

Date of issue: 21 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:

- Case data and outbreak response activity summary is the best available at time of publication, and are updated on an ongoing basis.
- There have been challenges with NHLS laboratory information system data since epidemiological week 47, therefore case numbers for weeks 47 – 51 are likely to change on a daily basis and trends must be interpreted with caution until it has been confirmed that all cases have been captured.

Descriptive epidemiology

As of 21 December 2017, a total of 658 laboratory-confirmed listeriosis cases have been reported to NICD since 01 January 2017 (Figure 1). Most cases have been reported from Gauteng Province (62%, 408/658) followed by Western Cape (13%, 84/658) and KwaZulu-Natal (7%, 45/658) provinces. Cases have been diagnosed in both public (67%, 440/658) and private (33%, 218/658) healthcare sectors. Diagnosis was based most commonly on the isolation of *Listeria monocytogenes* in blood culture (70%, 463/658), followed by CSF (24%, 160/658). Where age was reported (n=629), ages range from birth to 93 years (median 26 years) and 39% (243/629) are neonates aged ≤28 days (Figure 2). Of neonatal cases, 96% (234/243) had early-onset disease (birth to ≤6 days). Females account for 55% (348/634) of cases where gender is reported.

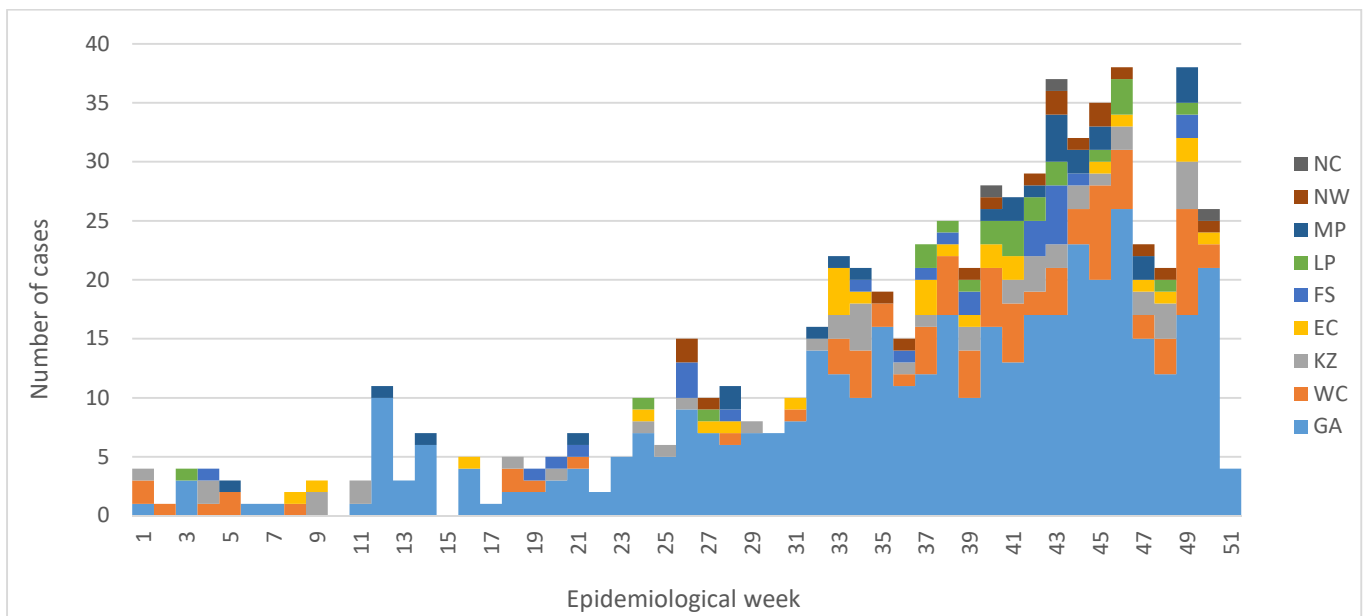


Figure 1: Epidemic curve of laboratory-confirmed listeriosis cases by epidemiological week and date of sample collection and province, South Africa, 01 January to 21 December 2017 (n=658)

