



INTERIM SITUATION REPORT, 2 May 2023

(Based on laboratory testing data up until 18 April 2023)

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

Highlights

- The NICD has tested 5798 serum samples for measles since epidemiological week 40, 2022, of which 970 (17%) were confirmed positive. In outbreak-affected provinces, 964 cases have been reported since week 40, 2022. In the past weeks (week 15 up until week 16, 18/04/2023) there have been 20 laboratory-confirmed measles cases detected across the country, of which the majority were from Limpopo (12).
- The percentage of samples testing positive (PTP) increased from 20% of 99 samples tested in week 14 to 22% of 79 samples tested in week 15.
- Measles outbreak has been declared in all the provinces in South Africa except for the Eastern Cape. In week 16, no new cases were reported in Free State, KwaZulu-Natal, Mpumalanga, Western Cape, Northern Cape and North West 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 (20%).
- Vaccination campaigns have so far included all children including those aged 10 to 14.
- The majority of cases (67%) were reported from primary healthcare facilities, and the highest proportion of cases reported from hospitals (59%) 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 2023-04-12 was estimated to be 0.65 (0.34 – 1.2), suggesting that infection incidence is likely decreasing. There is a 88% chance that the reproduction number was below 1 as of 2023-04-12.
- At the provincial level, the reproduction number as of 2023-04-12 was estimated to be 0.85 (0.54 – 1.2) in Limpopo, suggesting that infection incidence is likely decreasing. In contrast, the reproduction number as of 2023-04-12 was estimated to be 0.51 (0.27 – 0.85) in Mpumalanga, 0.67 (0.45 – 0.9) in Gauteng, and 0.49 (0.26 – 0.74) in North West, suggesting that infection incidence is decreasing.
- Note that the Easter holidays (2023-04-07 to 2023-04-10) occurred during the reporting period used to produce the latest reproduction number estimates. Declines in case reporting over the holidays may bias reproduction number estimates and resulting forecasts downward. Because the methods employed depend on reported case numbers, as detection returns to baseline levels over the coming 1-2 weeks, this may result in the appearance of a resurgence in the transmission that is an artefact of the holiday period. During this time, it is especially important to monitor other indicators, such as the percentage testing positive, for consistency with reproduction number estimates when interpreting trends.

Outbreak overview

From epidemiological week 40, 2022 (ending 8 October 2022) to week 16, 2023 the NICD has tested 5798 serum samples for measles of which 970 (17%) were confirmed measles cases. The number of samples submitted and the percentage of laboratory-confirmed measles-positive cases are shown in Figure 1. From epidemiological week 40 of 2022 to week 16 of 2023, 964 laboratory-confirmed cases were reported from eight provinces with declared measles outbreaks; Limpopo (405 cases), Mpumalanga (108 cases), North West (216 cases), Gauteng (165 cases), Free State (29 cases), Western Cape (14), KwaZulu-Natal (20) and Northern Cape (7) (Table 1). The geographical distribution of cases across South Africa from week 40 of 2022 until week 16 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 from 99 in week 14 compared to 79 in week 15 (Figure 3).

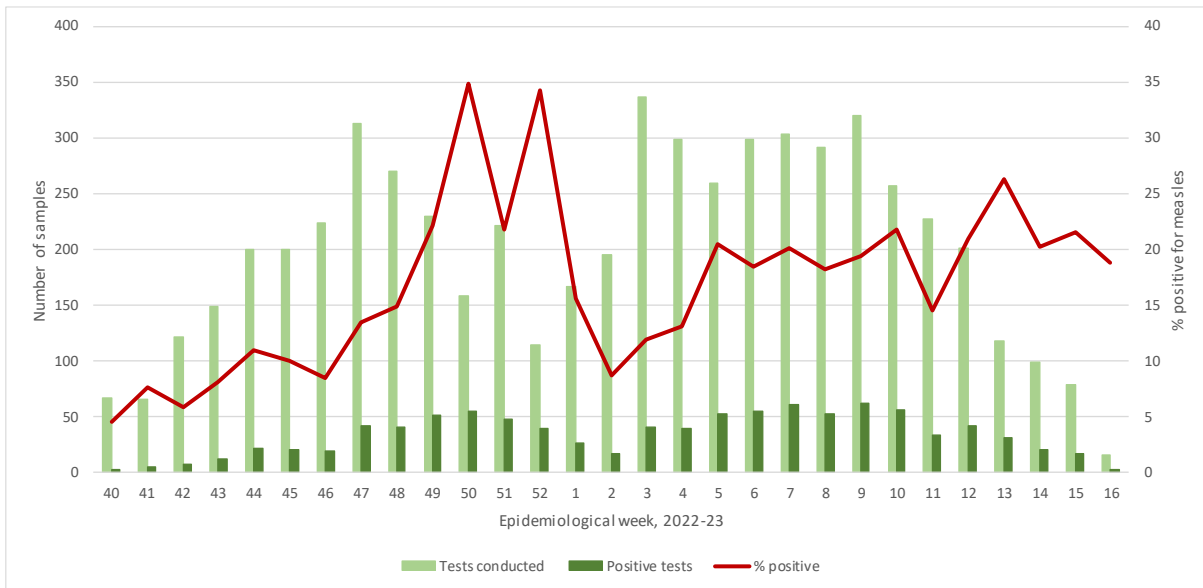


Figure 1. Number of serum samples submitted to the NICD for measles, week 40 2022, until week 16, 2023, and the number (dark green) and % tested positive (red line), by epidemiological week using the date the specimen was collected. *Data from week 16 represent partial data, and will be updated in next 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

