NATIONAL INSTITUTE FOR COMMUNICABLE DISEASES
Division of the National Health Laboratory Service

SOUTH AFRICAN MEASLES OUTBREAK 2023

INTERIM SITUATION REPORT, 9 March 2023

(Based on laboratory testing data up until 4 March 2023)

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

Highlights

- The NICD has tested 4608 serum samples for measles since epidemiological week 40, 2022, of which 727 (15.8%) were confirmed positive. 721 cases have been reported in outbreak-affected provinces since week 40, 2022. In the past weeks (week 08 up until mid-week 09, 2023), 74 laboratory-confirmed measles cases were detected across the country, of which 72 are from outbreak-affected provinces.
- The percentage of samples testing positive (PTP) decreased slightly from 20% of 305 samples tested in week 07 to 18% of the 274 samples tested in week 08.
- Measles outbreak has now been declared in all the provinces in South Africa except for the Eastern Cape.
- The measles strain detected in Limpopo province and North West province is genotype D8, 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 (42%) with a considerable proportion of cases reported among the 1-4 (25%) and 10-14 age groups (19%). Vaccination campaigns should therefore also include children aged 10 to 14.
- The majority of cases (70%) 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.

Outbreak overview

From epidemiological week 40, 2022 (ending 8 October 2022) to mid-week 09, 2023 (ending 4 March 2023) the NICD has tested 4608 serum samples for measles of which 727 (15.8%) 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 09 of 2023, 721 laboratory-confirmed cases were reported from eight provinces with declared measles outbreaks; Limpopo (255 cases), Mpumalanga (102 cases), North West (196 cases), Gauteng (107 cases), Free State (27 cases), Western Cape (10), KwaZulu-Natal (17) and Northern Cape (7) (Table 1). The geographical distribution of cases across South Africa from week 40 of 2022 until week 09 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).

*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

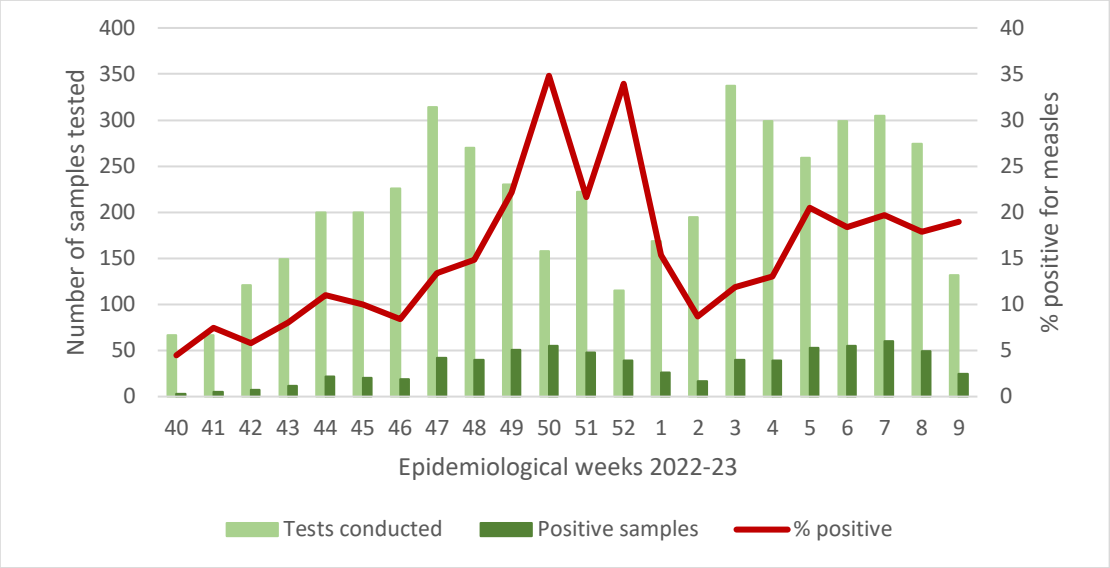

Figure 1. The number of serum samples submitted to the NICD for measles, week 40 2022, until week 09, 2023, and the number (dark green) and % tested positive (red line), by epidemiological week using the date the specimen was collected. *Data from week 09 represent partial data and will be updated in next week's situation report when the complete data from samples is collected that week becomes available.

