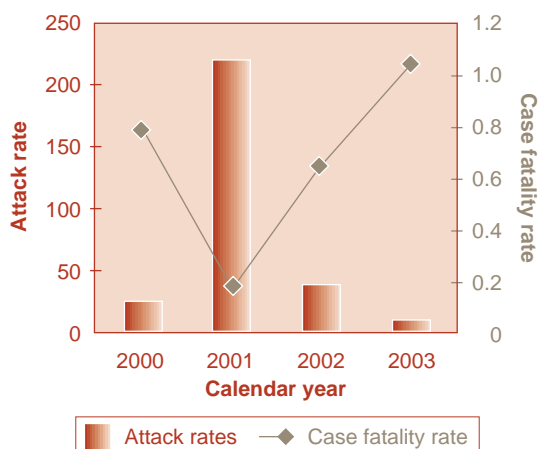


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National distribution of cholera attack and case fatality rates, 2000 - Sep 2003



Key Messages

- ◇ Good case management during the 2001/02 outbreak is reflected in a low case fatality rate of <0.22%.
- ◇ However, subsequent outbreaks, though smaller, have been associated with high CFR.
- ◇ Lack of access to safe drinking water, inadequate sanitation and poverty are key factors fuelling cholera outbreaks.

Framework for Monitoring and Evaluation

Global:

- ◇ WHO Communicable Diseases Surveillance and Response

South Africa:

- ◇ National Cholera Guidelines
- ◇ Health Goals, Objectives and Indicators 2001-2005

Key Indicators

Attack rate (incidence of cases per 100 000 population)

Case fatality rate

Key References and Data sources

- ◇ DoH Disease notification System
- ◇ DoH KwaZulu-Natal: Cholera surveillance

Introduction

Communicable diseases constitute a major burden (56.4%) of diseases in developing and underdeveloped countries. Water-borne diseases are among the most recent emerging and re-emerging infectious diseases in the world that add to this burden. Of these, the most common in developing countries including South Africa (SA) are diarrhoeal diseases particularly cholera, dysentery, typhoid and other rotavirus infections.¹

Cholera continues to threaten many countries and constitutes a major global public health problem. WHO Member States in the Africa Region reported 38 398 cases and 776 deaths from week 1 to week 34 of 2003.²

SA was considered to be at risk of cholera outbreaks as early as 1971. The hot humid summers, seaports, overcrowded communities, with low standards of environmental sanitation and scanty, restricted and unprotected water supplies in some areas facilitated the introduction of cholera in SA. The first case of cholera was diagnosed in 1973.³ In the 1980s SA had seven periods of cholera epidemics usually between the months of October and June.⁴

In August 2000, SA experienced the start of one of the worst cholera epidemics in the country's recent history.⁵ The outbreak started in the area of Ndabayake in Uthungulu district and later spread to other districts within KwaZulu-Natal and other provinces in SA.⁶ By July 2001, 106 389 people had been infected with 229 deaths. Subsequent epidemics have declined in magnitude and duration. Between August 2001 and December 2002 a total of 18 224 cases of cholera and 122 deaths were reported to the national Department of Health (NDoH). By September 2003, a total of 3 795 cases and 40 deaths had been reported to the NDoH.⁷ The reoccurrence of cholera comes regardless of knowledge of the definite causative organism, modes of transmission, risk factors and a seasonal tendency.

This chapter gives an overview of cholera in the country with the aim of enhancing current control measures and providing guidance for future planning.

Framework for Monitoring and Evaluation

International regulations

Cholera is one of three diseases requiring notification to WHO under the International Health Regulations.⁸ In 2001, 58 countries

reported 184 311 cases with 2 728 deaths. (SA 15 782 cases and 92 deaths⁹). The actual number of cases is considered to be much higher because of poor surveillance systems and frequent under-reporting, often motivated by fear of trade sanctions and loss of tourism. WHO estimates that the officially reported cases represent around 5-10% of actual cases worldwide.⁹

Although the Regulations have not prevented the international spread of cholera, they have helped to keep WHO and public health authorities informed of the global epidemiological situation and alert to any possible risk.¹⁰ SA, as a member state of WHO, subscribes to WHO regulations.

South African policy

The management of cholera in SA is guided by the NDoH Guidelines for Cholera Control.¹¹ The control strategies include: standard case management, surveillance (through clinical and laboratory investigations), activities towards breaking the chain of spread of the disease such as provision of safe water, use of household bleach for making drinking water safe and extensive health education targeting behaviour change to enhance personal and environmental hygienic practices.