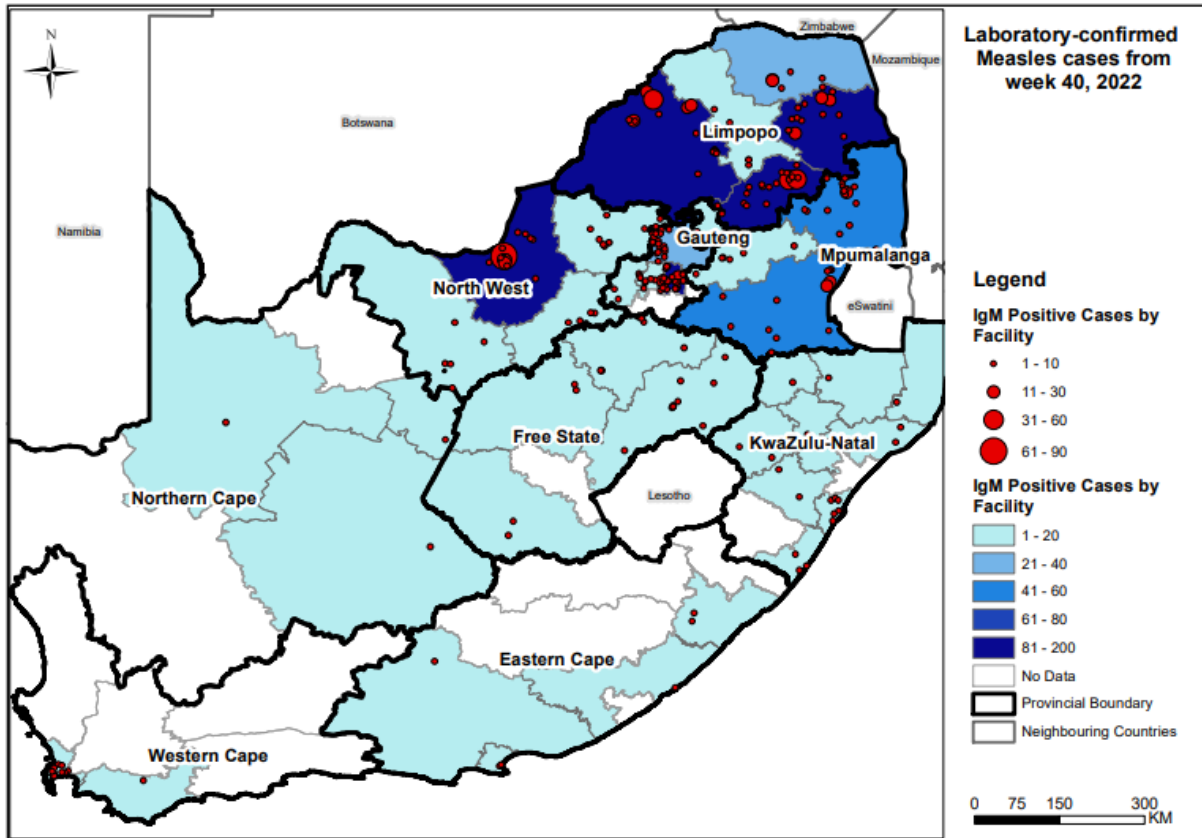


Figure 2. Distribution of laboratory-confirmed measles cases by testing site (red dots – the size of the dot indicates the number of cases from that facility) and district of South Africa (deepening colour of blue indicates the total number of cases by sub-district), from week 40 to week 16, 2023.

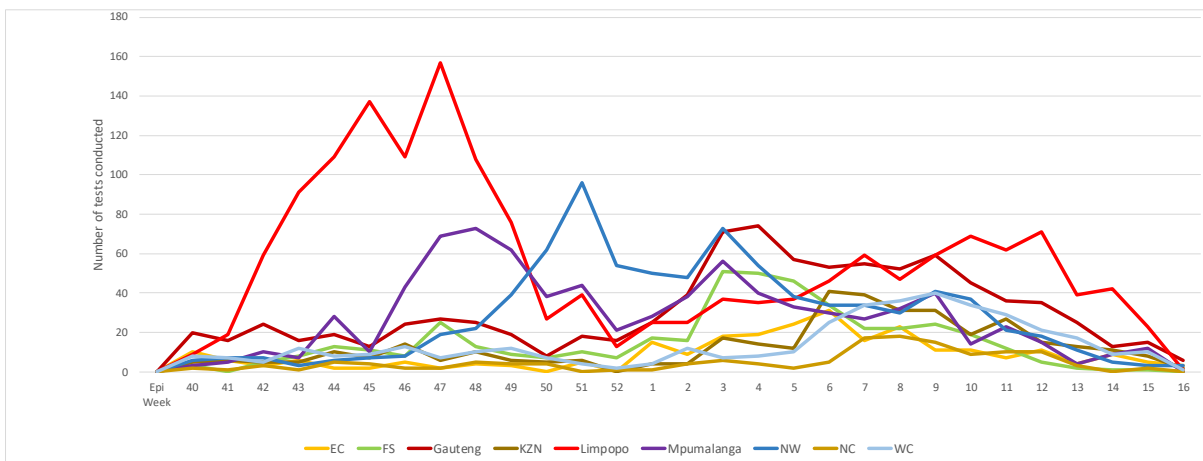


Figure 3. Number measles of tests conducted from week 40 2022, until week 16, 2023, by province and epidemiological week using the date the specimen was collected. *Data from week 16 represent partial data, and will be updated in next week’s situation report, when complete data from samples collected that week becomes available.

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Reproduction number

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

Nationally, the reproduction number as of 2023-04-12 was estimated to be 0.65 (0.34 – 1.2), suggesting that infection incidence is likely decreasing.

