



Situation Report			
Outbreak name	Listeriosis	Country affected	South Africa
Date & Time of report	26 July 2018	Investigation start date	August 2017
Prepared by	National Listeria Incident Management Team		

A member of our IMT with showing a district environmental health practitioner how to take environmental swabs during a factory inspection



Members of the Incident Management team with factory owners during an inspection



1. Highlights

- 1 060 laboratory confirmed cases have been reported from 01 January 2017 to 17 July 2018. The number of reported cases per week has decreased since the implicated products were recalled on 04 March 2018 with a total of 87 cases reported since 05 March 2018. No new cases of listeriosis were reported during the week prior to publication of this report.
- By close of business 20 July, 146 of 158 facilities across the country that produce ready-to-eat processed meat products have been inspected. Environmental swabs were collected at 132 facilities and are being tested.
- Following the publication of 3 important pieces of legislation pertaining to food safety, planning for the following activities is underway including; a) publication of terms of reference for a food scientist and legal expert; b) a stakeholder workshop to agree on listeria levels; c) training of EHPs in HACCP and revised legislation, and d) a survey of *L. monocytogenes* levels in ready-to-eat foods to support proposed legislation. See below for details.
- Risk communication activities including delivery of public service announcements on community radio stations regarding food safety are underway.
- Phase 3 of the Emergency Response Plan (reporting and consolidation of health system strengthening activities, and after action review) has commenced with drawing up of a final report on activities conducted to date. A date for an 'after-action' review of the IMT activities is planned for the last quarter of 2018.

2. Background

Prior to 2017, an average of 60 to 80 laboratory-confirmed listeriosis cases per year (approximately 1 per week), were reported in South Africa. In July 2017, an increase in laboratory-confirmed cases of listeriosis was reported to National Institute for Communicable Diseases (NICD) which triggered further investigation. On 05 December 2017, the listeriosis outbreak was declared by the Minister of Health, Dr Aaron Motsoaledi. The

source of the outbreak was identified as ready-to-eat processed meat products manufactured at Enterprise Foods' Polokwane production facility. A recall of affected products was initiated on 04 March 2018.

3. Emergency Management Approach

The Emergency Response Plan developed by the multi-sectoral incident management team (IMT) aims to control and end the current listeriosis outbreak, and to strengthen systems to facilitate prevention and early detection of outbreaks. To inform and support these aims, surveillance and investigation of cases of listeriosis and risk communication activities are ongoing. Additional activities to complement these are being conducted as follows;

- Phase 1: Development of the ERP, communication of the plan with provincial and district stakeholders, development of material and training of staff to support inspections of facilities identified as at-risk food processing plants;
- Phase 2: Inspection of at-risk food processing plant and strengthening the capacity of district environmental health practitioners;
- Phase 3: Reporting and consolidation of health system strengthening activities, and after action review.

4. Public Health action/response interventions

1. CO-ORDINATION

The incident management team (IMT) continues to meet weekly to co-ordinate completion of Phase 2 and commencement of Phase 3 activities. Activities have included finalising facility inspections, collating and sending out reports from factory inspections, supporting the planning of legislation and risk communication activities.

2. SURVEILLANCE

1 060 laboratory-confirmed cases have been reported from 01 January 2017 to 17 July 2018. The number of new cases reported each week has decreased since the implicated products were recalled on 04 March 2018 with no new cases of listeriosis reported during the week prior to release of this sitrep (Figure 1). Neonates ≤ 28 days of age are the most affected age group (42%, 443/1 060), followed by adults aged 15 – 49 years of age (32%, 334/1 060) - Figure 2. Most cases have been reported from Gauteng Province (58%, 614/1 060), followed by Western Cape (13%, 136/1 060) and KwaZulu-Natal (8%, 83/1 060) provinces (Table 1). Final outcome (i.e. death or discharge) is known for 76% (806/1 060) of total cases to date; 27% (216/806) with known outcome died.