The National Cholera Task Team (NCTT) and Joint Operational Committees (JOCs) at provincial, district and sub-district levels, are responsible for coordinating these activities. The SA strategy is in line with universal control measures for diarrhoeal diseases.^{11, 12}

The goal for communicable disease control given in the Health Goals, Objectives and Indicators is to improve the response to outbreaks of communicable diseases. The objective is to reduce mortality and morbidity through rapid response to outbreaks of cholera, with the key indicator being the case fatality rate.^{11, 13} Cholera is one of the notifiable diseases in SA.¹¹

Indicators

Reported number of cases (and deaths) of cholera: The number of cases (and deaths) of cholera reported to the Department of Health.

Note: Since cholera in SA is seasonal, occurring primarily during the rainy season, data may be reported by season rather than by calendar year

Case fatality rate (CFR): Number of deaths divided by number of cases expressed as a percentage.

The CFR is used to monitor the quality of case management.

Attack rate (Incidence): Number of cases per 100 000 population at risk.

This indicator used to gauge the severity of the outbreak. Severely affected countries have reported national attack rates of between 1% and 10% of the population.¹⁴

a Figures are for August 2001.

Data: Cholera Trends in South Africa

Cholera - 1980 to 1987

SA experienced seven cholera epidemics in the 1980s. The majority of the cases were reported in 1981/82, with a peak during the warm rain season (January – March).

Table 1: Number of cholera cases and deaths in SA, 1980 – 1987

Duration	No. of Cases	No. of Deaths	Case Fatality Rate (%)
10/1980 – 07/1981	3 786	42	1.1
08/1981 – 07/1982	11 141	218	2.0
07/1982 – 07/1983	7 638	62	0.8
08/1983 – 07/1984	1 977	20	1.0
08/1984 – 07/1985	568	4	0.7
08/1985 – 07/1986	134	2	1.5
08/1986 – 07/1987	7	0	0.0
Total	25 251	348	1.4

Source: Kustner and Du Plessis⁴

Very few cases were reported until 2000.

Cholera epidemic 2000 to 2001

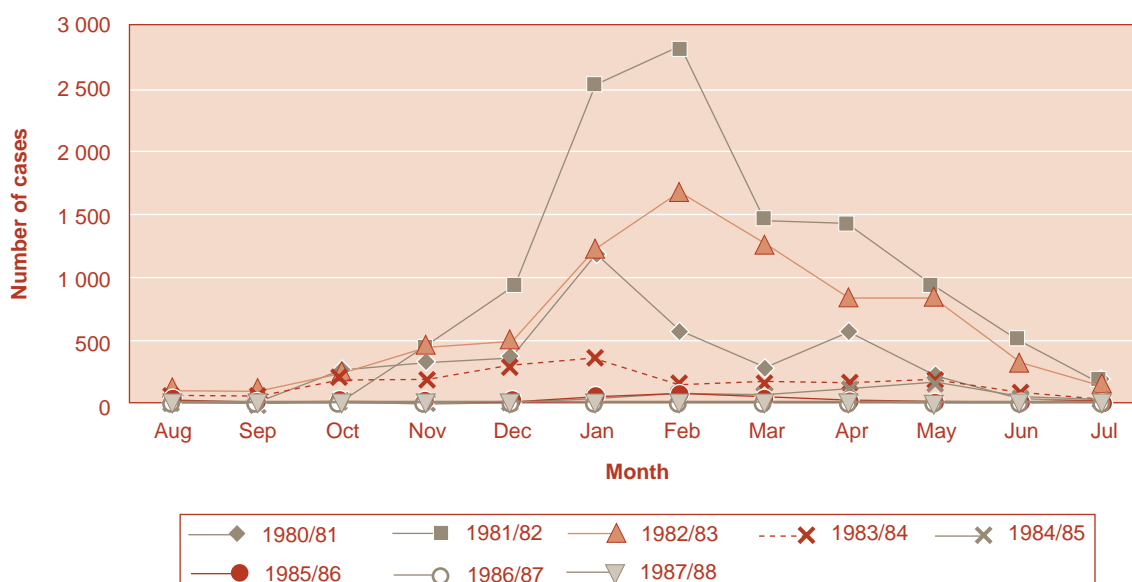
The suspected index case of the 2000/01 cholera epidemic was reported on August 2000 in Uthungulu district, KwaZulu-Natal. The disease rapidly spread to other areas near Lower Umfolozi and in Ulundi. Within a few weeks, over 65% of districts in KwaZulu-Natal had cases of cholera.⁶