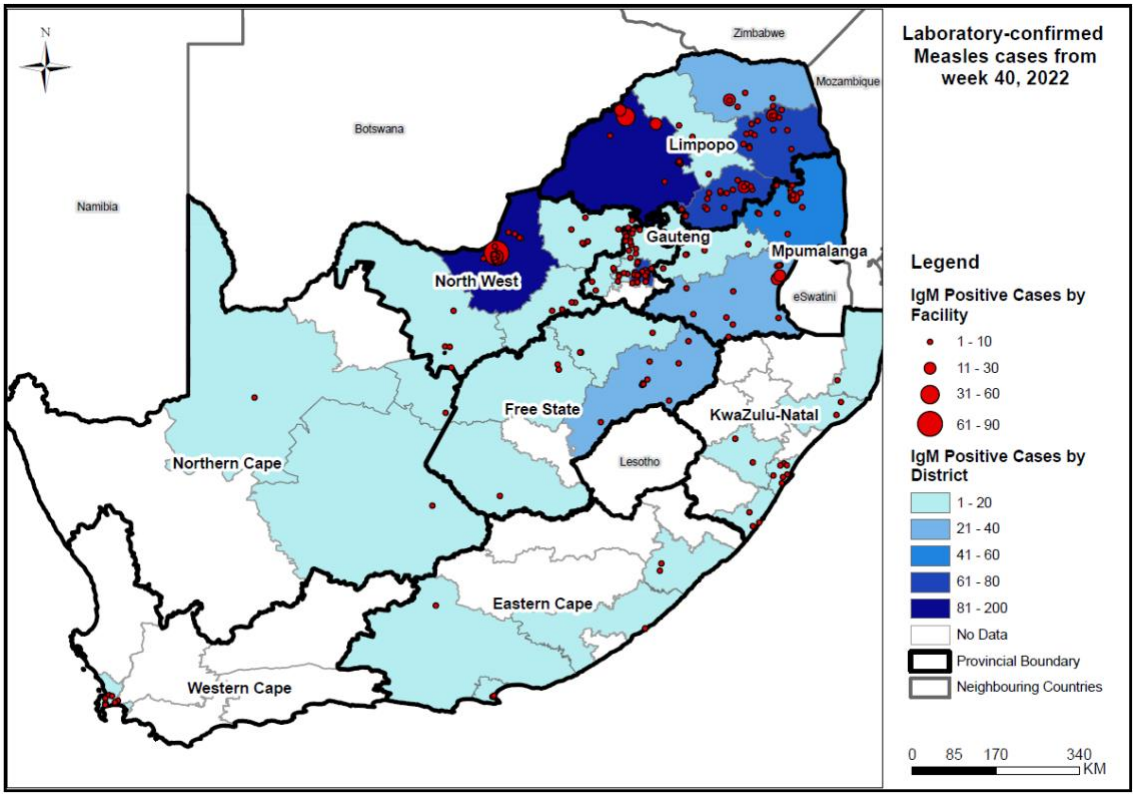

Figure 2. Distribution of laboratory-confirmed measles cases by the testing site (red dots – the size of the dot indicates the number of cases from that facility) and district of South Africa (the deepening colour of blue indicates the total number of cases by sub-district), from week 40 to week 09, 2023.

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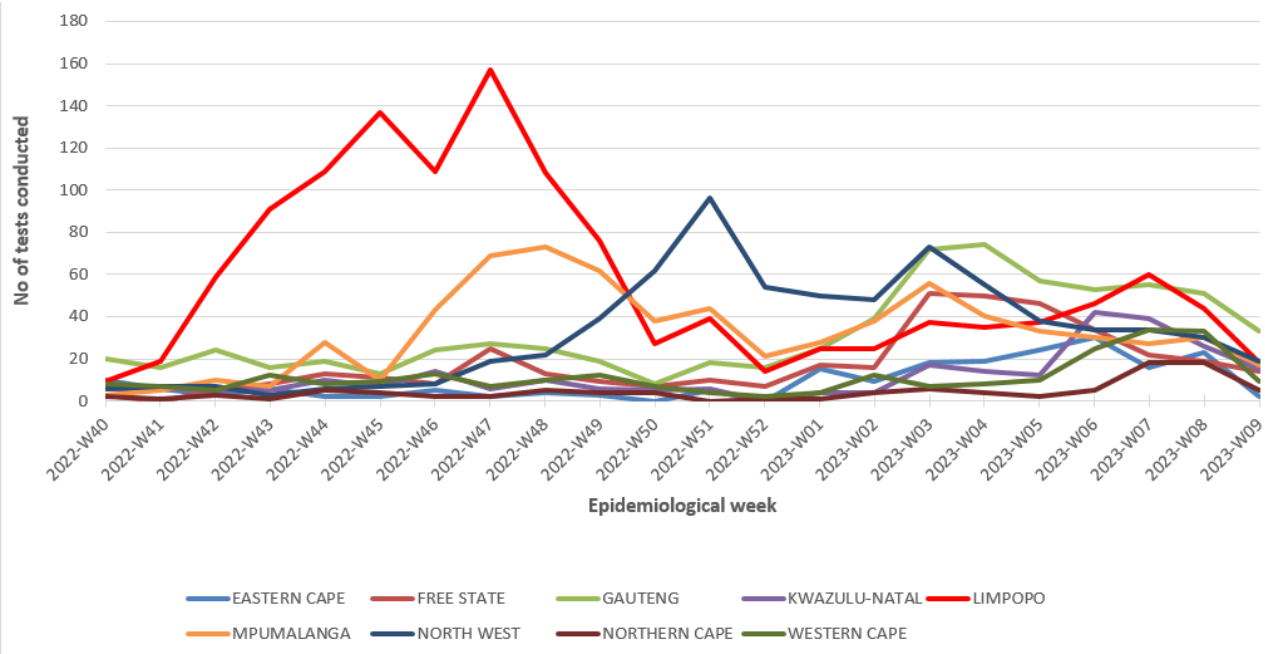

Figure 3. Number measles of tests conducted from week 40 2022, until week 09, 2023, by province and epidemiological week using the date the specimen was collected. *Data from week 09 represent partial data and will be updated in next week's situation report when complete data from samples collected that week becomes available.

