



INTERIM SITUATION REPORT, 6 April 2023

(Based on laboratory testing data up until 29 March 2023)

Issued by the National Institute for Communicable Diseases based on laboratory testing data

Highlights

- The NICD has tested 5507 serum samples for measles since epidemiological week 40, 2022, of which 911 (17%) were confirmed positive. In outbreak-affected provinces, 905 cases have been reported since week 40, 2022. In the past weeks (week 12 up until week 13, 29/03/2023) there have been 53 laboratory-confirmed measles cases detected across the country all of which were from the outbreak-affected provinces.
- The percentage of samples testing positive (PTP) increased from 15% of 244 samples tested in week 11 to 21% of 191 samples in week 12.
- Measles outbreak has been declared in all the provinces in South Africa except for the Eastern Cape. In week 12, no new cases were reported in Free State, KwaZulu-Natal, and Northern Cape provinces.
- The measles strain detected in Limpopo province and North West province is genotype D8 which is similar to the strain in Zimbabwe in the 2022 outbreak.
- In the provinces where an outbreak has been declared, the most affected age groups are still the 5-9 year olds (43%) with a considerable proportion of cases reported among the 1-4 (24%) and 10-14 age groups (19%). Vaccination campaigns should therefore also include children aged 10 to 14.
- The majority of cases (68%) were reported from primary healthcare facilities, and the highest proportion of cases reported from hospitals (56%) was reported in children under the age of one.
- Members of the public are urged to ensure their children are vaccinated against measles.
- Nationally, the reproduction number as of 2023-03-22 was estimated to be 0.39 (0.14 - 0.9), suggesting that infection incidence is decreasing. There is a 97% chance that the reproduction number was below 1 as of 2023-03-22.
- At the provincial level, the reproduction number as of 2023-03-22 was estimated to be 0.97 (0.61 - 1.3) in Limpopo, suggesting that infection incidence is stable. In contrast, the reproduction number as of 2023-03-22 was estimated to be 0.69 (0.44 - 1) in Mpumalanga, 0.82 (0.47 - 1.1) in Gauteng, and 0.76 (0.49 - 1) in North West, suggesting that infection incidence is likely decreasing.
- The weekly report on nowcasts and forecasts for measles in South Africa is available at <https://www.sacema.org/sacema-nicd-measles-forecast/>

Outbreak overview

From epidemiological week 40, 2022 (ending 8 October 2022) to week 13, 2023 (ending 29 March 2023) the NICD has tested 5507 serum samples for measles of which 911 (17%) were confirmed measles cases. The number of samples submitted, and percentage of laboratory confirmed measles positive cases are shown in Figure 1. From epidemiological week 40 of 2022 to week 13 of 2023, 905 laboratory-confirmed cases were reported from eight provinces with declared measles outbreaks; Limpopo (362 cases), Mpumalanga (107 cases), North West (213 cases), Gauteng (156 cases), Free State (30 cases), Western Cape (12), KwaZulu-Natal (18) and Northern Cape (7) (Table 1). The geographical distribution of cases across South Africa from week 40 of 2022 until week 13 of 2023 is shown in Figure 2. The number of blood samples and throat swabs submitted to the NICD for measles serology and PCR testing has decreased compared to previous weeks (Figure 3).

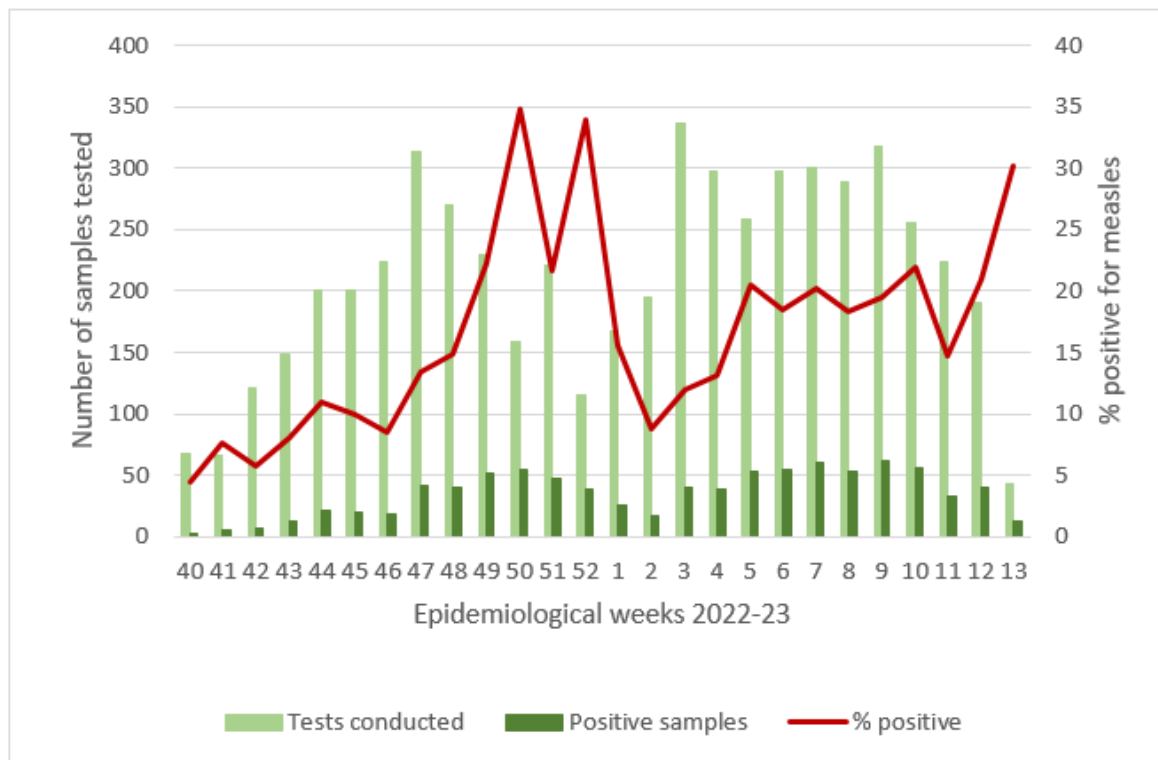


Figure 1. Number of serum samples submitted to the NICD for measles, week 40 2022, until week 13, 2023, and the number (dark green) and % tested positive (red line), by epidemiological week using the date the specimen was collected. *Data from week 13 represent partial data, and will be updated in next week's situation report, when complete data from samples collected that week becomes available.