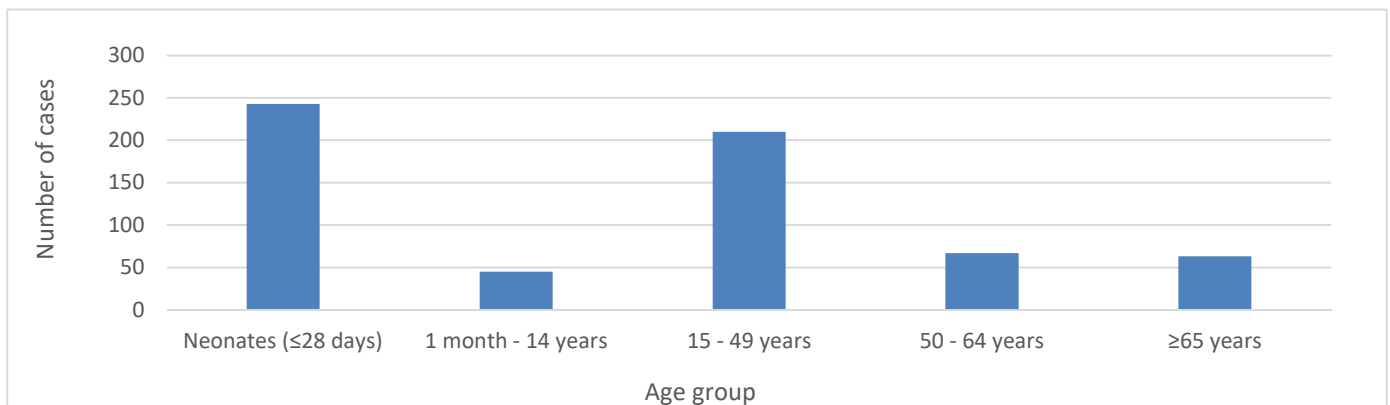


Figure 2: Age distribution of laboratory-confirmed listeriosis cases, South Africa, 01 January to 20 December 2017 (n=629)

Clinical findings

As of 21 December 2017, case investigation forms (CIFs) of variable completeness have been received for 229 (35%) cases. Apart from neonates (≤ 28 days) and the elderly (>65 years), additional risk factors for listeriosis reported include pregnancy (11/47 females aged 15–49 years) and HIV infection status. In non-neonatal cases where HIV status was known ($n=117$), 37% (43/117) 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 20% (132/640) of cases, of which 46% (61/132) died.

Reference laboratory findings

Whole genome sequencing of currently available clinical isolates (including archived isolates from 2015 and 2016), food and food production facility environmental isolates is ongoing. Of the 248 isolates sequenced to date, 201 are clinical isolates received since 01 January 2017. Of these, 85% (170/201) are sequence type 6 (ST6) and are very closely related, representing a single strain of *L. monocytogenes*. This ST6 strain has been identified in isolates from all nine provinces (Figure 3). This finding supports the current working hypothesis of a single source of food contamination causing the outbreak, i.e. a single widely consumed food product, or multiple food products produced at a single facility.

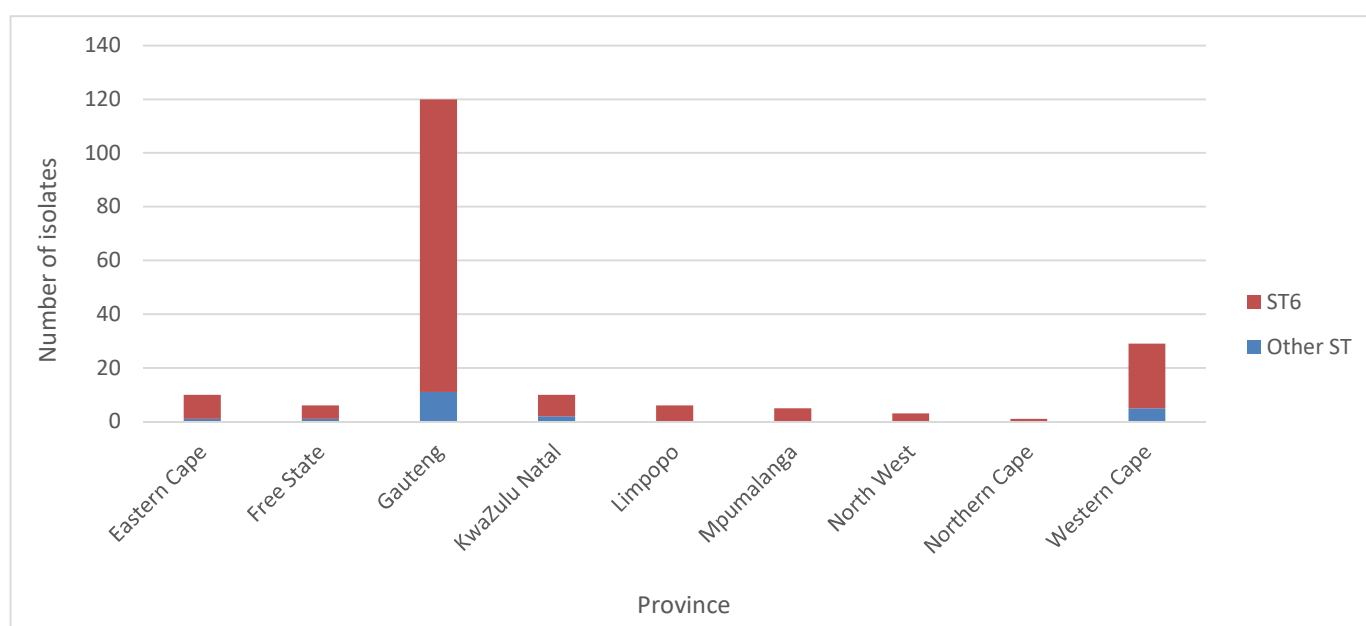


Figure 3: Sequence types (ST) of *L. monocytogenes* clinical isolates by province, South Africa, 01 January to 20 December 2017 (n=201)