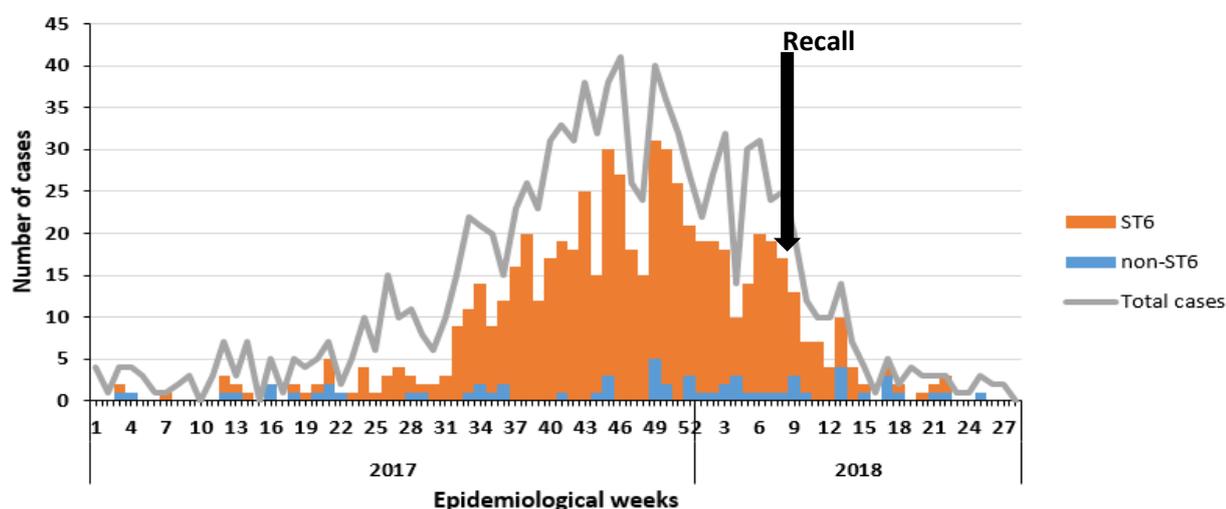


Figure 1: Epidemic curve of laboratory-confirmed listeriosis cases by date of clinical specimen collection (N=1 060) and sequence type (ST) (n=636), South Africa, 01 January 2017 to 17 July 2018