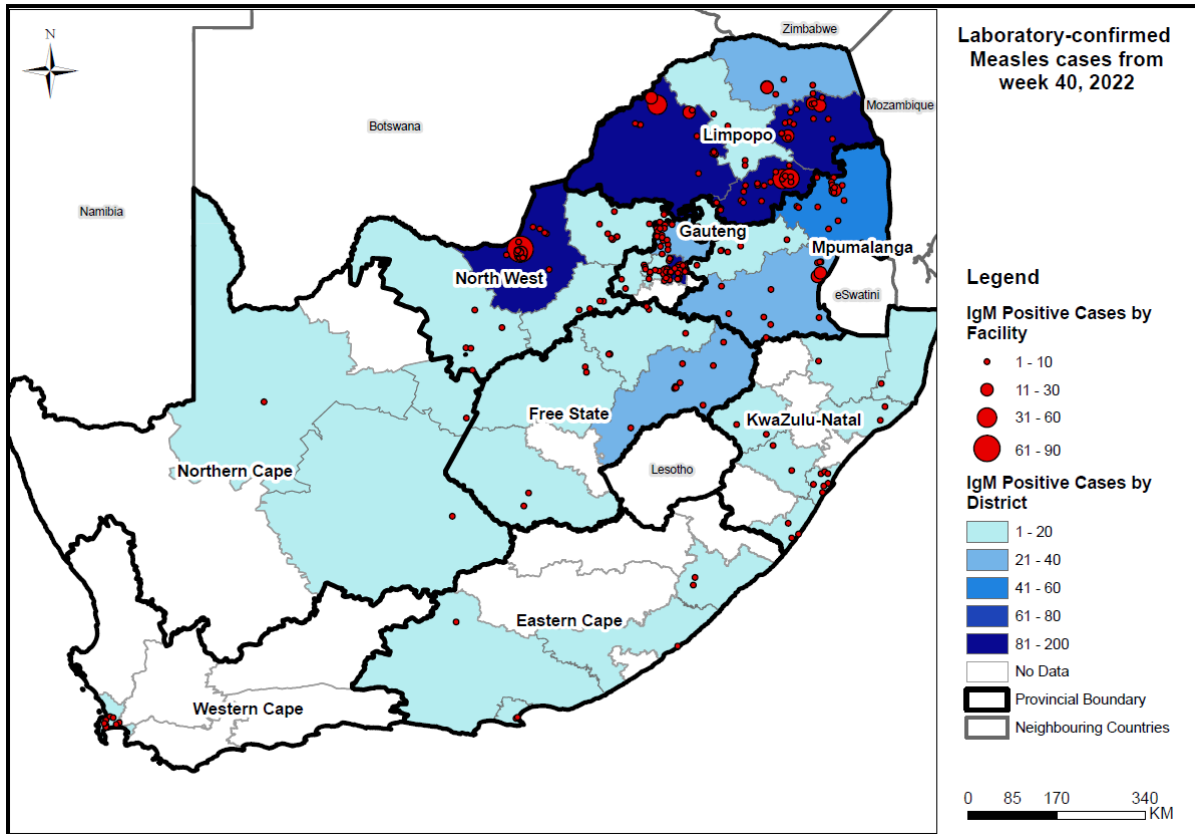


Figure 2. Distribution of laboratory-confirmed measles cases by testing site (red dots – the size of the dot indicates the number of cases from that facility) and district of South Africa (deepening colour of blue indicates the total number of cases by sub-district), from week 40 to week 13, 2023.

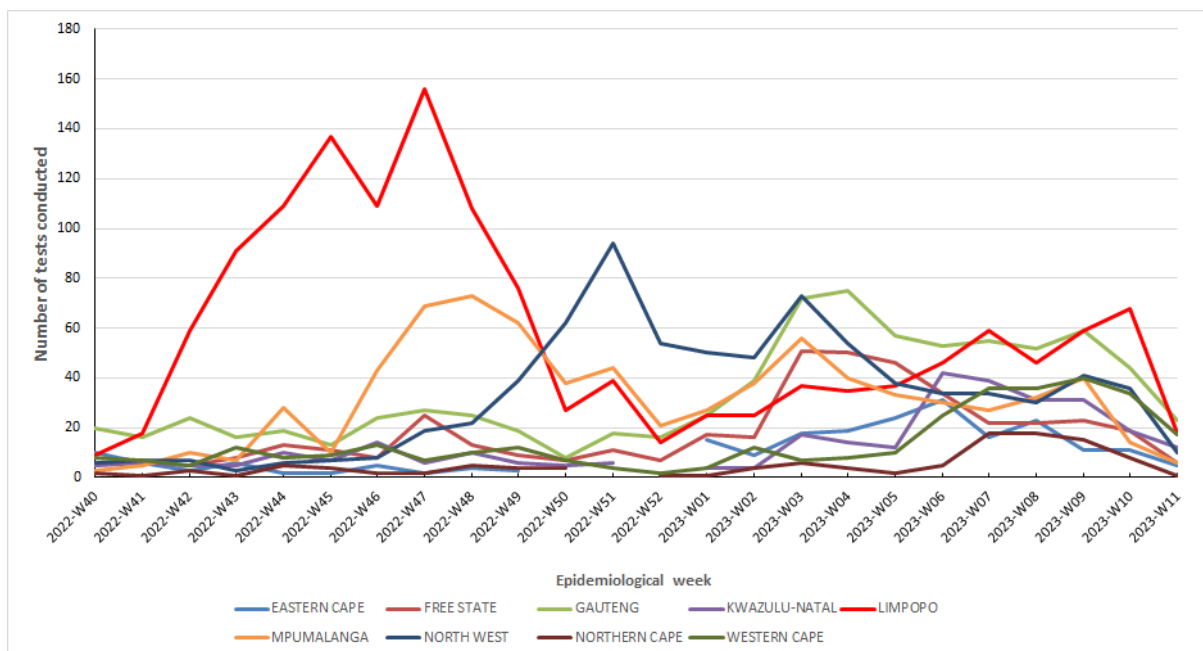


Figure 3. Number measles of tests conducted from week 40 2022, until week 13, 2023, by province and epidemiological week using the date the specimen was collected. *Data from week 13 represent partial data, and will be updated in next week's situation report, when complete data from samples collected that week becomes available.

*Note: Data is subject to change as new results are added or updated. Please contact Mr Tshepo Motsamai (tshepom@nicd.ac.za) to update data elements

Reproduction number



The figure below shows the national time-varying reproduction number over the past 90 days. The estimated reproduction number dipped below 1 from early December to early January, coinciding with the school holidays, then increased, reaching a peak of approximately 1.3 in mid-January. The reproduction has since declined, crossing the threshold value of 1 in mid-February. The reproduction has since declined, crossing the threshold value of 1 in mid-February.

Nationally, the reproduction number as of 2023-03-22 was estimated to be 0.39 (0.14 – 0.9), suggesting that infection incidence is decreasing.