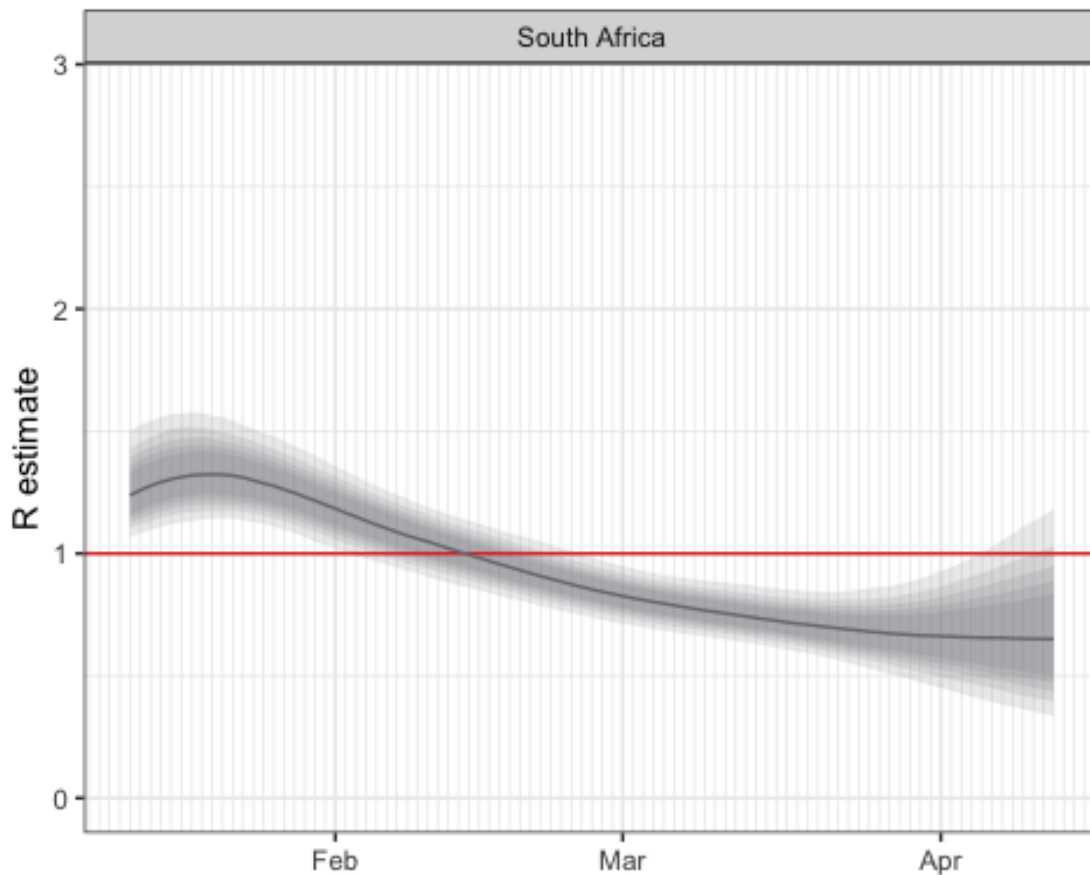


Figure 4. National time-varying reproductive estimate from early December 2022 to early April 2023.

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

Table 1. Cases of laboratory-confirmed measles tested by the NICD from all provinces in South Africa from epidemiological week 40, 2022 to week 16, 2023. Outbreak-associated cases are contained within the red bordered cells* (FS=Free State; GP=Gauteng; KZN=KwaZulu-Natal; LP=Limpopo; MP=Mpumalanga NW=North West; NC=Northern Cape, WC = Western 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 16 represents 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	GP	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		3	3	1	7	5	28			47
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		1	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		29	1	4		1	42
13, 2023			6	1	22		2			31
14, 2023			2	1	17					20
15, 2023			3		11	1			2	17
16, 2023			2		1					3
Total	6	29	165	20	405	108	216	7	14	970

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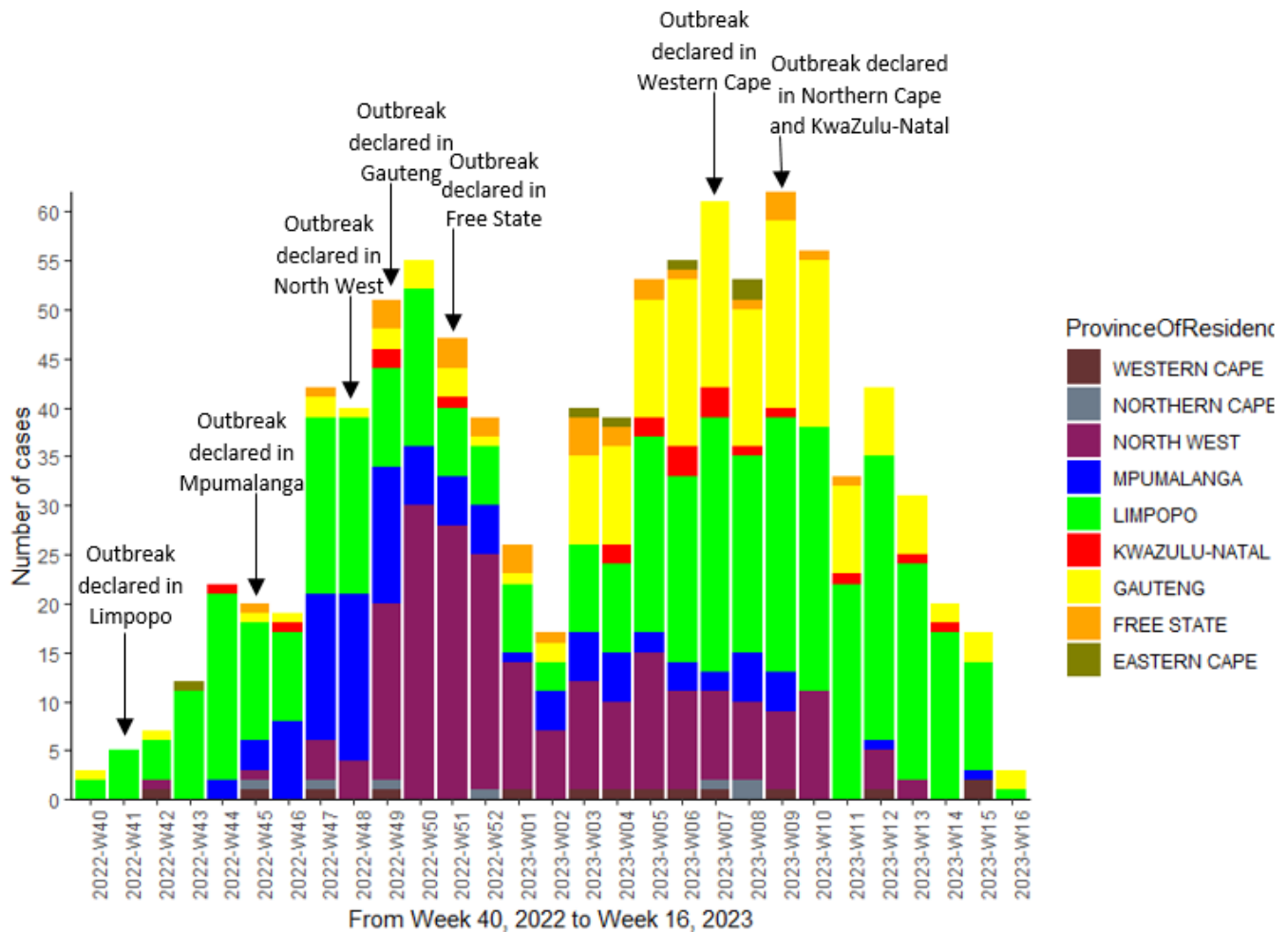


Figure 5. The epidemiological curve of the number of laboratory-confirmed measles cases in South Africa from week 40, 2022 to week 16, 2023 (ending 09 October, 2022 – ending 22 April, 2023) by specimen collection dates and by province, indicating the weeks in which outbreaks were declared in Limpopo, Mpumalanga, North West, Gauteng, Free State, Western Cape, Northern Cape and Kwa-Zulu Natal provinces. *Data from week 16 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 411, (43%) were in the 5-9-year age group, followed by 228 (24%) in the 1-4-year age group and 188 (20%) 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, 105 (10.9%) of the 964 cases were vaccinated, 123 (12.8%) were unvaccinated, and the vaccination status of 736 (76.3%) 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 16, 2023, in provinces with a declared measles outbreak with age-specific attack rates.