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Table 1. Cases of laboratory-confirmed measles tested by the NICD from all provinces in South Africa from epidemiological week 40, 2022 to week 09, 2023. Outbreak-associated cases are contained within the red bordered cells* (EC=Eastern Cape; FS=Free State; GP=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 the onset of disease, in a district. *Data from week 09 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	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		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		0	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	25	2	9	1	1	60
08, 2023	2	1	13	1	18	4	8	2		49
09, 2023		2	8	1	8	1	5			25
Total	**6**	**27**	**107**	**17**	**255**	**102**	**196**	**7**	**10**	**727**

*Inclusive of samples submitted up until week 09

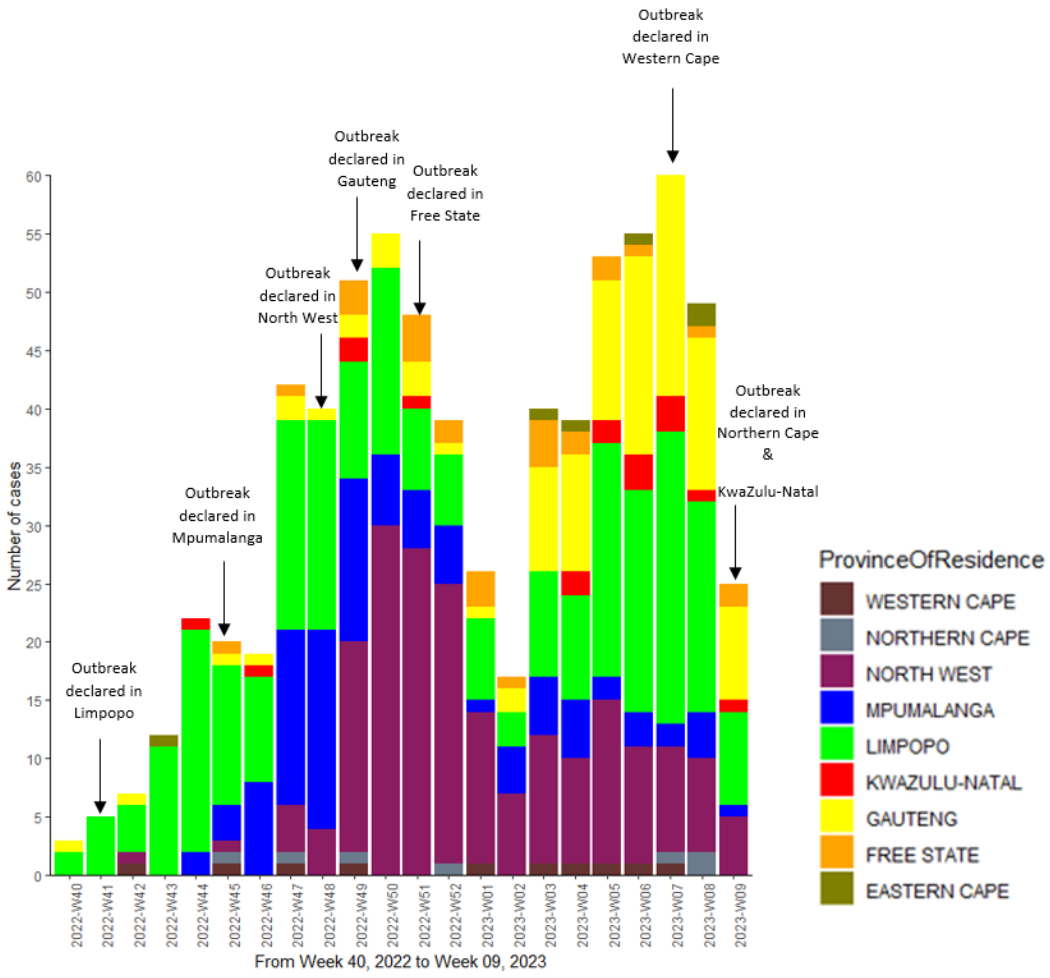

Figure 4. The epidemiological curve of the number of laboratory-confirmed measles cases in South Africa from week 40, 2022 to week 09, 2023 (ending 09 October 2022 – ending 04 March 2023) by specimen collection dates and by province, indicating the weeks in which outbreaks were declared in Limpopo, Mpumalanga, North West, Gauteng, Free State provinces and Western Cape. *Data from week 08 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 60 years (Table 2). The majority of cases 300, (42%) were in the 5-9-year age group, followed by 181 (25%) in the 1-4-year age group and 140 (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, 68 (9.4%) of the 721 cases were vaccinated, 83 (11.5%) were unvaccinated, and the vaccination status of 570 (79.1%) 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 facilities. Admitted patients will be a subset of these cases. Presently it is not possible to determine measles admission rates and mortality. The NICD is working on data systems to collect this information.

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Table 2. Age distribution of laboratory-confirmed measles cases from epidemiological week 40, 2022 to week 09, 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	3	5.63	13	4.93	12	9.09	5	5.52	8	9.90	1	0.83	0	0.00	1	0.41	43	4.26
1-4 years	10	4.76	18	1.73	58	10.87	29	8.31	53	16.84	5	1.07	2	1.97	6	0.62	181	4.55
5-9 years	11	4.12	48	3.83	104	15.61	36	8.42	90	22.98	0	0.00	3	2.38	8	0.67	300	6.14
10-14 years	3	1.04	18	1.47	60	8.99	21	4.54	33	8.09	2	0.34	2	1.59	1	0.08	140	2.82
≥15 years	0	0.00	10	0.08	21	0.53	11	0.32	12	0.40	2	0.04	0	0.00	1	0.01	57	0.15
Total	**27**	0.92	**107**	0.66	**255**	4.29	**102**	2.16	**196**	4.68	**10**	**0.14**	**7**	0.53	**17**	**0.15**	**721**	**1.34**

FS= Free State; GP = 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 09, 2023 in provinces with a declared measles outbreak.

Vaccination status	FS	GP	LP	MP	NW	WC	NC	KZN	Total
Vaccinated	6	7	18	12	13	4	3	5	68 (9.4%)
Unvaccinated	3	8	31	18	22	0	0	1	83 (11.5%)
Unknown	18	92	206	72	161	6	4	11	570 (79.1%)
Total	**27**	**107**	**255**	**102**	**196**	**10**	**7**	**17**	**721**

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Table 4: Age distribution of vaccinated persons from epidemiological week 40, 2022 to week 09, 2023 in provinces with a declared measles outbreak.

