



DIARRHOEA OUTBREAK IN DELMAS, MPUMALANGA, NOVEMBER 2007

1. BACKGROUND

During the month of October 2007 there was a marked increase in the number of people presenting to health facilities complaining of diarrhoea and abdominal cramps in the sub-district of Delmas, Mpumalanga.

This increase in the number of cases was noticed during the weekly surveillance reviews (Monday 29th October 2007). Thereafter daily surveillance reviews were conducted and all clinics were alerted to the outbreak. Health care facilities were requested to collect stool samples from all patients presenting with diarrhoea.

On the 8th November 2007 the National Outbreak Response Team (NORT) was requested to provide additional support towards the control of the outbreak in Delmas. The team comprised of officials from National Department of Health (Communicable Disease Control, Health Promotion, Environmental Health and Epidemiology and Surveillance), National Institute for Communicable Diseases (NICD) and World Health Organisation (WHO).

The Members of the NORT worked in collaboration with Provincial and District teams as well as the JOC. The activities carried out by the team included amongst others,

meetings/briefings with members of the Provincial and District Outbreak Response Teams, field visits to the sewage processing plant and the areas around the boreholes. A joint team also visited the health facilities and the most affected communities of Botleng and Extension 3.

3. EPIDEMIOLOGICAL CHARECTERISTICS

3.1 Surveillance

As on the 13 November 2007, a cumulative total of 805 cases with no deaths had been reported to the Delmas Sub district Department of Health. Sporadic cases were reported between the 1st and the 23rd of October 2007. Subsequently, cases gradually started rising and peaked on the 1st of November 2007 and thereafter started declining (Figure 1).

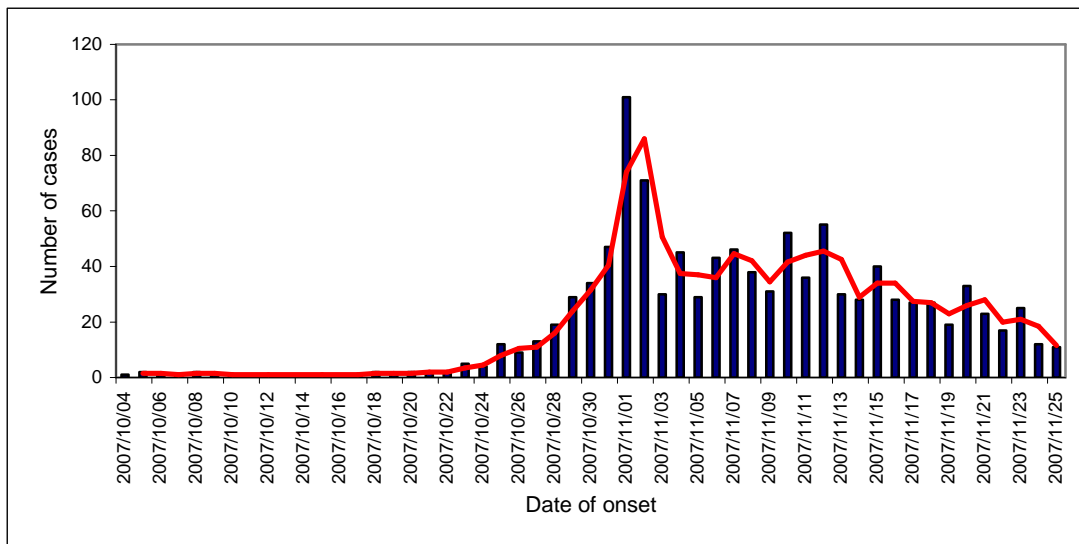


Figure 1: Total diarrhoea cases by date of onset, Delmas outbreak, 1 Oct - 13 Nov 2007 (N=805)

Source: Mpumalanga Department of Health, CDC

3.2 Distribution of cases by health facility

The majority of the cases were reported from Botleng Clinic (24%) followed by Extension 3 clinic (23%), Bernice Samuel Hospital (18%), Pharmacy (14%), Medicross Clinic (8%), F.C Dumat (9%) (Figure 2).