Age group	FS		GP		LP		MP		NW		WC		NC		KZN		Total	
	# cases	AR	# cases	AR	# cases	AR	# cases	AR	# cases	AR	# cases	AR	# cases	AR	# cases	AR	# cases	AR
<1 year	4	7.51	16	6.07	19	14.40	5	5.52	8	9.90	3	2.50	0	0.00	1	0.41	56	5.55
1-4 years	11	5.24	31	2.98	82	15.37	32	9.17	56	17.79	6	1.29	2	1.97	8	0.83	228	5.73
5-9 years	11	4.12	69	5.50	182	27.31	38	8.89	98	25.03	1	0.18	3	2.38	9	0.76	411	8.42
10-14 years	3	1.04	27	2.20	95	14.23	22	4.75	36	8.82	2	0.34	2	1.59	1	0.08	188	3.79
≥15 years	0	0.00	22	0.18	27	0.68	11	0.32	18	0.60	2	0.04	0	0.00	1	0.01	81	0.21
Total	29	0.99	165	1.02	405	6.82	108	2.29	216	5.16	14	0.19	7	0.53	20	0.17	964	1.79

FS= Free State; GP= Gauteng; KZN=KwaZulu-Natal; LP=Limpopo; MP=Mpumalanga; NW=North West; WC=Western Cape; NC= Northern Cape; 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 16, 2023 in provinces with a declared measles outbreak.

Vaccination status	FS	GP	LP	MP	NW	WC	NC	KZN	Total
Vaccinated	9	12	34	15	18	7	3	7	105 (10.9%)
Unvaccinated	3	13	58	18	30	0	0	1	123 (12.8%)
Unknown	17	140	313	75	168	7	4	12	736 (76.3%)
Total	29	165	405	108	216	14	7	20	964

Table 4: Age distribution of vaccinated persons from epidemiological week 40, 2022 to week 16, 2023 in provinces with a declared measles outbreak.

Age group	FS	GP	LP	MP	NW	WC	NC	KZN	Total
< 1 year	2	2	3	0	0	3	0	0	10
1 – 4 years	2	3	12	2	5	3	0	3	30
5 – 9 years	2	7	15	9	12	1	2	4	52
10 – 14 years	3	0	4	4	1	0	1	0	13
≥15 years	0	0	0	0	0	0	0	0	0
Total	9	12	34	15	18	7	3	7	105

Table 5. The facility type where laboratory-confirmed measles cases have been identified, for epidemiological week 40, 2022 to week 16, 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 year	1-4 years	5-9 years	10-14 years	≥15 years	Total
From PHC/CHC/other	23	152	283	130	57	645(67)
From a hospital (%)	33 (59)	76 (33)	128 (31)	58 (31)	24 (30)	319(33)
Total	56	228	411	188	81	964

An Overview of the Outbreak in the Limpopo Province

In total, 405 cases of laboratory-confirmed measles were reported between epidemiological week 40, 2022 to week 16, 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 16 of 2023 in Limpopo province. Waterberg district reported the highest number of measles cases which is 147 cases, Mopani district reported 95 cases, Greater Sekhukhune district reported 125 cases, Vhembe district reported 31 cases and Capricorn district reported seven cases. Dilokong Hospital reported 56 cases out of the 125 from Greater Sekhukhune. Amongst the 31 cases reported from the Vhembe district, 28 cases originated from Makhado (Louis Trichardt Hospital and Clinic). In the Waterberg district, 48 cases of 147 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 27.31 per 100,000 persons. This was followed by the 1-4 age group with an attack rate of 15.37 per 100,000 persons. Of the 405 measles cases in Limpopo province, 313 (77%) had an unknown vaccination status, 34 (8%) were vaccinated, and 58 (14%) were unvaccinated (Table 3).