Age group	FS	GP	LP	MP	NW	WC	NC	KZN	Total
< 1 year	1	2	1	0	0	1	0	0	5
1 – 4 years	2	0	8	1	3	3	0	2	19
5 – 9 years	1	5	8	7	9	0	2	3	35
10 – 14 years	2	0	1	4	1	0	1	0	9
≥15 years	0	0	0	0	0	0	0	0	0
Total	**6**	**7**	**18**	**12**	**13**	**4**	**3**	**5**	**68**

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Table 5. The facility types where laboratory-confirmed measles cases have been identified, for epidemiological week 40, 2022 to week 09, 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	19	126	219	101	41	506
From a hospital (%)	24 (56)	55 (30)	81 (27)	39 (28)	16 (28)	215 (30)
Total	**43**	**181**	**300**	**140**	**57**	**721**

An overview of the outbreak in the Limpopo Province

In total, 255 cases of laboratory-confirmed measles were reported between epidemiological week 40, 2022 to week 09, 2023 with the majority of the measles cases reported in the Greater Sekhukhune, Mopani and Waterberg districts. Figure 5 shows an epidemiological curve from week 40, 2022 to week 09 of 2023 in Limpopo province. Waterberg district reported the highest number of measles cases which is 84 cases, Mopani district reported 79 cases, Greater Sekhukhune district reported 66 cases, Vhembe district reported 22 cases and Capricorn district reported five cases. Dilokong hospital reported 27 cases out of the 66 from Greater Sekhukhune. Amongst the 22 cases reported from the Vhembe district, 19 cases originated from Makhado (Louis Trichardt Hospital and Clinic). In the Waterberg district, 35 cases of 84 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 15.61 per 100,000 persons. This was followed by the 1-4 age group with an attack rate of 10.87 per 100,000 persons. Of the 255 measles cases in Limpopo province, 206 (81%) had an unknown vaccination status, 18 (7%) were vaccinated, and 31 (12%) were unvaccinated (Table 3).

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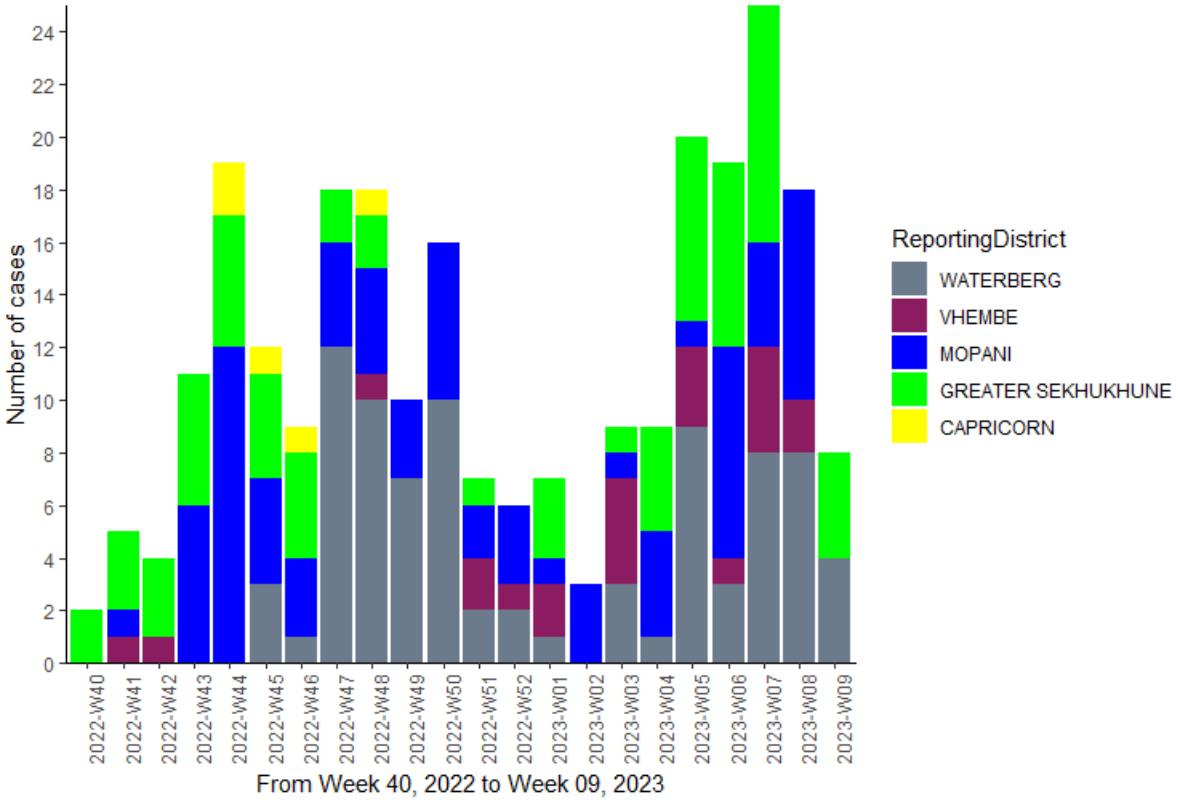

Figure 5. The epidemiological curve of the number of laboratory-confirmed measles cases by districts of Limpopo Province from epidemiological week 40, 2022 to week 09, 2023 by specimen collection dates

Mpumalanga

In total, 102 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 6 shows an epidemiological curve for Mpumalanga province from week 44, 2022 to week 09, 2023, with Ehlanzeni and Gert Sibande districts reporting the majority of cases, 46 and 41, respectively. Dwarsloop clinic reported 17 of the 46 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 8.42 per 100,000 persons. Of the 102 cases, 72 had an unknown vaccination status, 12 were vaccinated and 18 were unvaccinated (Table 3).