Narrative summary of actions to date

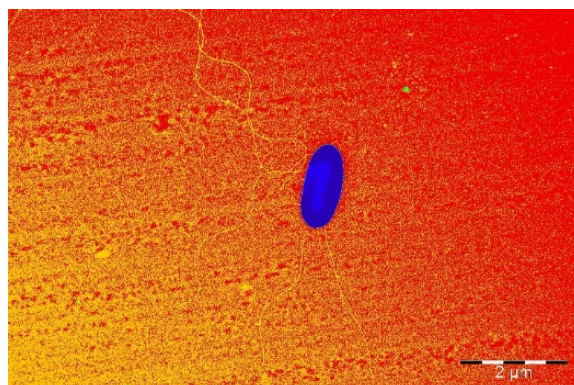
1. Co-ordination of outbreak investigation and response

- A multisectoral outbreak response team with representatives from the National Department of Health, the Department of Agriculture, Forestry and Fishery (DAFF), the Department of Trade and Industry, the NICD and other relevant stakeholders has been tasked by the Minister of Health to coordinate the outbreak response activities.

2. Epidemiology and surveillance

- The line list database of listeriosis cases is updated daily with data from NHLS Central Data Warehouse (CDW) downloads, and direct reports from NHLS, private laboratories, clinicians and infection prevention practitioners.
- Case investigations forms (CIFs) are currently being completed by healthcare workers in both the public and private healthcare sectors. All clinicians are requested to submit completed CIFs (found on the NICD website at www.nicd.ac.za) to outbreak@nicd.ac.za.
- Provincial CDCs have been requested to assist with outstanding demographic and clinical outcome data.
- Over 20 case-patients in Gauteng Province have been interviewed to ascertain comprehensive food consumption histories, and data is being analysed to inform revision of the case investigation form (CIF) to focus on the most commonly consumed food items.

- Listeriosis is now a Category 1 Notifiable Medical Condition and as such requires immediate reporting by the most rapid means available upon diagnosis, followed by a written or electronic notification to the Department of Health within 24 hours of diagnosis by healthcare providers, private health laboratories or public health laboratories. The published regulations can be accessed at <https://archive.opengazettes.org.za/archive/ZA/2017/government-gazette-ZA-vol-630-no-41330-dated-2017-12-15.pdf>.
3. Clinical management and diagnosis
- Clinical listeriosis management guidelines are available on the website (www.nicd.ac.za).
 - Where clinicians suspect listeriosis but specimens (including CSF and blood) are culture negative, a polymerase chain reaction (PCR)-based test can be performed at the NICD. Please contact nicolap@nicd.ac.za, junot@nicd.ac.za or arvindas@nicd.ac.za for further details.
4. Laboratory diagnostics and investigations
- Private and public sector laboratories are submitting clinical isolates to the NICD Centre for Enteric Diseases (CED). All isolates of *L. monocytogenes* received at the CED are subjected to confirmatory identification tests, and are stored. Please email arvindas@nicd.ac.za or junot@nicd.ac.za should you have queries or require assistance.
 - Whole genome sequencing is being performed on all clinical isolates and food/environmental isolates received from the NHLS Infection Control Laboratory in Johannesburg.
5. Environmental health and food control
- Environmental health practitioners have been requested to visit homes of persons newly diagnosed with listeriosis and sample available food where possible. Environmental health practitioners should submit food specimens to the NHLS Infection Control Services Laboratory in Johannesburg. The specimen submission form is available on the NICD website (www.nicd.ac.za). Contact rob.stewart@nhls.ac.za for further information.
 - Some private sector food testing laboratories have voluntarily submitted *L. monocytogenes* isolates (from food and environmental samples) to the NICD.
 - The Director General of the National Department of Health has formally requested food industry stakeholders to submit details of *Listeria*-positive food items, environmental swabs and *Listeria* isolates to the NICD, along with samples. Whilst several stakeholders have been forthcoming with information, not all stakeholders have responded as yet.
6. 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.
 - The NICD continues to operate its 24-hour hotline for clinicians, and the EOC call centre for members of the public.



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