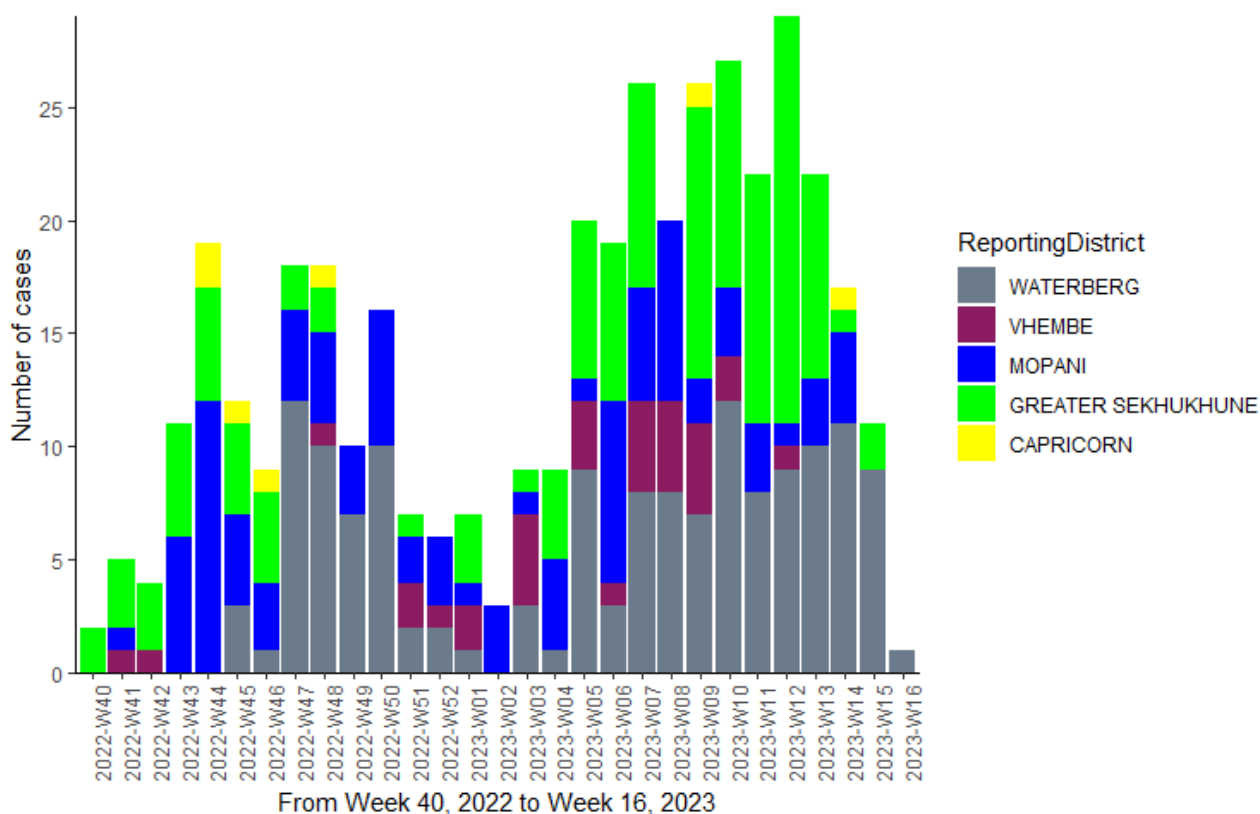


Figure 6. The epidemiological curve of the number of laboratory-confirmed measles cases by districts of Limpopo Province from epidemiological week 40, 2022 to week 16, 2023 by specimen collection dates

Mpumalanga

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In total, 108 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 16, 2023, with Ehlanzeni and Gert Sibande districts reporting the majority of cases, 48 and 42, respectively. Dwarloop clinic reported 18 of the 48 cases from the Ehlanzeni district, while Dundonald clinic reported 12 out of the 42 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 108 cases, 75 had an unknown vaccination status, 15 were vaccinated and 18 were unvaccinated (Table 3).

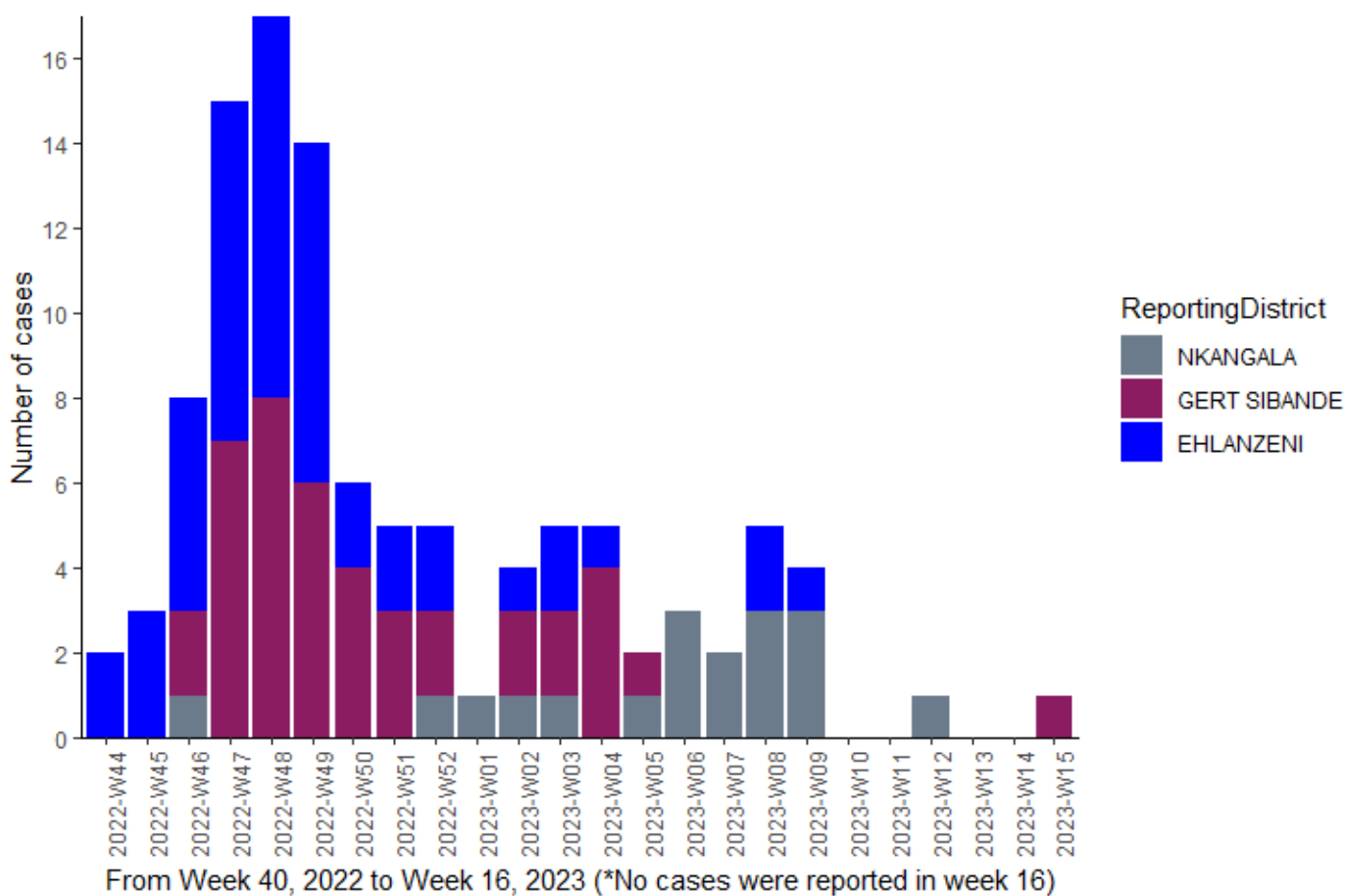


Figure 7. The epidemiological curve of the number of laboratory-confirmed measles cases in districts of Mpumalanga Province from epidemiological week 44, 2022 to week 16, 2023 by specimen collection dates.

North West

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A total of 216 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. The majority of the laboratory-confirmed cases are among children aged 5-9 years, with 98 cases and an attack rate of 25.03 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 216 cases were vaccinated and 168 had unknown vaccination status (Table 3). Of these 216 cases, the majority (180) were reported from the Ngaka Modiri Molema district, with 73 cases reported from a single clinic, Lonely Park Clinic in Mahikeng. Twenty-one cases were reported from Bojanala Platinum district, eight cases from Dr Kenneth Kaunda district, and seven cases from Dr Ruth Segomotsi Mompati district.