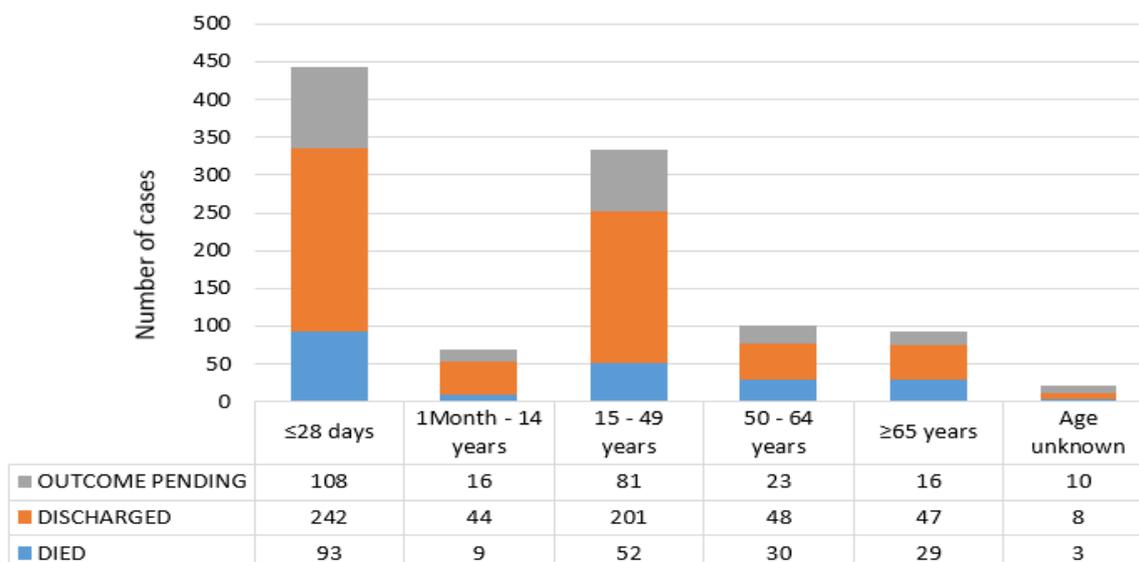


Figure 2: Age distribution and outcome* of laboratory-confirmed listeriosis cases, South Africa, 01 January 2017 to 10 July 2018 (N = 1 060) 'Outcome pending' includes patients whose outcome is unknown (e.g. they may still be hospitalised) and those whose medical records could not be found).

Table 1. Number of laboratory-confirmed listeriosis cases and deaths by province, where outcome data is available, South Africa, 01 January 2017 to 17 July 2018 (N=1 060)

Province	Outcome available (as a % of total cases in RSA)	Number of deaths (% of those with outcome available)	# cases (% of total cases)
Gauteng	393 (64.0)	108 (27.5)	614 (57.9)
Western Cape	134 (98.5)	32 (23.9)	136 (12.8)
Kwa-Zulu Natal	76 (91.6)	21 (27.6)	83 (7.8)
Limpopo	51 (92.7)	11 (21.6)	55 (5.2)
Eastern Cape	40 (75.5)	13 (32.5)	53 (5.0)
Mpumalanga	47 (97.9)	11 (23.4)	48 (4.5)
Free State	32 (88.9)	9 (28.1)	36 (3.4)
North West	27 (93.1)	8 (29.6)	29 (2.7)
Northern Cape	6 (100.0)	3 (50.0)	6 (0.6)
Total	806 (76.0)	216 (26.8)	1 060

- Following a recall of the implicated products, the number of cases have steadily decreased. However, it is anticipated that cases could still be reported for the following reasons:
 - The incubation period of listeriosis can be up to 70 days
 - The implicated products have a long shelf life and it is possible that despite the recall some products have not been removed from retail or consumer's homes
 - Cross-contamination at retail and in the home can occur
- Post recall (05 March 2018 to date), all new cases of laboratory-confirmed listeriosis are contacted by IMT members, and a comprehensive food history is obtained. Exposure to food products implicated in the listeria outbreak is determined.
 - Of 87 post-recall cases, 65 have been interviewed to date.
 - Of those interviewed, 38/65 (58%) of ill people or their proxy reported consuming polony prior to their illness onset; brands manufactured by Enterprise Foods were most commonly reported to have been consumed where brand of polony was known.



3. LABORATORY

A. NICD:

- All clinical isolates received at NICD are undergoing whole genome sequencing (WGS). A total of 636 clinical isolates have undergone whole genome sequencing to date (Figure 1); 91% (576/636) belong to the sequence type 6 (ST6) outbreak strain, and the remainder belong to 16 different sequence types.
- Of the 87 cases reported post recall, 56 isolates of *Listeria monocytogenes* were received by NICD from diagnostic laboratories, of which 50 were viable. WGS has been completed for 48 of these isolates to date; 33 are outbreak strain ST6 and the remainder (n=15) belong to seven other sequence types (ST1, ST2, ST5, ST7, ST1039, ST554 and a novel ST).
- Case investigation forms have been received for 92% (80/87) post-recall cases
- Environmental isolates of *L. monocytogenes* obtained from facility inspections (where these are positive) have been submitted by NHLS Infection Control Services Laboratory for whole genome sequencing as part of surveillance activities.
- For the purposes of assessing linkage of *L. monocytogenes* strains to the South African outbreak, the NICD has deposited 10 representative ST6 sequences in the public GenBank - NCBI database (<https://www.ncbi.nlm.nih.gov/Traces/study/?acc=SRP142281>). The accompanying Genome Announcement can be accessed at: <https://mra.asm.org/content/6/25/e00538-18.full>. Please contact Dr Anthony Smith (anthonys@nicd.ac.za) regarding sequencing queries.