Gender, age and ethnic group distribution of Cases

Female cases were predominant (they constitute 60% in KwaZulu-Natal probably due to high migration practices of adult males).³ This was also possibly due to the high participation of females in social and caring roles e.g. caring for the sick and playing active roles in funerals and festivities.⁷ The age distribution was skewed to the young age group (11-30 years). This was possibly due to lack of immunity in this age group (i.e. they were not exposed to 1980s outbreaks). The majority of the patients were African, mostly living in places with poor sanitation and other living conditions.³

Increased mobility and festivities during the December and January holidays in the country may also have resulted in almost all provinces getting affected, with the exception of the Northern Cape. The total number of cases and CFRs in each province are summarised in Table 2.

Figure 1: Pattern of Cholera in South Africa, 1980 - 1987



Source: National Department of Health

Table 2: Total number of cholera cases and deaths by province, August 2000 – July 2001

Province	Cumulative Cases	Total Confirmed Deaths	Case Fatality Rate (%)
Eastern Cape	9	10	-
Free State	1	0	0.00
Gauteng	65	4	6.15
KwaZulu-Natal	106 389	219	0.21
Limpopo	793	2	0.25
Mpumalanga	125	4	3.20
Northern Cape	0	0	-
North West	6	0	0.00
Western Cape	1	0	0.00
South Africa	106 389	239	0.22

Source: National Department of Health

KwaZulu-Natal accounted for 96% of all cholera cases reported to the NDoH.^{3,6}

Despite a high number of people infected in KwaZulu-Natal, both the province and the country had a low CFR of 0.21% and 0.22% respectively, implying very good case management. The target CFR, given good preparedness and implementation of control strategies is <1%.¹²

Cholera – October 2001 to August 2002

The 2001/02 epidemic started in October 2001 in KwaZulu-Natal. Between January and March 2002, the disease spread to other provinces. A total of 17 890 cases of cholera were reported compared to the 106 389 cases reported during the previous epidemic. Most of the cases and deaths were in KwaZulu-Natal and the Eastern Cape. The North West had a sudden outbreak in the Westvaal Mine that affected 11 miners and 1 nurse. The number of cases and CFRs are shown in Table 3.^b

Eastern Cape

The Eastern Cape was the second most affected province, where the epidemic started in the Oliver Tambo district, and lasted for six months. The epidemic was mainly attributed to unsafe water as a result of untreated wastewater that was emptied into the Umtata River.⁷

Cholera notification in the Eastern Cape was difficult due to a lack of infrastructure and resources. Cases were supposedly reported weekly, but there was under-reporting. Also, some cases were reported collectively after two weeks. Most of the cases were reported from Mqanduli, Qiqgolo and Port St Johns. Based on provincial data the majority of the infected people were between 14 and 45 years old.⁷

Table 3: Number of cholera cases and deaths by province, August 2001 – October 2002

Province	Total Cases	Total Deaths	Case Fatality Rate (%)
Eastern Cape	2 335	45	1.93
Free State	0	0	-
Gauteng	24	2	-
KwaZulu-Natal	15 062	70	0.46
Limpopo	465	2	0.43
Mpumalanga	4	1	-
Northern Cape	0	0	-
North West	12	0	0.00
Western Cape	0	0	-
South Africa	17 902	120	0.67