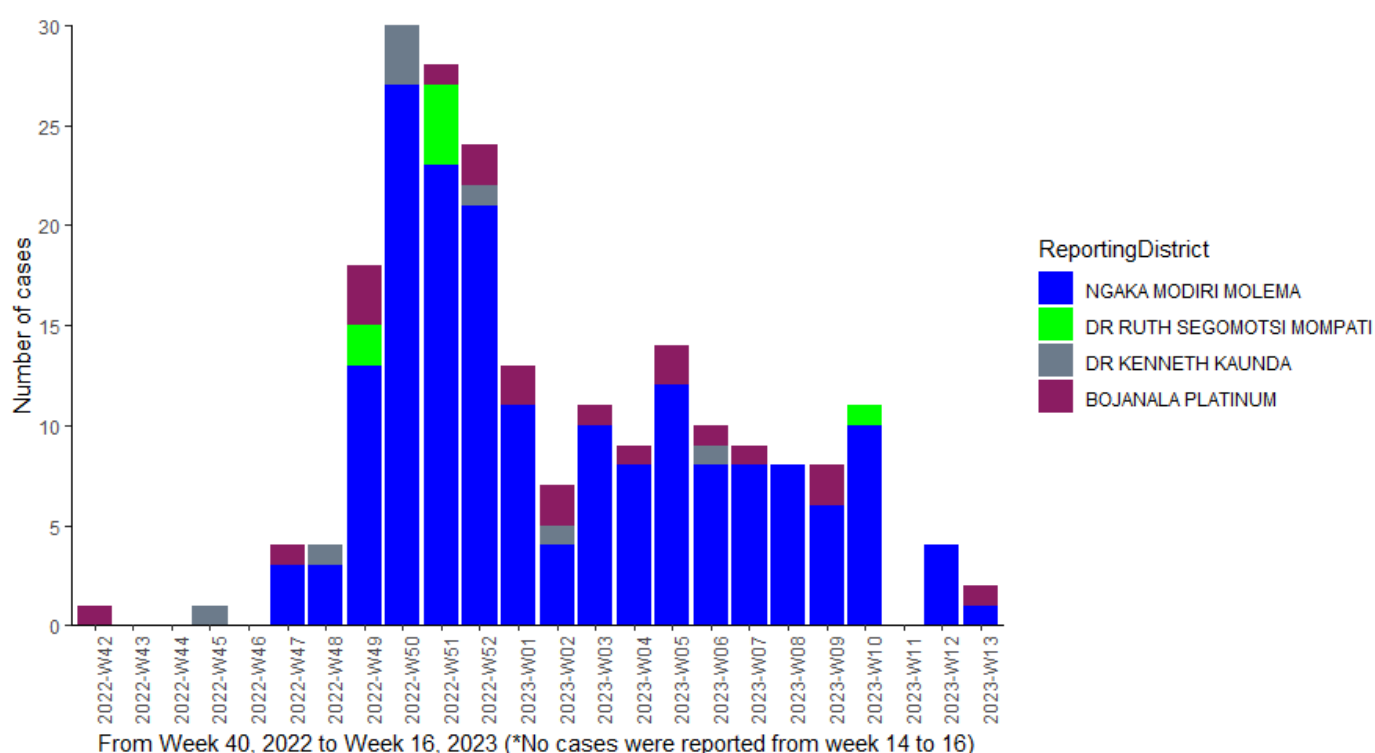


Figure 8. The epidemiological curve of the number of laboratory-confirmed measles cases in districts of North West Province from epidemiological week 42, 2022 to week 16, 2023 by specimen collection date.

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Gauteng

A total of 165 laboratory-confirmed measles cases have been reported from epidemiological week 40, 2022 to week 16, 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 the City of Ekurhuleni Metropolitan Municipality. To date, the majority of cases, 109, have been reported from the City of Ekurhuleni, 32 from the City of Tshwane, 16 cases from the City of Johannesburg, and eight cases from West Rand. Amongst these 165 cases, 140 have unknown vaccination status while 12 cases were vaccinated (Table 3). Of the 109 cases in Ekurhuleni, 14 were identified at Daveyton's main clinic in Ekurhuleni.