B. NHLS Infection Control Services Laboratory:

- Environmental swabs from factory inspections are being tested for *L. monocytogenes* using both genetic (PCR) and culture based methods according to the agreed strategy (available on NICD website)
- Swabs from 132 factories have been received at the laboratory and are being processed. Results are reported directly to the district environmental health services, and to the IMT
- All environmental isolates of *L. monocytogenes* obtained from facility inspections (where these are positive) have been to Centre for Enteric Diseases/NICD for whole genome sequencing as part of surveillance activities

4. ENVIRONMENTAL HEALTH and FOOD SAFETY

- A team of 11 IMT members have conducted inspections and submitted environmental samples for Listeria testing.
- By close of business 20 July, 158 facilities across the country were confirmed to be producers of ready-to-eat processed meat products. Inspections have been completed in 146 facilities. It is anticipated that the remaining 12 inspections will be done during the week ending 28 July. Environmental swabs were collected at 132 facilities. 14 facilities were not in production or were undergoing renovation, or did not produce food at risk for contamination with *L. monocytogenes* and therefore were not eligible for environmental sampling.
- Reports of inspection findings and results of environmental swabs are being collated by IMT members and shared with district municipalities or metros.
- Facilities with positive environmental swabs indicating the presence of *Listeria monocytogenes* are being followed up by districts, with the support of the National Department of Health and the IMT, according to the listeria testing strategy available on the NICD website

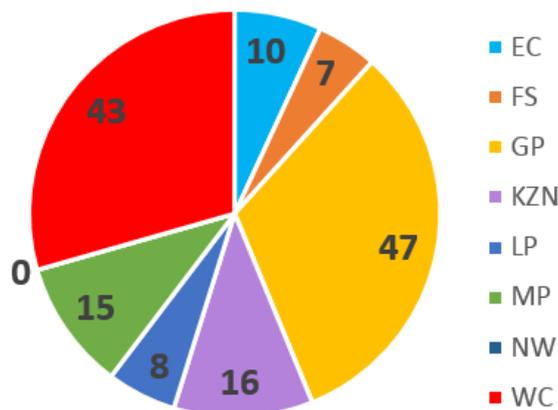


Figure 3. Distribution by province of 146 facilities producing ready-to-eat processed meat and which have been inspected through activities of the Incident Management Team, up until 20 July 2018

5. RECALL PROCESS

As of 15 June, 4 162 tons of recalled products have been destroyed by thermal treatment or landfill according to certificates provided by Department of Environmental Affairs officials. This includes products destroyed at exported destinations.

6. TRAINING/CAPACITY BUILDING

No dedicated training events have taken place this week. Ongoing in-service training of district environmental health practitioners is taking place through the factory inspections that have been conducted by IMT members together with districts. To date, 895 EHPs, veterinary public health officials and others have been trained in the following provinces.

Province	Date of trainings	# delegates trained
Eastern Cape	22, 23 May 2018	108
Free State	5 June 2018	44
Gauteng	10, 11 18 May 2018	282
Limpopo	29 May 2018	69
Mpumalanga	22 May 2018	19
North West	5 June 2018	59
Western Cape	29, 30 May 2018	159
KwaZulu-Natal	12, 13 June 2018	98
Northern Cape	12 June 2018	57
Total		895

7. FOOD SAFETY LEGISLATION REVIEW

To date, the following pieces of amended legislation have been published:

- Regulations governing 'General Hygiene Requirements for Food premises, the Transport of Food and Related Matters were published on the 22 June 2018 in the Government Gazette as Notice R.638 of 22 June 2018
- 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 (R607, 2018). (Available at www.gpwonline.co.za/Gazettes/Gazettes/41707_14-6_Health.pdf)
- A draft of the revised 'Regulations governing microbiological standards for foodstuffs and related matters' (R692 of 16 May 1997) have been shared with the working group for input

The following activities are being executed, or planned. Notification of stakeholders will take place through appropriate channels once details have been finalised.