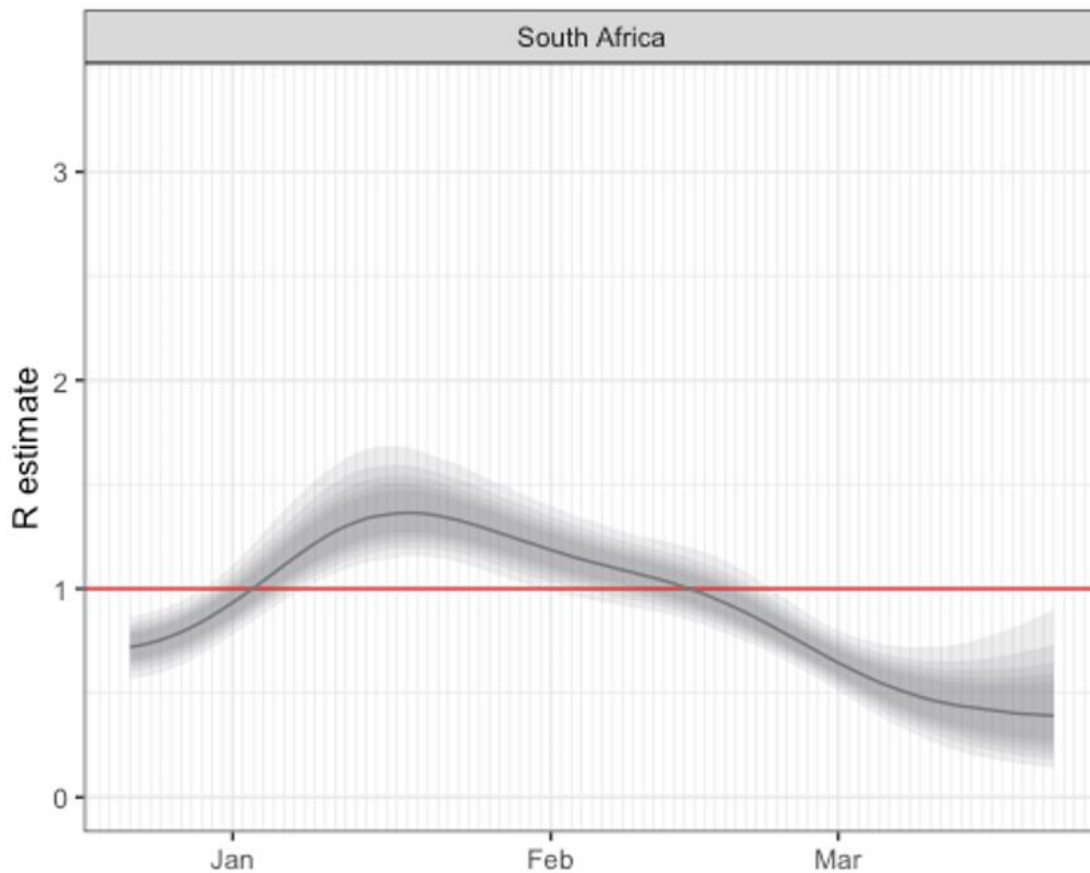


Figure 4. National time-varying reproductive estimate from early December 2022 to early April 2023.

The weekly report on nowcasts and forecasts for measles in South Africa is available at <https://www.sacema.org/sacema-nicd-measles-forecast/>

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Table 1. Cases of laboratory-confirmed measles tested by the NICD from all provinces in South Africa from epidemiological week 40, 2022 to week 13, 2023. Outbreak-associated cases are contained within the red bordered cells* (EC=Eastern Cape; FS=Free State; GT=Gauteng; KZN=KwaZulu-Natal; LP=Limpopo; MP=Mpumalanga NW=North West; NC=Northern Cape). * A measles outbreak is classified as three or more confirmed laboratory measles cases reported within 30 days of onset of disease, in a district. *Data from week 13 represent partial data, and will be updated in next week's situation report, when complete data from samples collected that week becomes available.

Epi Week	EC	FS	GT	KZN	LP	MP	NW	NC	WC	Total
40, 2022			1		2					3
41, 2022					5					5
42, 2022			1		4		1		1	7
43, 2022	1				11					12
44, 2022				1	19	2				22
45, 2022		1	1		12	3	1	1	1	20
46, 2022			1	1	9	8				19
47, 2022		1	2		18	15	4	1	1	42
48, 2022			1		18	17	4			40
49, 2022		3	2	2	10	14	18	1	1	51
50, 2022			3		16	6	30			55
51, 2022		4	3	1	7	5	28			48
52, 2022		2	1		6	5	24	1		39
01, 2023		3	1		7	1	13		1	26
02, 2023		1	2		3	4	7			17
03, 2023	1	4	9		9	5	11			40
04, 2023	1	2	10	2	9	5	9		1	39
05, 2023		2	12	2	20	2	14		1	53
06, 2023	1	1	17	3	19	3	10		1	55
07, 2023			19	3	26	2	9	1	1	61
08, 2023	2	1	14	1	20	5	8	2		53
09, 2023		3	19	1	26	4	8		1	62
10, 2023		1	17		27		11			56
11, 2023		1	9	1	22					33
12, 2023			7		28	1	3		1	40
13, 2023			4		9					13
Total	6	30	156	18	362	107	213	7	12	911

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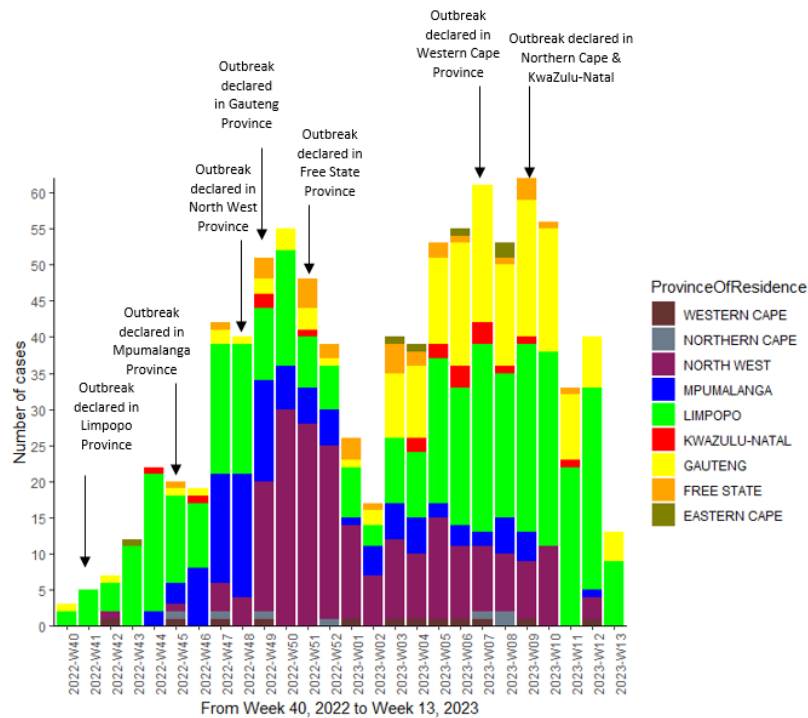


Figure 5. The epidemiological curve of the number of laboratory-confirmed measles cases in South Africa from week 40, 2022 to week 13, 2023 (ending 09 October, 2022 – ending 29 March, 2023) by specimen collection dates and by province, indicating the weeks in which outbreaks were declared in Limpopo, Mpumalanga, North West, Gauteng, Free State provinces and Western Cape. *Data from week 12 represent partial data, and will be updated in next week’s situation report, when complete data from samples collected that week becomes available.