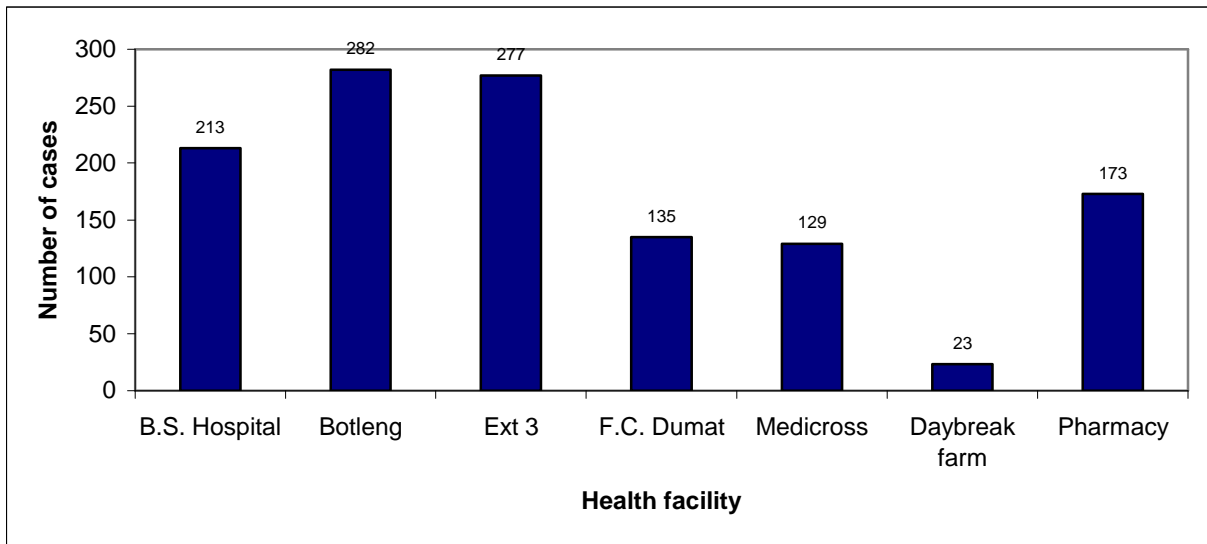


Figure 2: Total diarrhoea cases per facility, Delmas outbreak, 1 Oct – 19 Nov 2007 (N=957)

Source: Mpumalanga Department of Health, CDC

3.3 Distribution of cases by gender

Figure 3 shows the distribution of cases by sex for the period 1 October to 12 November 2007. Fifty seven percent of the cases were females.

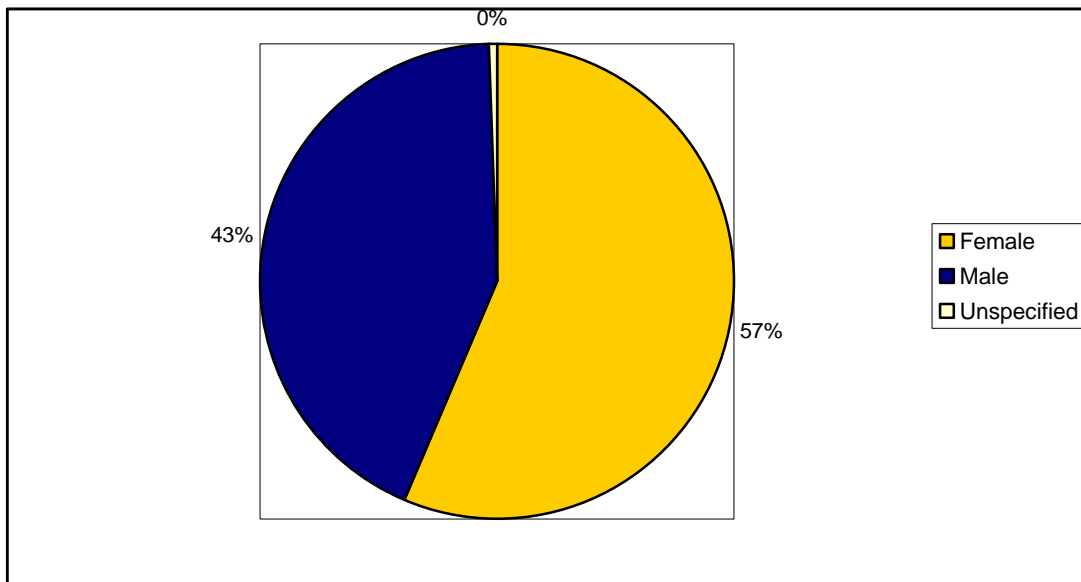


Figure 3: Total diarrhoea cases by gender, Delmas outbreak 1 Oct – 19 Nov 2007 (N=957)

Source: Mpumalanga Department of Health, CDC

3.4 Distribution of cases by age

Of the 957 cases reported, 321 (34%) were children under the age of 5 years versus 65% in persons 5 years and older. Thirteen percent of the children were below the age of 1 year (Figure 4.1 and Figure 4.2).