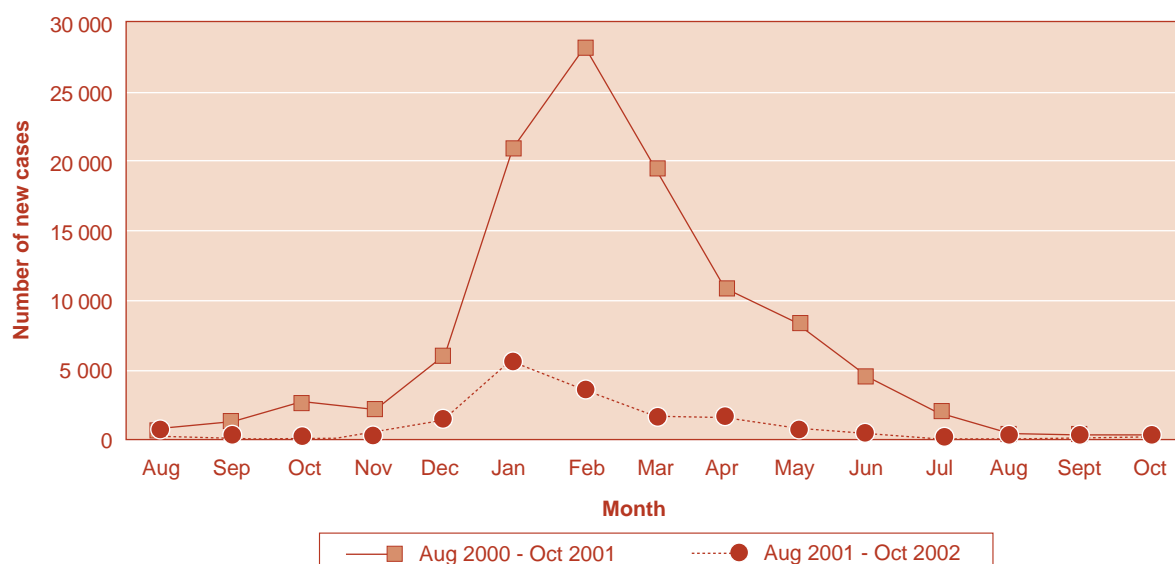
Source: National Department of Health

KwaZulu-Natal

An average of 90% reduction in cholera incidence between 2000/01 and 2001/02 was maintained throughout the epidemic period.⁷ Many of the cholera cases and the high CFR were observed in a previously unaffected area of Ladysmith. The decrease in the number of cholera cases was attributed to good prevention and control strategies. The Department of Water Affairs and Forestry (DWAF) contributed to control of the epidemic through the provision of safe drinking water. Also, most of the people in the province had already developed immunity.⁷ As part of epidemic preparedness activities, improving and sustaining personal and environmental hygiene has been prioritised and is ongoing.

^b The case fatality rates in Gauteng and Mpumalanga were not included in the table because further investigation showed that some of the fatalities originated either in Swaziland or Mozambique.

Figure 2: Comparison between the 2000/01 and 2001/02 cholera epidemics in KwaZulu-Natal



Source: KwaZulu-Natal Department of Health

Cholera in 2003

There was a drop in the number of cases and deaths reported as well as fewer provinces reporting cholera outbreaks compared to the 2001/02 season. Limpopo improved greatly from 465 cases with 2 deaths in 2001/02 down to zero cases in 2003. Free State and Northern Cape continued to report zero cases.⁷

The national CFR rose to 1.05% (Table 4). This may indicate that case management interventions are lax in relatively smaller outbreaks. The Eastern Cape has reported the largest number of cases and deaths accounting for the bulk of all cases reported at national level.

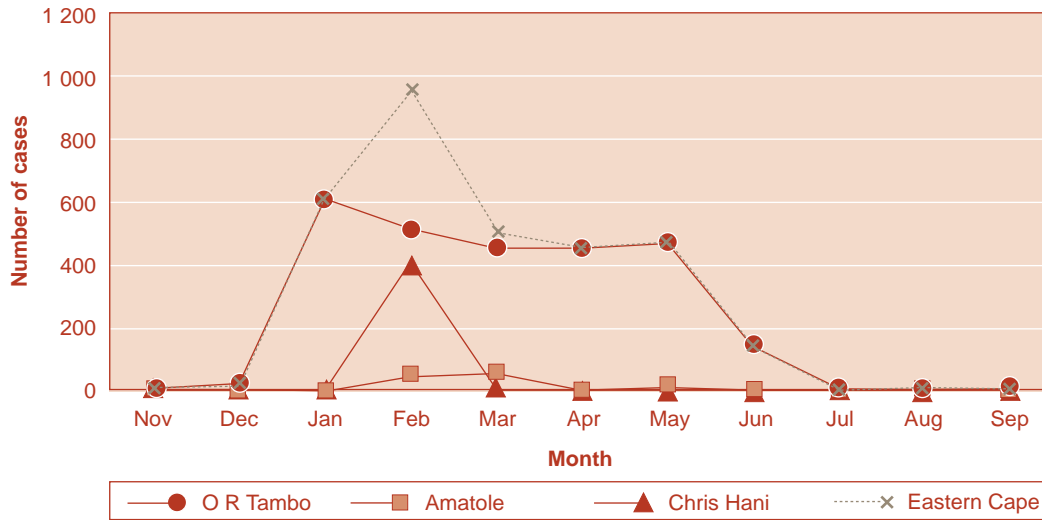
Table 4: Reported Cholera cases – January to September 2003