The age of laboratory-confirmed cases across the eight provinces ranges from two months to 67 years (Table 2). The majority of cases 393, (43%) were in the 5-9-year age group, followed by 216 (24%) in the 1-4-year age group and 174 (19%) in the 10-14-year age group. The attack rates are highest among age groups 1-4 and 5-9 (Table 2). In the provinces where a measles outbreak has been declared, 98(10.8%) of the 905 cases were vaccinated, 116 (12.8%) were unvaccinated, and the vaccination status of 691 (76.4%) is unknown (Table 3). The age groups with the highest number of vaccinated cases are those aged 1-4 years and those aged 5-9 years (Table 4). Whilst the NICD is presently not able to provide data on hospital admission rates nor on measles mortality rates, Table 5 reflects the number and proportion of laboratory-confirmed measles cases that originate from hospitals as opposed to primary healthcare facilities. Whilst cases that are seen at hospitals may not necessarily be admitted, this proportion gives us an indication of the severity of illness, as patients consulted tertiary care facility.

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Table 2. Age distribution of laboratory-confirmed measles cases from epidemiological week 40, 2022 to week 13, 2023, in provinces with a declared measles outbreak with age-specific attack rates.

Age group	FS		GT		LP		MP		NW		WC		NC		KZN		Total	
	# case s	AR	# case s	AR	# case s	AR	# case s	AR	# case s	AR	# case s	AR	# case s	AR	# case s	AR	# case s	AR
<1 year	4	7.51	14	5.31	14	10.6 1	5	5.52	8	9.90	2	1.67	0	0.00	1	0.41	48	4.75
1-4 years	11	5.24	29	2.79	76	14.2 5	31	8.88	56	17.7 9	5	1.07	2	1.97	6	0.62	216	5.43
5-9 years	12	4.49	69	5.50	165	24.7 6	38	8.89	96	24.5 1	1	0.18	3	2.38	9	0.76	393	8.05
10-14 years	3	1.04	26	2.12	82	12.2 9	22	4.75	36	8.82	2	0.34	2	1.59	1	0.08	174	3.51
≥15 years	0	0.00	18	0.15	25	0.63	11	0.32	17	0.57	2	0.04	0	0.00	1	0.01	74	0.19
Total	30	1.03	156	0.97	362	6.09	107	2.27	213	5.09	12	0.17	7	0.53	18	0.16	905	1.68

FS= Free State; GT= Gauteng; KZN=KwaZulu-Natal; LP=Limpopo; NW=North West; AR = attack rate per 100,000 children within the age-band, denominators from mid-year population estimates,

2022, StatsSA

Table 3. Vaccination status for laboratory-confirmed measles cases from epidemiological week 40, 2022 to week 13, 2023 in provinces with a declared measles outbreak.

Vaccination status	FS	GT	LP	MP	NW	WC	NC	KZN	Total
Vaccinated	8	11	31	15	18	6	3	6	98 (10.8%)
Unvaccinated	3	13	51	18	30	0	0	1	116 (12.8%)
Unknown	19	132	280	74	165	6	4	11	691 (76.4%)
Total	30	156	362	107	213	12	7	18	905

Table 4: Age distribution of vaccinated persons from epidemiological week 40, 2022 to week 13, 2023 in provinces with a declared measles outbreak.

Age group	FS	GT	LP	MP	NW	WC	NC	KZN	Total
< 1 year	1	2	2	0	0	2	0	0	7
1 – 4 years	2	2	11	2	5	3	0	2	27
5 – 9 years	2	7	14	9	12	1	2	4	51
10 – 14 years	3	0	4	4	1	0	1	0	13
≥15 years	0	0	0	0	0	0	0	0	0
Total	8	11	31	15	18	6	3	6	98

Table 5. The facility type where laboratory-confirmed measles cases have been identified, for epidemiological week 40, 2022 to week 13, 2023, South Africa. Submission of a specimen from a hospital may suggest (but is not firm evidence) that the patient was admitted. The number of admissions will be lower than the number of cases reported from hospitals.

Reporting Health Facility	<1 years	1-4 years	5-9 years	10-14 years	≥15 years	Total
From PHC/CHC/other	21	146	273	121	53	614 (68)
From a hospital (%)	27 (56)	70 (32)	120 (31)	53 (30)	21 (28)	291 (32)
Total	48	216	393	174	74	905

An overview of the outbreak in the Limpopo Province

In total, 362 cases of laboratory-confirmed measles were reported between epidemiological week 40, 2022 to week 13, 2023 with the majority of the measles cases reported in the Greater Sekhukhune, Mopani and Waterberg districts. Figure 6 shows an epidemiological curve from week 40, 2022 to week 13 of 2023 in Limpopo province. Waterberg district reported the highest number of measles cases which is 120 cases, Mopani district reported 90 cases, Greater Sekhukhune district reported 116 cases, Vhembe district reported 30 cases and Capricorn district reported six cases. Dilokong hospital reported 42 cases out of the 116 from Greater Sekhukhune. Amongst the 30 cases reported from the Vhembe district, 27 cases originated from Makhado (Louis Trichardt Hospital and Clinic). In Waterberg district, 43 cases of 120 have been reported from Witpoort Hospital in Lephalale. The age of measles cases across Limpopo ranged from 4 months to 42 years.

Measles virus infection affected mostly the age group 5-9 years (Table 2), with an attack rate of 24.76 per 100,000 persons. This was followed by the 1-4 age group with an attack rate of 14.25 per 100,000 persons. Of the 362 measles cases in Limpopo province, 280 (77%) had an unknown vaccination status, 31 (9%) were vaccinated, and 51 (14%) were unvaccinated (Table 3).