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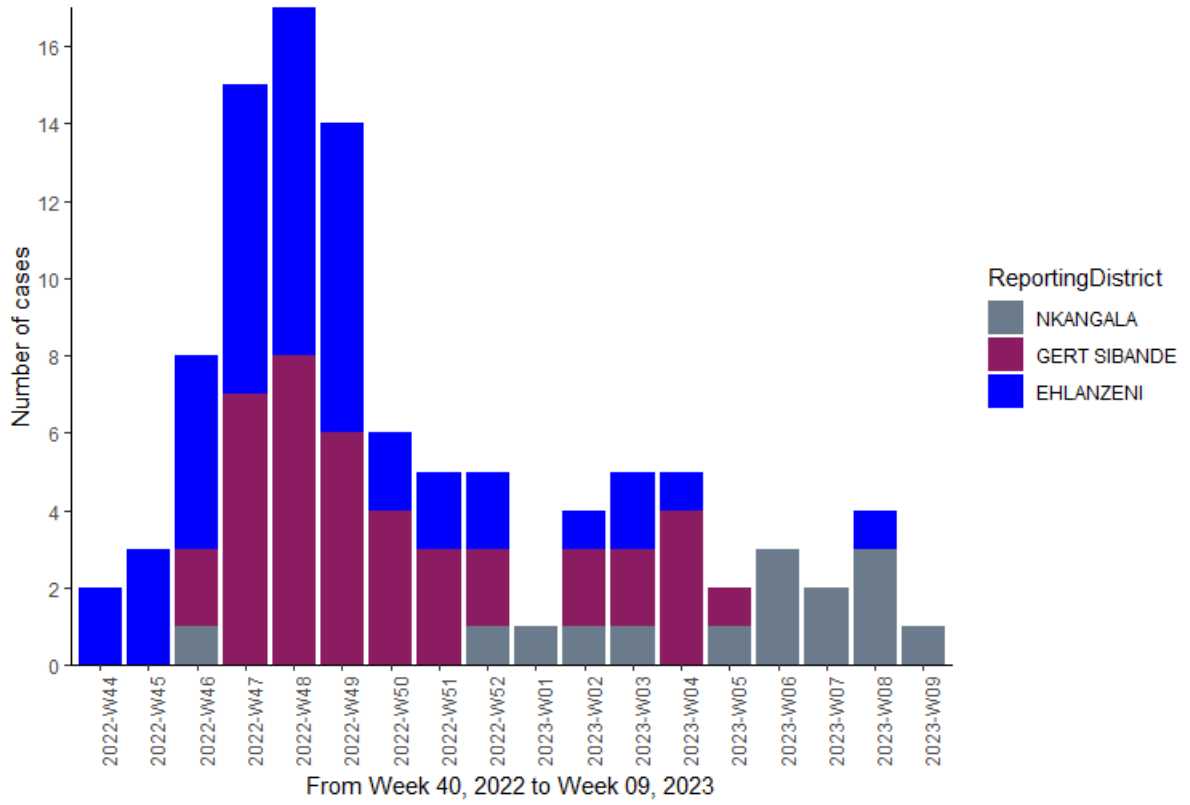

Figure 6. The epidemiological curve of the number of laboratory-confirmed measles cases in districts of Mpumalanga Province from epidemiological week 44, 2022 to week 09, 2023 by specimen collection dates.

North West

A total of 196 laboratory-confirmed measles cases have been reported in North West Province since epidemiological week 40, 2022 (Figure 7). 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 90 cases and an attack rate of 22.98 per 100,000 persons, followed by those aged 1-4 years with 53 cases, with an attack rate of 16.84 per 100,000 persons (Table 2). A total of 13 of the 196 cases were vaccinated and 161 had unknown vaccination status (Table 3). Of these 196 cases, the majority (164) were reported from the Ngaka Modiri Molema district, with 72 cases reported from a single clinic, Lonely Park Clinic in Mahikeng.