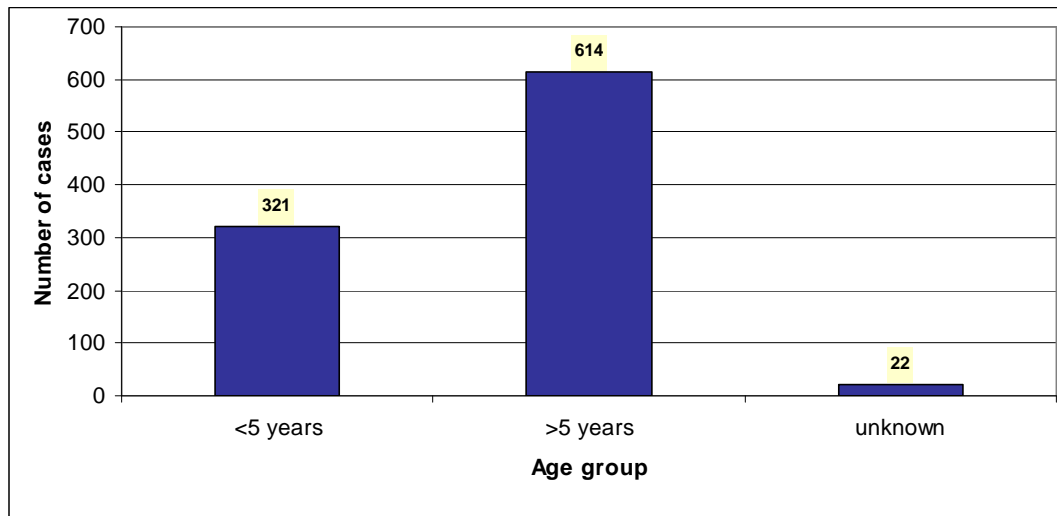


Figure 4.1: Total diarrhoea cases per age group - Delmas outbreak 1 Oct – 19 Nov 2007 (N=957)

Source: Mpumalanga Department of Health, CDC

3.5 Distribution of cases by place of residence

Cases had been reported from all areas including Delmas town, Botleng and Mandela Informal Settlement. An estimated 30% of cases were reported from Botleng and 26% were reported from Extension 3 (Figure 5). The Mandela Informal Settlement has communal municipal taps, the bucket system of sanitation and no electricity.

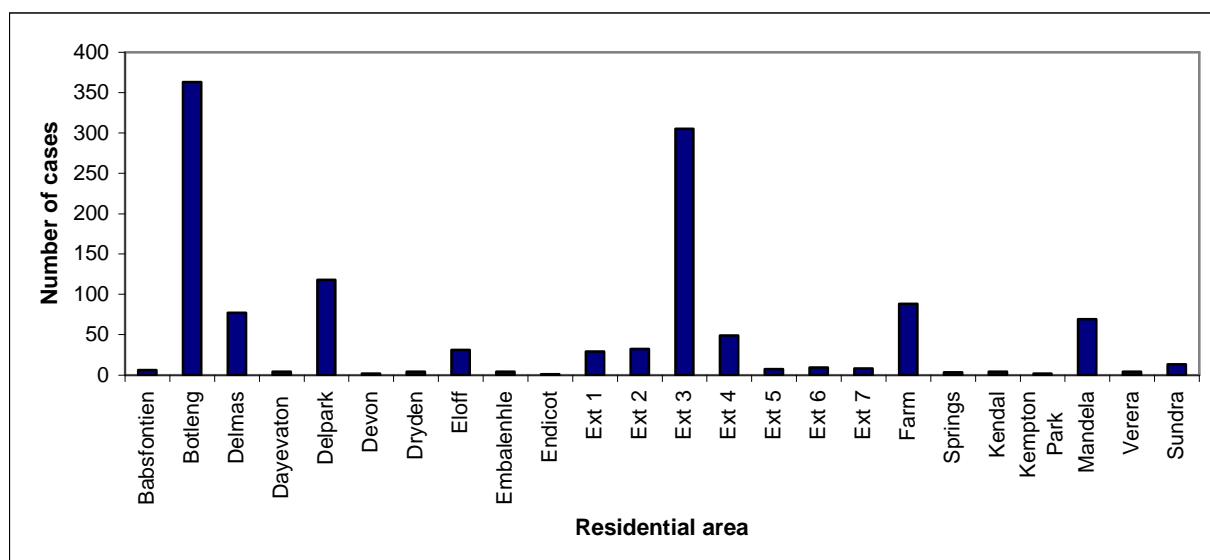


Figure 5: Total diarrhoea cases by place of residence, Delmas outbreak 1 Oct – 19 Nov 2007 (n=957)

Source: Mpumalanga Department of Health, CDC

3.6 Field visits to Botleng and Extension 3

Guided by the data, field visits were made to the health facilities (Botleng and Extension 3 Clinics) in the most affected areas of Botleng and Extension 3 (townships surrounded by a number of informal settlements). An average number of 5 cases are normally reported on a weekly basis from each of the two clinics.