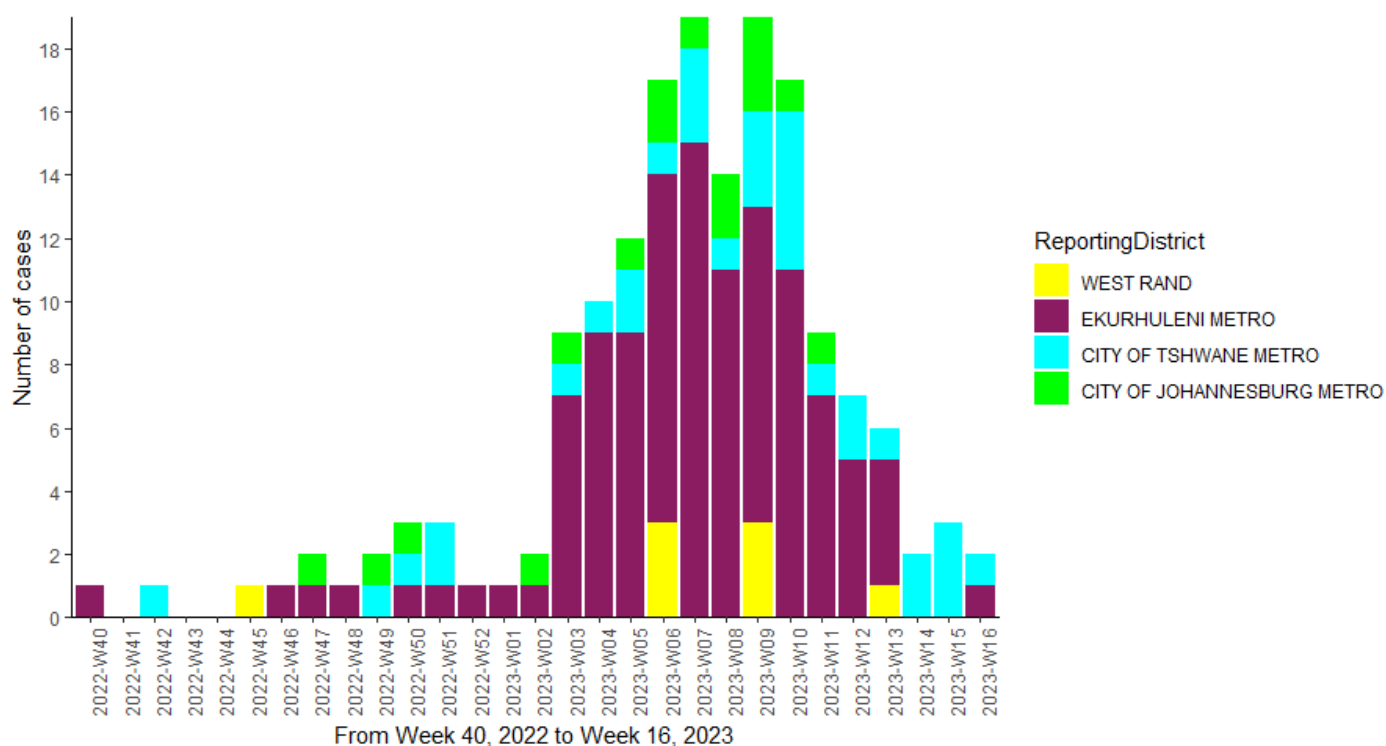


Figure 9. The epidemiological curve of the number of laboratory-confirmed measles cases in districts of Gauteng Province from epidemiological week 40, 2022 to week 16, 2023 by specimen collection dates.

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Free State

There are currently 29 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 the Thabo Mofutsanyana district. Of the 29 cases, 20 have been reported from the Thabo Mofutsanyana district, six from the Fezile Dabi district, two cases from Xhariep district and one case from the Lejweleputswa district. Of these 20 cases reported from Thabo Mafutsanyana district, five were reported by Bethlehem clinic. The vaccination status of 17 cases is unknown, whereas three cases were not vaccinated, and nine were (Table 3).

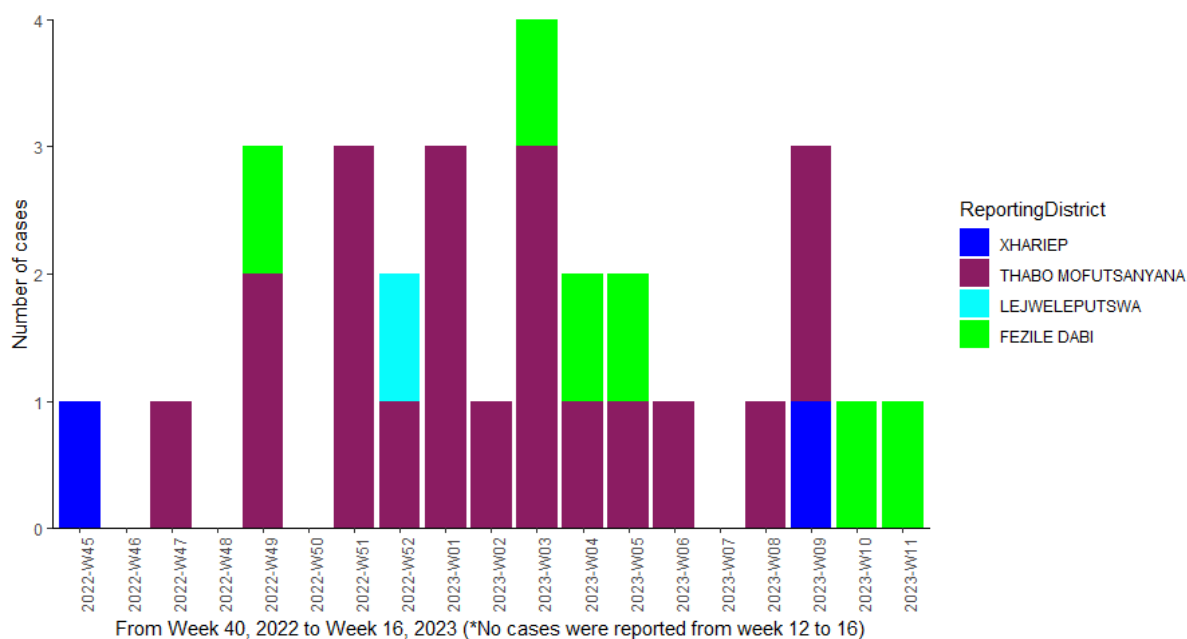


Figure 10. The epidemiological curve of the number of laboratory-confirmed measles cases in districts of Free State Province from epidemiological week 40, 2022 to week 16, 2023 by specimen collection dates.

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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 14 measles cases have been reported from the Western Cape, with 13 cases from the City of Cape Town and one case from Overberg. Seven of these cases have been vaccinated, while the vaccination status of the remaining seven is unknown (Table 3).