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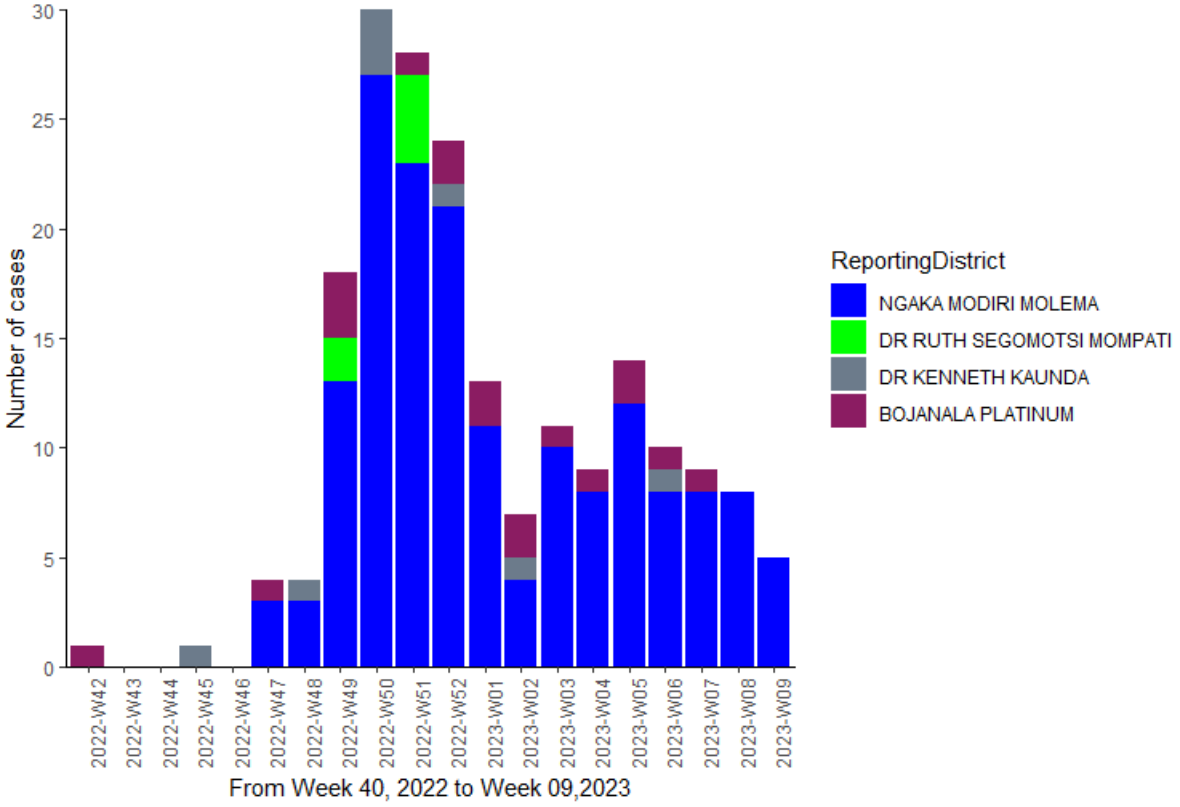

Figure 7. The epidemiological curve of the number of laboratory-confirmed measles cases in districts of North West Province from epidemiological week 42, 2022 to week 09, 2023 by specimen collection dates

Gauteng

A total of 107 laboratory-confirmed measles cases have been reported from epidemiological week 40, 2022 to week 09, 2023 in Gauteng Province displayed in Figure 8. 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, 76, have been reported from the City of Ekurhuleni, 15 from the City of Tshwane 11 cases from the City of Johannesburg and five cases from West Rand. Amongst these 107 cases, 92 have unknown vaccination status while seven cases were vaccinated (Table 3). Of the 107 cases, 10 were identified at Daveyton's main clinic in Ekurhuleni.

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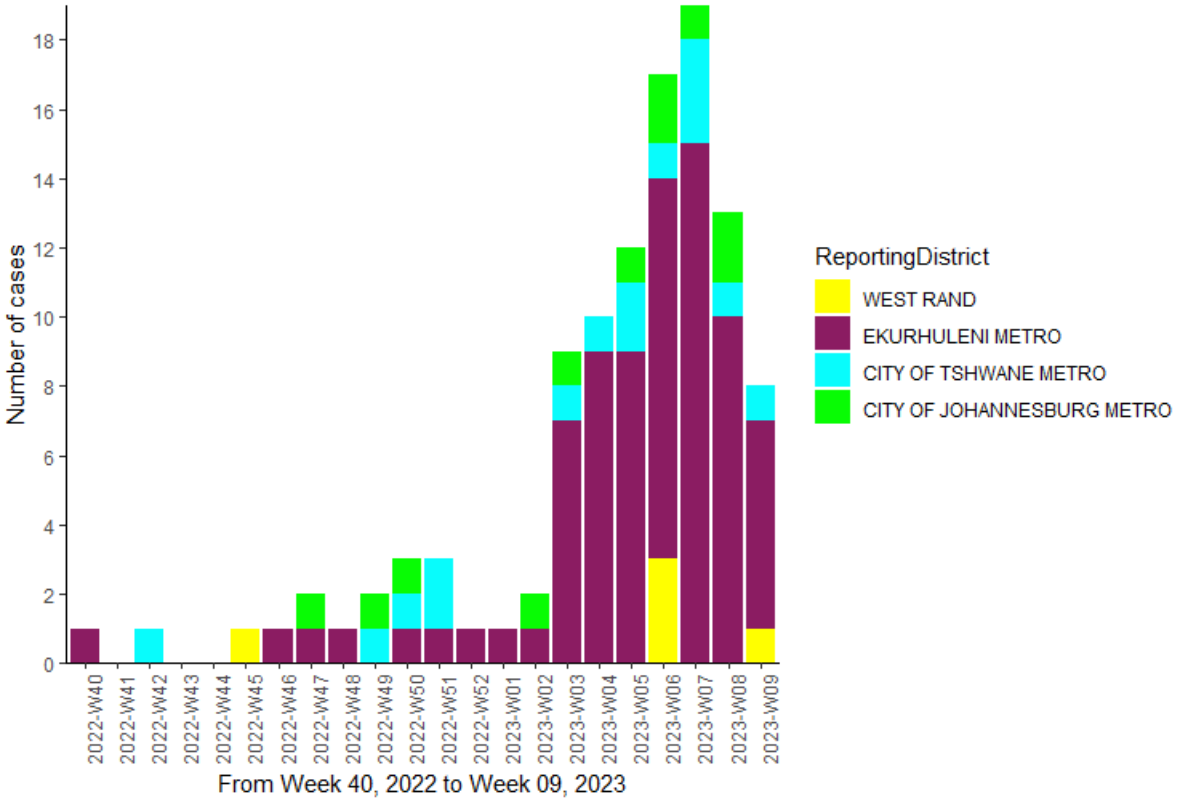

Figure 8. The epidemiological curve of the number of laboratory-confirmed measles cases in districts of Gauteng Province from epidemiological week 40, 2022 to week 09, 2023 by specimen collection dates.