- Terms of reference for an appropriately skilled legal professional to undertake gap analysis of the applicable food safety and outbreak response legislation in South Africa, in relation to the Listeriosis outbreak will be published shortly
- Terms of reference for an appropriately skilled food scientist to provide guidance to industry regarding the control of *Listeria monocytogenes* in a food processing environment and how to conduct challenge-test studies and possible additional specific studies for ready-to-eat (RTE) foods to be able to determine if growth of *L. monocytogenes* occur or not occur in these RTE foods during their shelf life
- A stakeholder workshop is being planned with the aim of finalising microbiological criteria for *Listeria monocytogenes* across the food value chain from farm-to-fork considering international and local scientific, economic and sociologic perspectives
- National training of Environmental Health Practitioners regarding the HACCP regulations (R607 of 2018) will be rolled out across provinces
- A protocol to conduct a survey of levels in cfu/g of *L. monocytogenes* in ready-to-eat processed meat at retail stores is being developed

8. RISK COMMUNICATION, COMMUNITY ENGAGEMENT & SOCIAL MOBILISATION

- Approximately 747 persons have received training in risk communication related to food safety (Table 2). The next planned risk communication workshop is planned for the 26th and 27th July in the Eastern Cape.
- Public service announcements concerning food safety including aspects of listeriosis are in preparation for airing on community radio stations.
- A dedicated listeriosis website went live <http://listeriosis.org.za/listeriosis/> on 31 May 2018. Please provide feedback to Nombulelo Leburu NombuL@health.gov.za
- Support will be given to activities planned by NDOH for World Environment Day as the theme this year is 'Food Safety'.

Table 2. Risk communication workshops that have taken place through the joint WHO/RSA Incident Management Team.

Province	Location	Start date	End date	Approximate number of attendees
Limpopo	Polokwane	31/05/2018	01/06/2018	55
North West	Orkney	29/05/2018	30/05/2018	60
Northern Cape	Kimberley	27/06/2018	27/06/2018	50
Gauteng	Tshwane	26/06/2018	26/06/2018	50
Gauteng	Ekurhuleni	25/06/2018	26/06/2018	50
Gauteng	West Rand	19/06/2018	20/06/2018	60
Gauteng	Sedibeng	17/07/2018	18/07/2018	50
Mpumalanga	Standerton	12/06/2018	12/06/2018	50
Mpumalanga	Nelspruit	11/06/2018	11/06/2018	54
Free State	Bloemfontein	07/06/2018	08/06/2018	43
Gauteng	Johannesburg	04/07/2018	05/07/2018	50
Gauteng	Johannesburg	04/06/2018	05/06/2018	50
Eastern Cape	Port Elizabeth	04/06/2018	05/06/2018	40

5. Challenges / Gaps

There are challenges regarding the turn-around time of testing of environmental swabs from facility inspections. Challenges are arising on account of the volume of specimens received during the last three weeks, machine failure and in some cases, challenges regarding test result interpretation. Each challenge is being addressed through appropriate interventions.



6. Recommendations & priority follow-up actions

Inspections of facilities and processing of environmental swabs will be completed in the coming weeks. Districts are being supported in following up of findings of factory inspections. Collation of findings and writing of an interim report are underway.

7. Conclusions

Phase 2 of the ERP is nearing completion with the following activities conducted by the IMT over the past week: 1) ongoing surveillance and investigation of cases; 2) inspection by a team of 11 IMT EHPs of 146 facilities that produce ready-to-eat processed meat across South Africa; 3) ongoing community engagement activities; 4) Planning for activities detailed in the emergency response plan related to food legislation is underway including; a) publication of terms of reference for a food scientist and legal expert; b) a stakeholder workshop to agree on listeria levels; c) training of EHPs in HACCP and revised legislation, and d) a survey of *L. monocytogenes* levels in ready-to-eat foods to support proposed legislation. Phase 3 has commenced with drawing up of a final report on activities conducted to date. A date for an 'after-action' review of the IMT activities is planned for the last quarter of 2018.

Prof Davison Munodowafa delivering training on risk communication during a training workshop