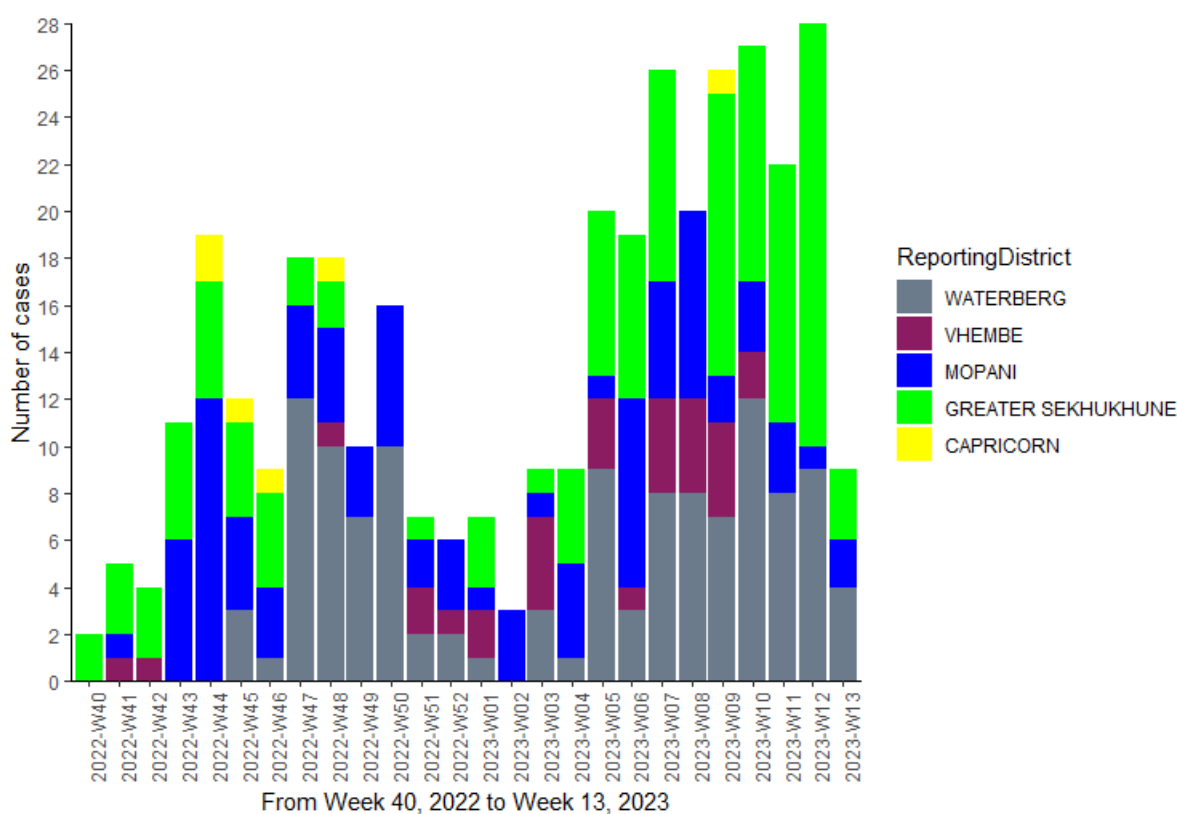


Figure 6. The epidemiological curve of the number of laboratory-confirmed measles cases by districts of Limpopo Province from epidemiological week 40, 2022 to week 13, 2023 by specimen collection dates

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Mpumalanga

In total, 107 cases of laboratory-confirmed measles have been reported since epidemiological week 40, 2022. The measles outbreak was declared in Mpumalanga province on 11 November 2022 (epidemiological week 45, 2022). Figure 7 shows an epidemiological curve for Mpumalanga province from week 44, 2022 to week 13, 2023, with Ehlanzeni and Gert Sibande districts reporting the majority of cases, 48 and 41, respectively. Dwarloop clinic reported 17 of the 48 cases from the Ehlanzeni district, while Dundonald clinic reported 12 out of the 41 cases from the Gert Sibande district.

The age of cases across Mpumalanga ranged from 4 months to 60 years. The most affected age group by the measles outbreak is 5-9 years (Table 2), with an attack rate of 8.89 per 100,000 persons. Of the 107 cases, 74 had an unknown vaccination status, 15 were vaccinated and 18 were unvaccinated (Table 3).

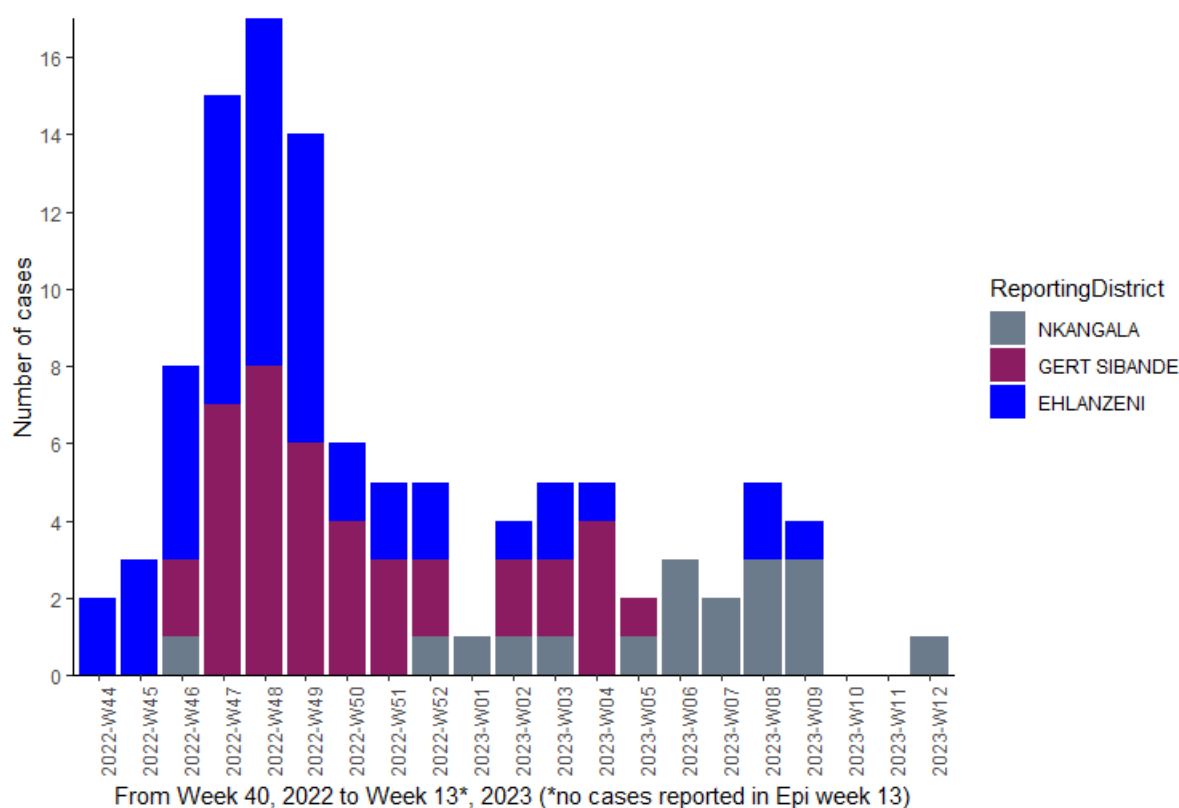


Figure 7. The epidemiological curve of the number of laboratory-confirmed measles cases in districts of Mpumalanga Province from epidemiological week 44, 2022 to week 13, 2023 by specimen collection dates.