However, since mid October the number of diarrhoeal cases started increasing; an average of 10 and 66 cases were reported per week for Extension 3 and Botleng clinics respectively. Following report of this matter to the District Department of Health, linelists were drawn and daily reports provided. During November 2007 an average of 10 cases were reported on a daily basis from each of these clinics. It is important to note that Botleng clinic operates seven days per week while Extension 3 clinic operates five days per week. Most of these cases were seen on an out-patient basis and only a few were referred to the hospital. The patients commonly presented with mild diarrhoea and abdominal cramps following intake of food, only two had associated fever. On average patients presented to the health facility within 1 to 3 days of the onset of illness.

On the 1st of November 2007, 31 children from Delpark Primary School were seen at Botleng clinic, while during the week of the 12th of November 2007 five children from Sizuzile Primary School were seen at Extension 3 clinic, both day schools. All these

children presented with mild diarrhoea and abdominal cramps and improved on oral-rehydration solution and analgesics. Laboratory analysis of stool samples taken from these children did not reveal any specific causative organism.

From the interaction with these two communities, there was no evidence of cases coming up following gatherings and or feasting, which ruled out the possibility of food poisoning. The majority of the cases were from different homes; only very few homes reported occurrence of more than one case. Due to mildness of the illness, many patients did not seek medical care.

The index case could not be identified due to possible sporadic cases prior to the gradual increase in cases (see figure 1).

4. CASE MANAGEMENT

Clinical features:

Clinical features reportedly included: watery diarrhoea – self-limiting, abdominal cramps and vomiting.

It was noted by the District team that many cases on the line lists did not have diarrhoea at the time of clinical presentation but complained of abdominal cramps only. It was unclear whether these patients had a history of diarrhoea that had resolved.

Laboratory tests and results:

The outbreak specimens were analysed at the Witbank NHLS laboratory. The following organisms were isolated.

- *Giardia Lamblia* – 1 patient
- *Entamoeba Coli* – 1 patient
- Salmonella group C – 1 patient
- *Shigella species*- 1 patient
- Cholera non 1 - 1
- *Adeno virus* – 2

Treatment:

Patients are treated symptomatically according to the Department of Health Outbreak Protocol and according to the EDL.

5. ENVIRONMENTAL HEALTH

The National Department of Water Affairs and Forestry (DWAf) the regional DWAf office, Delmas Environmental Health Practitioners (EHP) and EHPs from the Department of Health and Social Services (DHSS) assessed the situation and agreed on a plan of action. It was agreed that the DoH, DWAf and the Municipality would take water samples and forward all results to DWAf for analysis and interpretation.

Sewage collection and processing

It was noted that the old sewerage purification plant was not operational such that raw sewerage was overflowing into the stream. Effluent samples taken showed a high level of contamination. This stream runs through the informal settlement and Delpark. This highly polluted water was used by the community for washing, as well as by the animals in that area.

Mandela informal settlement was still using the bucket system of sanitation. The following challenges were observed in the process of sewage bucket handling:

- The sewage effluent was discharged into a stream that is approximately 10 metres from the source water boreholes. Therefore it was highly likely that sewage water was percolating into these boreholes;
- The sewage municipal workers did not have personal protective equipment;
- The community was accessing water from a tap situated close to a pit where the sewage buckets are emptied.

Water purification process

The following observations were made:

- The chlorination system in Delmas was not functioning adequately, the free chlorine levels in the town fluctuated, from either 'too low' or 'too high.'

- The water levels in the reservoir did reach the stipulated capacity therefore the chlorine contact time of 30 minutes was compromised.
- Water testing of boreholes pre-treatment revealed a significant load of pathogenic bacteria including:
 - *E.coli*
 - *V.cholerae* non-01
 - *Salmonella* spp.
- Although tests on water from the reticulation network to date did not show the presence of coliforms and *E. coli*, it was not clear whether water was sampled at different points in the system and at varying times

6. HEALTH PROMOTION

Diarrhoea outbreaks are dealt with according to the *'Health Promotion Guidelines for Diarrhoea Outbreaks* and the *'Epidemic Preparedness Response for Health Promotion.'*

6.1 Health promotion interventions

Community mobilization plans and health promotion messages were developed by a team consisting of Health Promotion Practitioners, Environmental Health Officers, Communicable Disease Control, Epidemiology and Surveillance and NICD on Thursday, 8 November. These plans were presented to the Delmas JOC for approval on Friday, 9 November 2007.

7. CONCLUDING REMARKS

Based on the information provided at meetings and the epidemiology of this diarrhoeal outbreak it was possible that contaminated drinking water was the most likely source. In addition poor sanitation and hygiene particularly in informal settlements pose additional risk for diarrhoea outbreaks. The intensification of control measures at household and community levels, monitoring the environment, ongoing surveillance, active participation of community members and provision of a permanent safe water supply to the Standerton community will enhance the gains made and reduce on the frequency of similar outbreaks in the future.