Free State

There are currently 27 laboratory-confirmed measles cases in this province since epidemiological week 40, 2022 (Figure 9). 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 27 cases, 21 have been reported from the Thabo Mofutsanyana district, four from the Fezile Dabi district, and one each from the Lejweleputswa and Xhariep districts. Of these 27 cases reported from Thabo Mafutsanyana district, six were reported by Bethlehem clinic. The vaccination status of 18 cases is unknown, whereas three cases were not vaccinated, and six were (Table 3).

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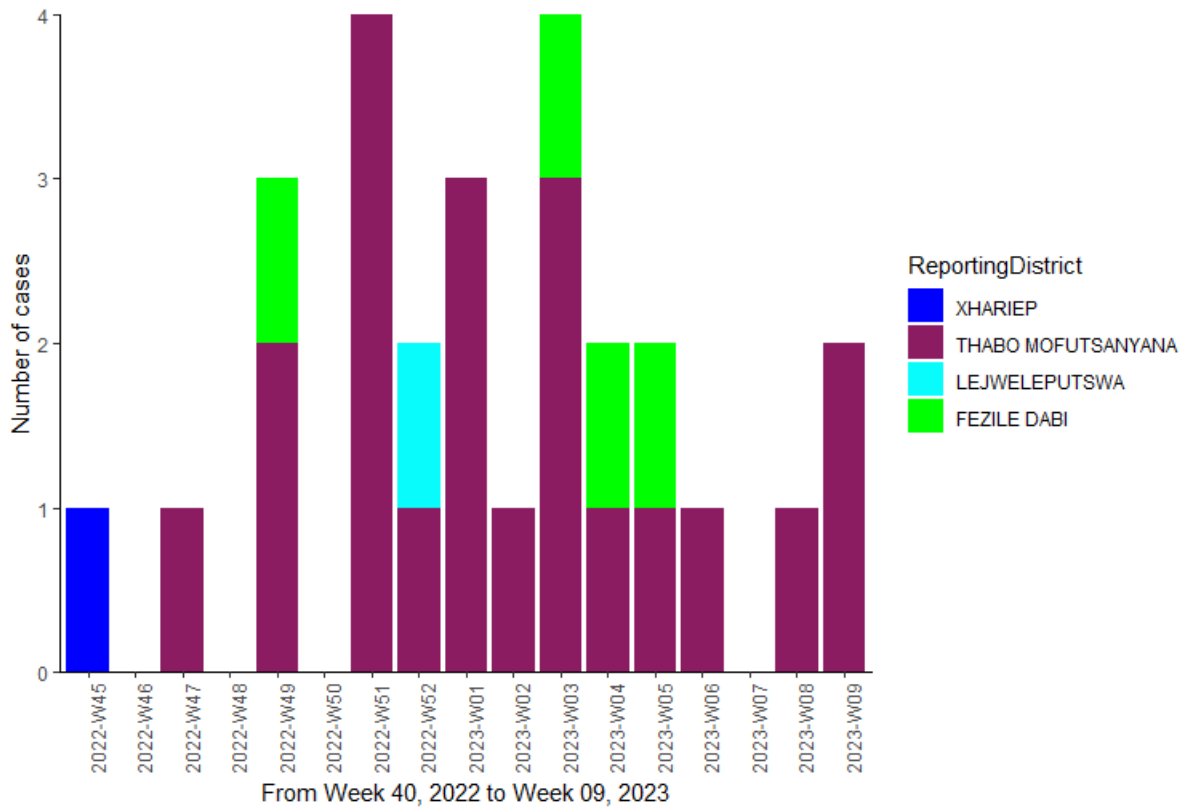

Figure 9. The epidemiological curve of the number of laboratory-confirmed measles cases in districts of Free State Province from epidemiological week 40, 2022 to week 09, 2023 by specimen collection dates.

Western Cape

An outbreak was declared in the Western Cape Province on 20 February 2023 (epidemiological week 08, 2023) following the detection of four laboratory-confirmed measles in the City of Cape Town (Figure 10). Since epidemiological week 40, 2022, a total of ten measles cases have been reported from the Western Cape, with all of the cases coming from the City of Cape Town. Four of these cases have been vaccinated, while the vaccination status of the remaining six is unknown (Table 3).