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North West

A total of 213 laboratory confirmed-measles cases have been reported in North West Province since epidemiological week 40, 2022 (Figure 8). An outbreak was declared in North West province on 02 December 2022 (epidemiological week 48, 2022) after three laboratory-confirmed cases were reported in Ngaka Modiri Molema district. Majority of the laboratory-confirmed cases are among children aged 5-9 years, with 96 cases and an attack rate of 24.51 per 100,000 persons, followed by those aged 1-4 years with 56 cases, with an attack rate of 17.79 per 100,000 persons (Table 2). A total of 18 of the 213 cases were vaccinated and 165 had unknown vaccination status (Table 3). Of these 213 cases, majority (178) were reported from the Ngaka Modiri Molema district, with 73 cases reported from a single clinic, Lonely Park Clinic in Mahikeng. Twenty cases were reported from Bojanala Platinum district, eight cases from Dr Kenneth Kaunda district and seven cases from Dr Ruth Segomotsi Mompoti district.

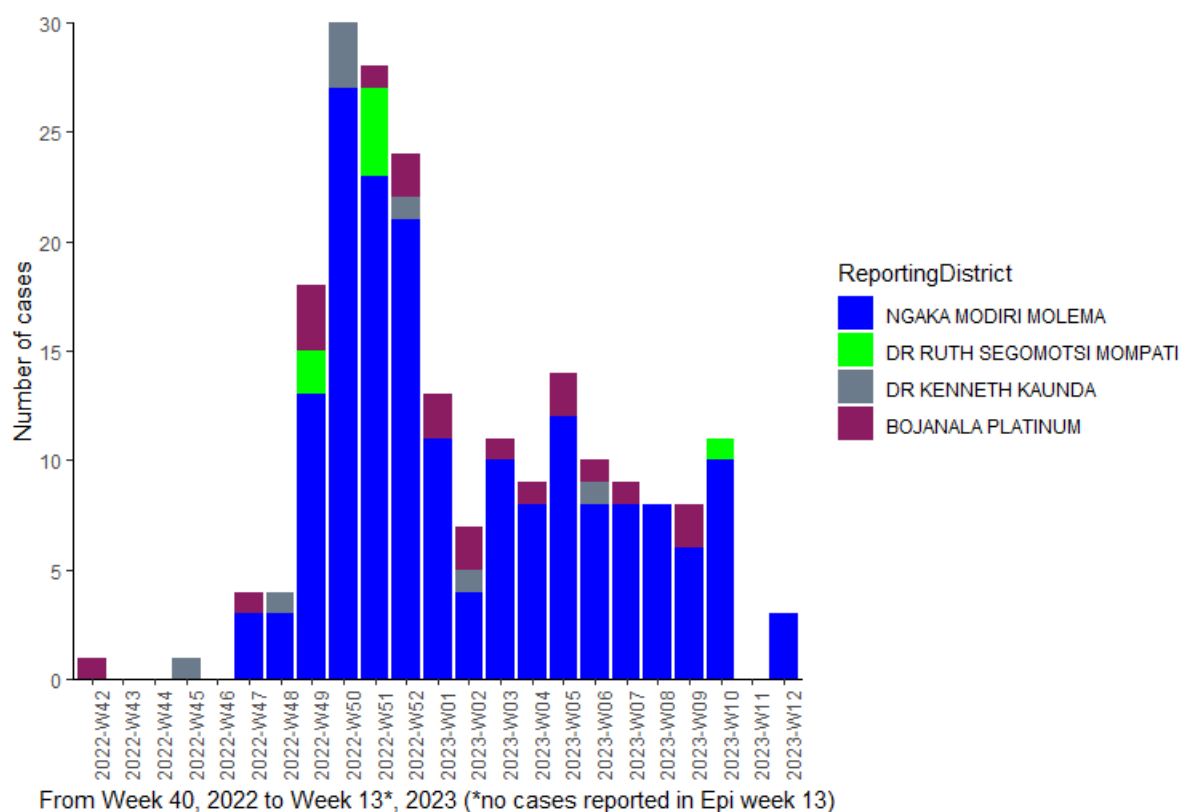


Figure 8. The epidemiological curve of the number of laboratory-confirmed measles cases in districts of North West Province from epidemiological week 42, 2022 to week 13, 2023 by specimen collection date.

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Gauteng

A total of 156 laboratory-confirmed measles cases have been reported from epidemiological week 40, 2022 to week 13, 2023 in Gauteng Province displayed in Figure 9. An outbreak was declared on 06 December 2022 (epidemiological week 49, 2022) after three laboratory-confirmed measles cases were reported at a single health facility, Ethafeni clinic in City of Ekurhuleni Metropolitan Municipality. To date, majority of cases, 107, have been reported from the City of Ekurhuleni, 25 from the City of Tshwane, 16 cases from the City of Johannesburg and eight cases from West Rand. Amongst these 156 cases, 132 have unknown vaccination status while 11 cases were vaccinated (Table 3). Of the 100 cases in Ekurhuleni, 14 were identified at Daveyton main clinic in Ekurhuleni.