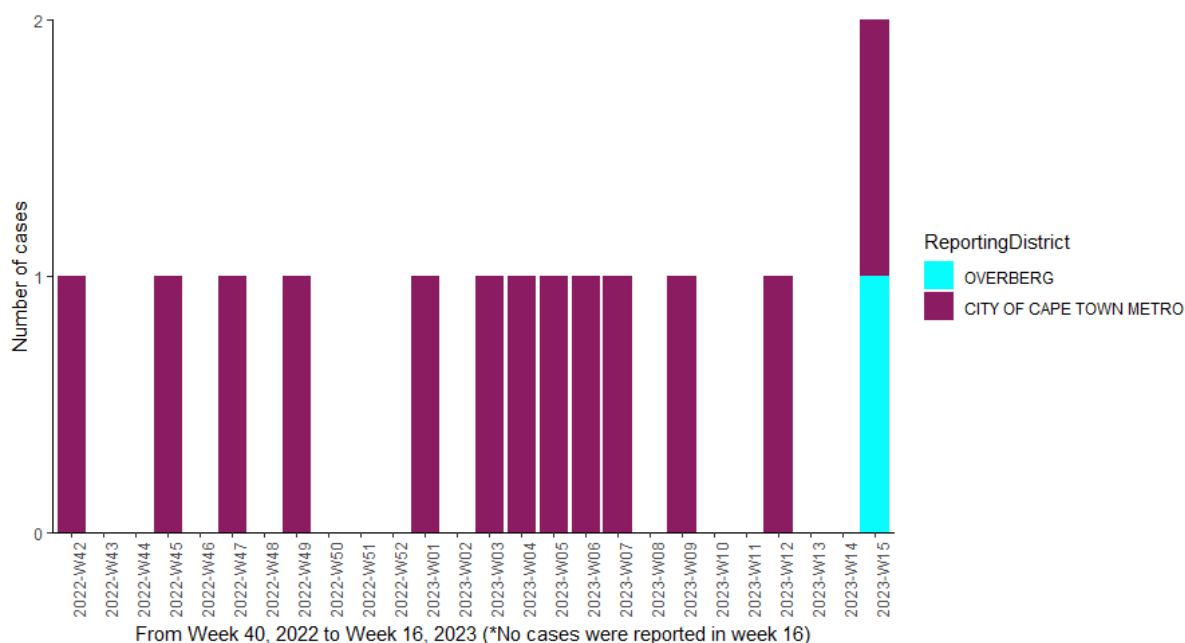


Figure 11. The epidemiological curve of the number of laboratory-confirmed measles cases in districts of Western Cape Province from epidemiological week 40, 2022 to week 16, 2023 by specimen collection dates.

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Northern Cape

A 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 16 of 2023, with no cases recorded in weeks 9 to 16 (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).

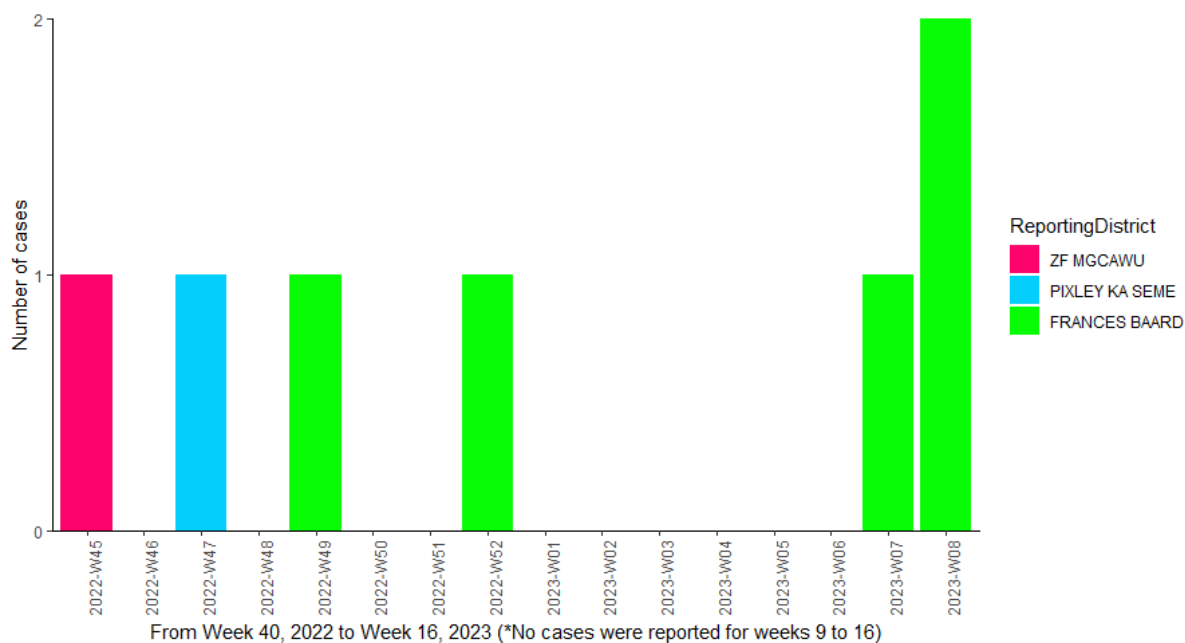


Figure 12. The epidemiological curve of the number of laboratory-confirmed measles cases in districts of Northern Cape Province from epidemiological week 45, 2022 to week 16, 2023 by specimen collection dates.

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KwaZulu-Natal

A measles outbreak was declared on 1 March 2023 (epidemiological week 09, 2023) in KwaZulu-Natal province after four laboratory-confirmed measles cases were reported in the EThekweni. There are 20 cases in this province as of week 16 of 2023, with no new cases reported in weeks 15 and 16 (Figure 13). Seven of these cases were vaccinated, while the status of the 12 cases is unknown (Table 3).

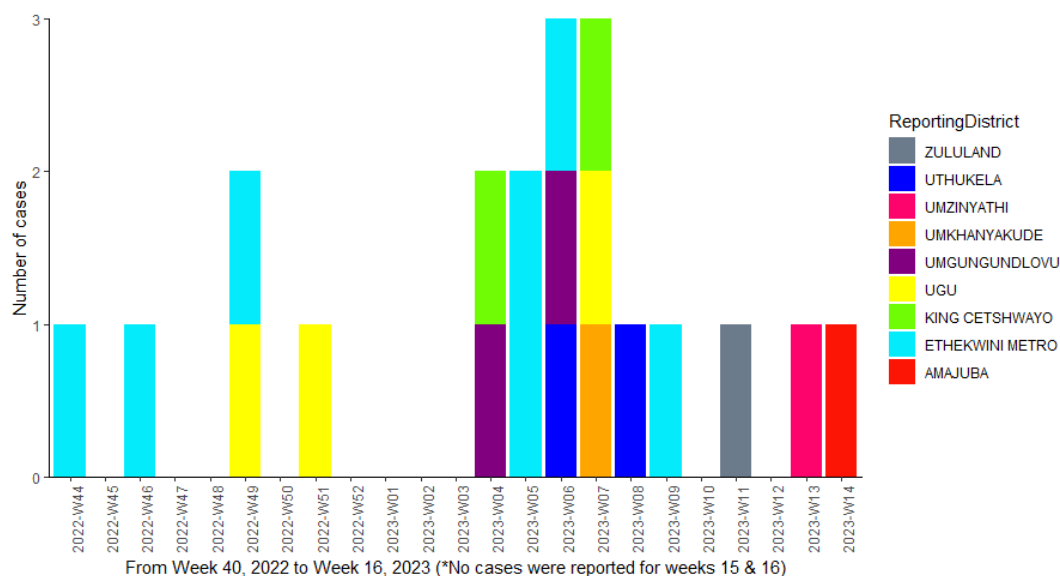


Figure 13.

The epidemiological curve of the number of laboratory-confirmed measles cases in districts of KwaZulu-Natal Province from epidemiological week 44, 2022 to week 16, 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 contributed 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. The national measles vaccination coverage still remains low. 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 the 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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