Province	Total Cases	Total Deaths	Case Fatality Rate (%)
Eastern Cape	3 142	37	1.18
Free State	0	0	-
Gauteng	3	0	0
KwaZulu-Natal	536	0	0
Limpopo	0	0	-
Mpumalanga	113	3	3
Northern Cape	0	0	-
North West	0	0	-
Western Cape	1	0	0
South Africa	3 795	40	1.05

Source: National Department of Health

Eastern Cape

Figure 3: Distribution of cholera cases by district in the Eastern Cape: November 2002 to September 2003



Source: Eastern Cape Department of Health

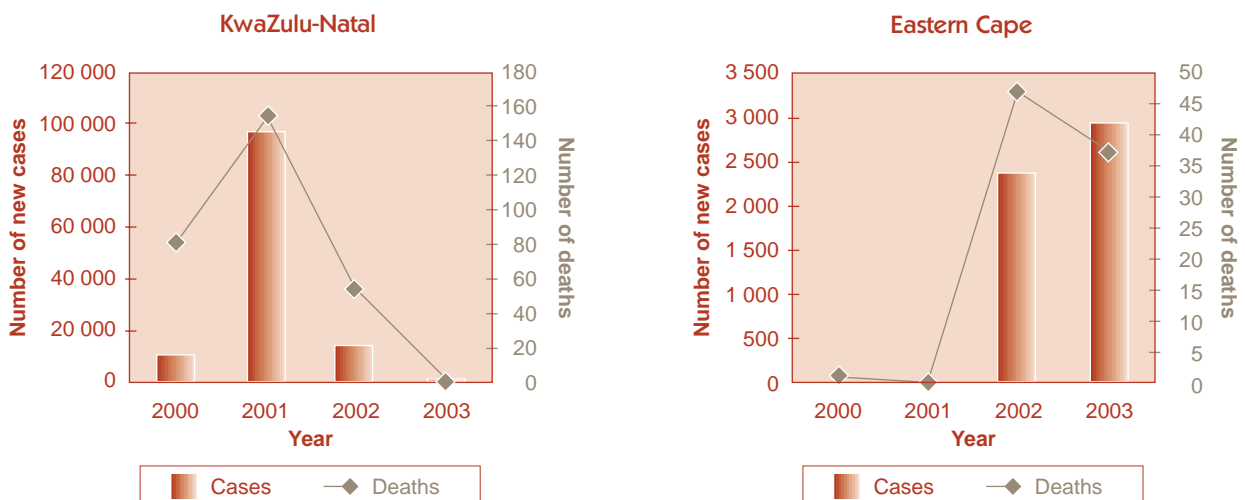
Comparison of cholera outbreaks in KwaZulu-Natal and Eastern Cape

The epidemic started in OR Tambo district around the third week of December 2002, and peaked during the second week of January 2003. In February the second district, Chris Hani, also experienced an outbreak. Chris Hani district responded quickly, and the epidemic did not last more than five weeks. However, a few cases were reported in Amatole district. OR Tambo was the worst affected district, and continued to report cases until June 2003.⁷

These two provinces accounted for the majority of cases during 2002/03 but had different experiences as shown in Figure 4.

Since the re-emergence of cholera in August 2000, epidemics of varying magnitude have been reported each year in various parts of the country particularly the rural areas of KwaZulu-Natal, Eastern Cape and Mpumalanga. Following a huge outbreak

Figure 4: Comparison of Annual Distribution of Cholera Cases between KwaZulu-Natal and Eastern Cape, 2000 - 2003

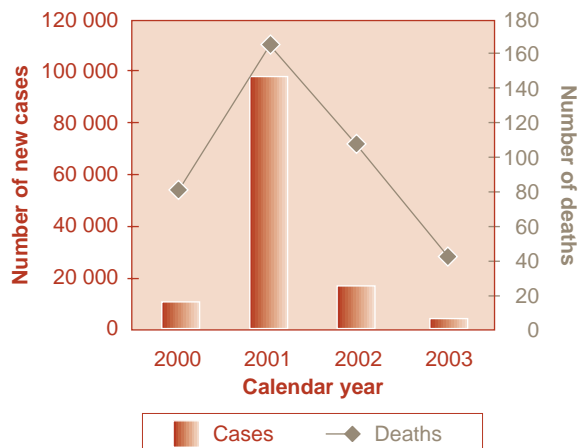


Source: National Department of Health

Note: The scale of these 2 graphs is different.

during 2001, predominantly cases reported from KwaZulu-Natal, the disease has been on a steady decline. Resurgence / upsurges have occurred in those areas previously mildly affected, or new areas, possibly due to the presence of a high number of susceptible individuals (Figure 5).