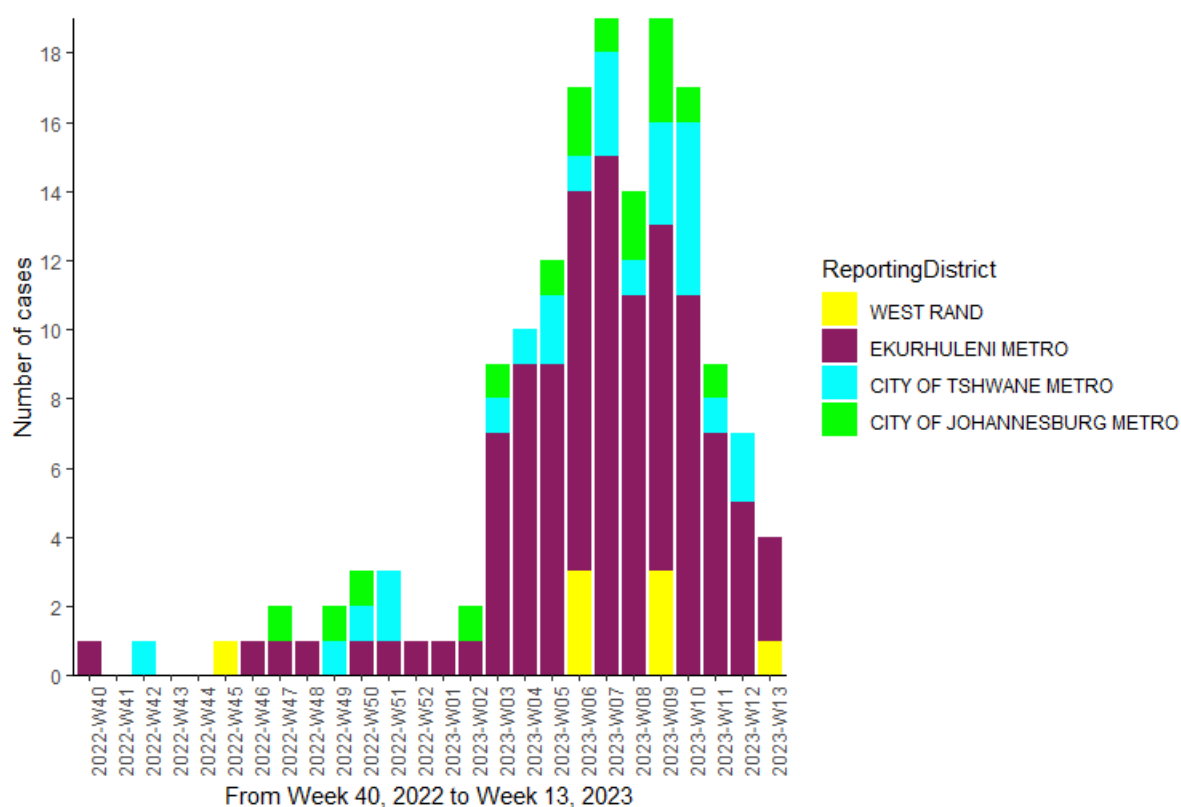


Figure 9. The epidemiological curve of the number of laboratory-confirmed measles cases in districts of Gauteng Province from epidemiological week 40, 2022 to week 13, 2023 by specimen collection dates.

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Free State

There are currently 30 laboratory-confirmed measles cases in this province since epidemiological week 40, 2022 (Figure 10). An outbreak was declared on 20 December 2022 (epidemiological week 51, 2022) in Free State province after three laboratory-confirmed measles cases were reported in Thabo Mofutsanyana district. Of the 30 cases, 21 have been reported from Thabo Mofutsanyana district, six from Fezile Dabi district, two cases from Xhariep district and one case from Lejweleputswa district. Of these 21 cases reported from Thabo Mafutsanyana district, eight were reported by Bethlehem clinic. The vaccination status of 19 cases is unknown, whereas three cases were not vaccinated, and eight were (Table 3).

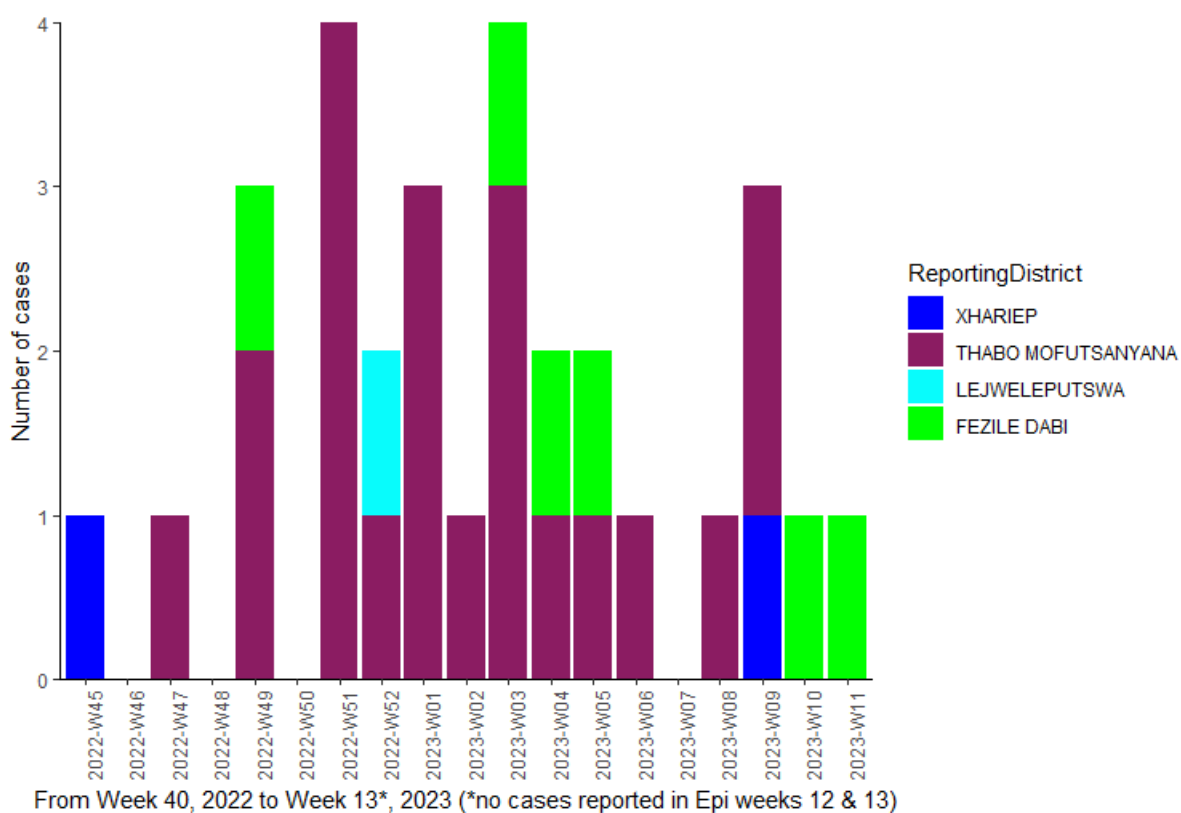


Figure 10. The epidemiological curve of the number of laboratory-confirmed measles cases in districts of Free State Province from epidemiological week 40, 2022 to week 13, 2023 by specimen collection dates.

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Western Cape

An outbreak was declared in the Western Cape Province on the 20 February 2023 (epidemiological week 08, 2023) following detection of four laboratory-confirmed measles in the City of Cape Town (Figure 11). Since epidemiological week 40, 2022, a total of 12 measles cases have been reported from the Western Cape, with all of the cases coming from the City of Cape Town. Six of these cases have been vaccinated, while the vaccination status of the remaining six is unknown (Table 3).

