigations

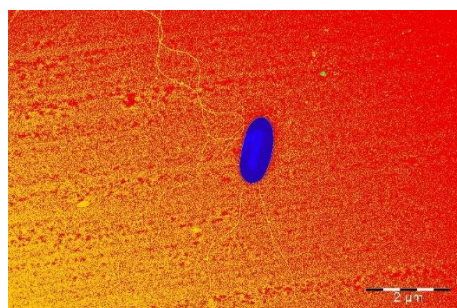
- Private and public sector laboratories are submitting clinical isolates to the NICD Centre for Enteric Diseases (CED). Please email arvindas@nicd.ac.za, junot@nicd.ac.za or karenk@nicd.ac.za should you have queries or require assistance.
- For cases where there is a high clinical index of suspicion for listeriosis but specimens (blood culture or CSF) are culture negative, a polymerase chain reaction (PCR)-based test can be performed at the NICD. Please contact anthonys@nicd.ac.za, arvindas@nicd.ac.za, junot@nicd.ac.za or karenk@nicd.ac.za for further details.
- All *L. monocytogenes* isolates from food samples tested at the NHLS Infection Control Services Laboratory are routinely submitted to the CED.
- Selected private sector food testing laboratories have voluntarily submitted *L. monocytogenes* isolates (from anonymised food samples and food processing facilities) to the CED.
- All isolates of *L. monocytogenes* received at the CED are subjected to confirmatory identification tests, and are stored.
- Whole genome sequencing is being performed on all clinical isolates and selected food/environmental isolates

Food control and environmental health

- The Director General of the National Department of Health has formally requested food industry stakeholders to submit *Listeria* isolates to the NICD, along with details of *Listeria*-positive food/food processing environmental samples.
- Environmental health practitioners have been requested to visit homes of persons diagnosed with listeriosis and sample food from their refrigerators. These specimens must be submitted to the NHLS Infection Control Services Laboratory in Johannesburg. Please email Rob Stewart (rob.stewart@nhls.ac.za) or Teena Thomas (teena.thomas@nhls.ac.za) for details regarding specimen submission.

Communications

- The NICD has made information available on the website regarding listeriosis, including Frequently Asked Questions (FAQs), clinical management guidance, and laboratory testing methodology. These can be accessed at <http://www.nicd.ac.za/index.php/listeriosis/>.
- The Food Control Division within the National Department of Health has distributed information about the outbreak to food industry stakeholders.



Electron Micrograph of *L. monocytogenes*, courtesy of Monica Birkhead, Centre for Emerging, Zoonotic and Parasitic Diseases, NICD