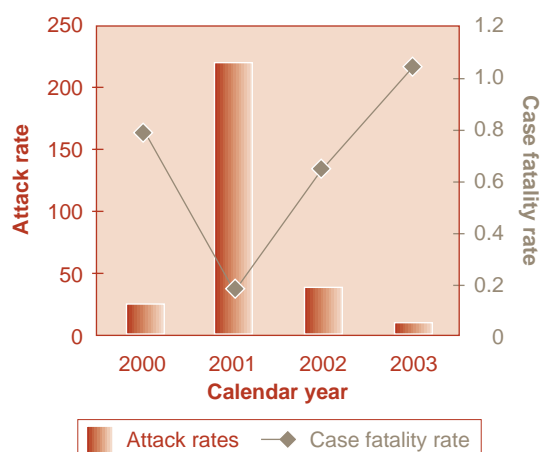
Figure 5: Distribution of cholera cases and deaths in South Africa, 2000 – September 2003



Source: National Department of Health

A high CFR was observed in 2003. Some of the factors possibly associated with deaths include; low accessibility to treatment centres, inadequate home treatment, and slow care seeking practices.⁷

Figure 6: National annual distribution of cholera attack and case fatality rates, 2000 – September 2003



Source: National Department of Health

Case fatalities have increased from 0.22% in 2001 when SA had its worst epidemic since the 1980s (mostly in KwaZulu-Natal) to 1.05% when the epidemic was moderate (most cases were reported from Eastern Cape).

Conclusion and Recommendations

The bulk of the cases over the last two years came from KwaZulu-Natal but the exact source of the *Vibrio cholerae* (index case) was not confirmed, although water sources were found to be contaminated. The majority of the cholera cases came from poverty stricken areas (mostly in rural areas) without access to safe drinking water and adequate sanitation.

The total number of the cholera cases in 2000/01 was over 100 000, but the case fatality rate was relatively low (i.e. 0.22%) which is below the WHO recommended figure of 1%, with good preparedness and implementation of control strategies. This indicated that despite poor provision of safe drinking water and adequate sanitation, case management was very good.

Poor infrastructure and weak public health governance in the Eastern Cape were identified as key constraints to adequate implementation of control and case management strategies which led to the high CFR experienced in that province.

The extent of cholera as a water-borne disease indicates that there may be other water-borne disease like shigellosis, parasites and viruses, which are not detected. It is therefore recommended that the following interventions should be put in place:

1. All relevant workers in risk areas should have access to, and be trained in using, the NDoH cholera control guidelines.
2. The DWAF should speed up the provision of safe drinking water, especially in the rural parts of KwaZulu-Natal, Eastern Cape, Mpumalanga and Limpopo.
3. Social mobilisation and health promotion should be strengthened particularly in "at high-risk" areas. Besides encouraging communities to build pit latrines, proper refuse disposal, safe food handling, hand washing and other health education, efforts should be made for follow-up of cases and contact case tracing.
4. Local capacity and intersectoral collaboration involving traditional religious, government and NGOs leaders need to be strengthened through JOCs in order to adequately monitor and ensure sustainable cholera control strategies.
5. Early case detection; while efforts are underway to contain the current epidemic, it is important that information is available on the status and trend of diarrhoeal diseases from the local health units [hospitals and clinics] and surrounding communities. This would be useful in order to anticipate any abnormal number of cases.

6. Laboratory surveillance for diarrhoeal diseases should be strengthened for purposes of monitoring epidemic control and defining causative organisms and antibiotic profiles for cholera and other diarrhoeal diseases.
7. Public Health Acts should be enforced so that polluters should be responsible for cleaning their waste, for example in rivers and streams.
8. More research needs to be undertaken to identify the reservoir(s) for *V. cholerae*, particularly in KwaZulu-Natal, which has been the origin of the SA current epidemics.
9. The national Department of Health should strengthen and scale-up the blueprint of epidemic preparedness and response, which is based on the Integrated Disease Surveillance and Response as recommended by the WHO. This strategy will not only assist in the management of cholera, but also other emerging and re-emerging epidemic-prone infectious diseases.
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