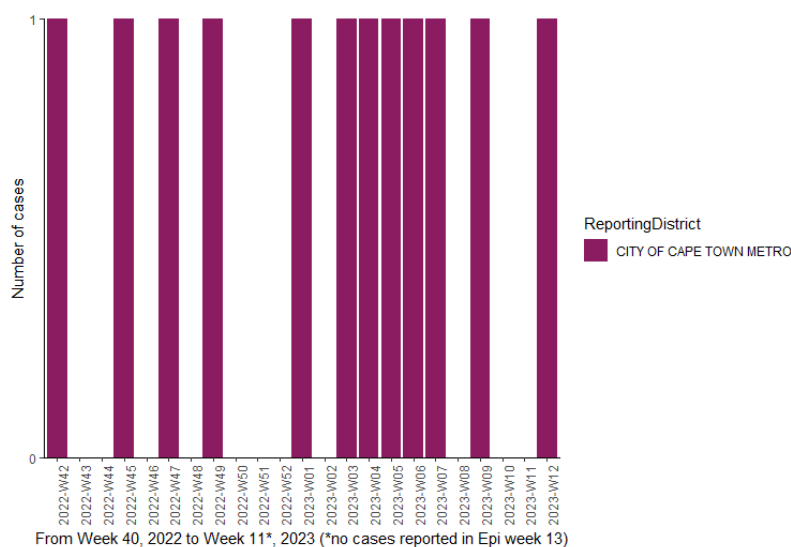


Figure 11. The epidemiological curve of the number of laboratory-confirmed measles cases in districts of Western Cape Province from epidemiological week 40, 2022 to week 13, 2023 by specimen collection dates.

Northern Cape

Measles outbreak was declared in the Northern Cape province after three laboratory-confirmed measles cases were reported in one facility in Kimberley on 28 February 2023. There are a total of seven cases in this province as of week 11 of 2023, with no cases recorded in weeks 9 to 13 (Figure 12). Five of the cases are from the Frances Baard district, with one from Pixley Ka Seme and one from ZF Mgcawu. Three of the seven cases in this province have been vaccinated, while the vaccination status of the remaining four is unknown (Table 3).

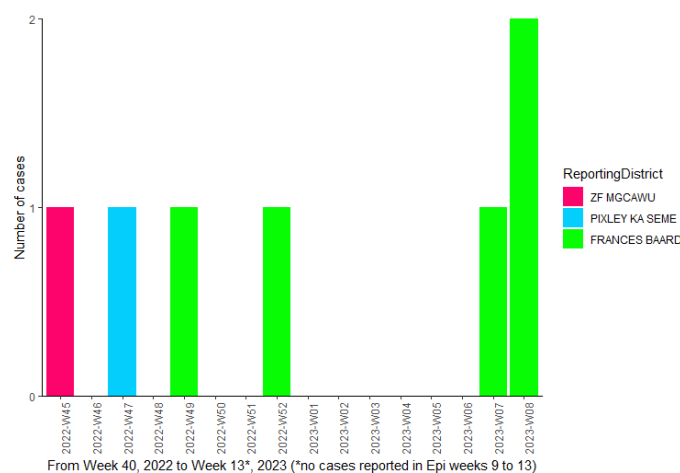


Figure 12. The epidemiological curve of the number of laboratory-confirmed measles cases in districts of Northern Cape Province from epidemiological week 45, 2022 to week 13, 2023 by specimen collection dates.

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KwaZulu-Natal

Measles outbreak was declared on the 1 March, 2023 (epidemiological week 09, 2023) in KwaZulu-Natal province after four laboratory-confirmed measles cases were reported in the EThekweni. There are 18 cases in this province as of week 13 of 2023, with no new cases reported in weeks 12 and 13 (Figure 13). Six of these cases were vaccinated, while the status of the 11 cases is unknown (Table 3).

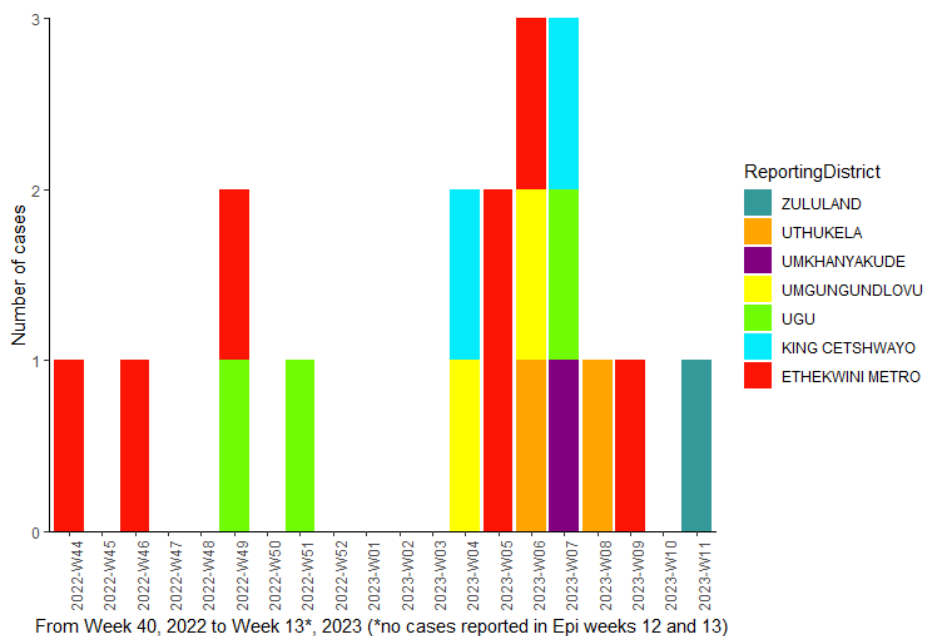


Figure 13. The epidemiological curve of the number of laboratory-confirmed measles cases in districts of KwaZulu-Natal Province from epidemiological week 44, 2022 to week 13, 2023 by specimen collection dates.

Conclusion

Overall, the incidence of measles appears to be decreasing across the country. However, Limpopo province has remained stable and largely contributing to the increased number of cases seen in the previous week. Continuous surveillance for measles cases is recommended. Prevention and control of measles outbreaks can only be achieved through vaccination. It is never too late to vaccinate – children over the age of 6 months to 15 years are targeted in the National supplemental immunization campaign rolled out in all provinces since 06 Feb 2023. The NICD continues to report on a large number of cases with unknown vaccination status. We urge district and province to complete vaccine status on the investigation forms for completeness of data. Clinicians across the country are urged to be on the lookout for measles cases. For more information about measles, case definition, notification, investigation and guidelines for measles management including vaccination, please refer to our website: <https://www.nicd.ac.za/diseases-a-z-index/measles/>. Health care workers are encouraged to submit reports on any adverse events following immunization (AEFI) through the Med Safety application (<https://medsafety.sahpra.org.za/>) or through submitting a case reporting form to their district surveillance officer.

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