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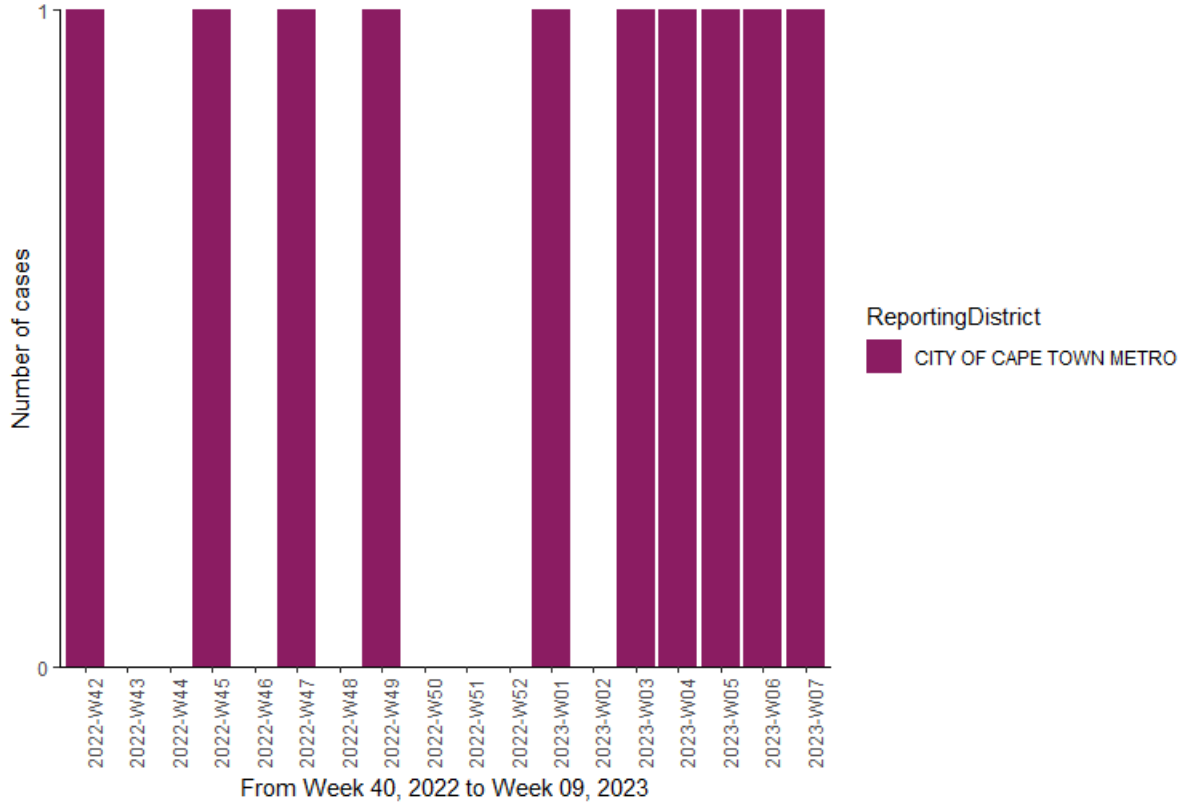

Figure 10. The epidemiological curve of the number of laboratory-confirmed measles cases in districts of Western Cape Province from epidemiological week 40, 2022 to week 09, 2023 by specimen collection dates.

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 seven cases in this province as of week 9 of 2023 (Figure 11). 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).

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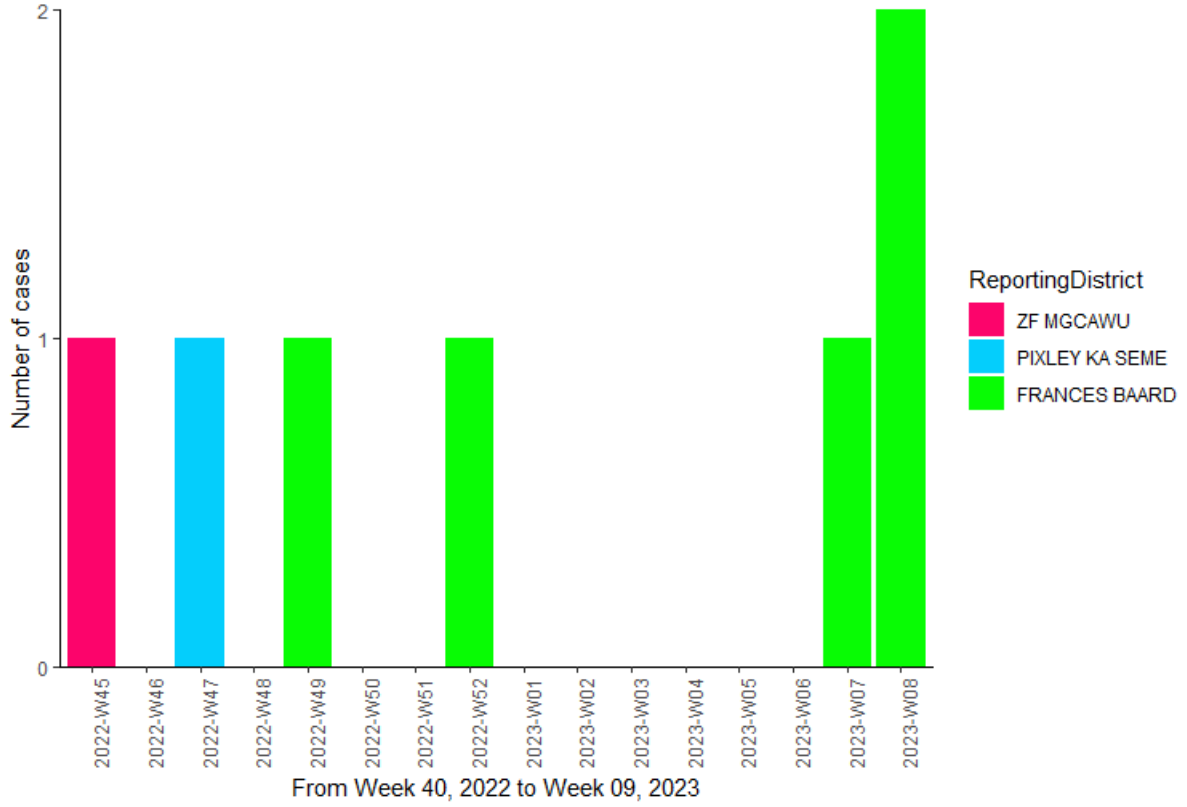

Figure 11. The epidemiological curve of the number of laboratory-confirmed measles cases in districts of Northern Cape Province from epidemiological week 45, 2022 to week 09, 2023 by specimen collection dates.

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 Ethekwini. There are 17 cases in this province as of week 9 of 2023 (Figure 12). Five of these cases were vaccinated, while the status of the remaining 11 cases is unknown (Table 3).

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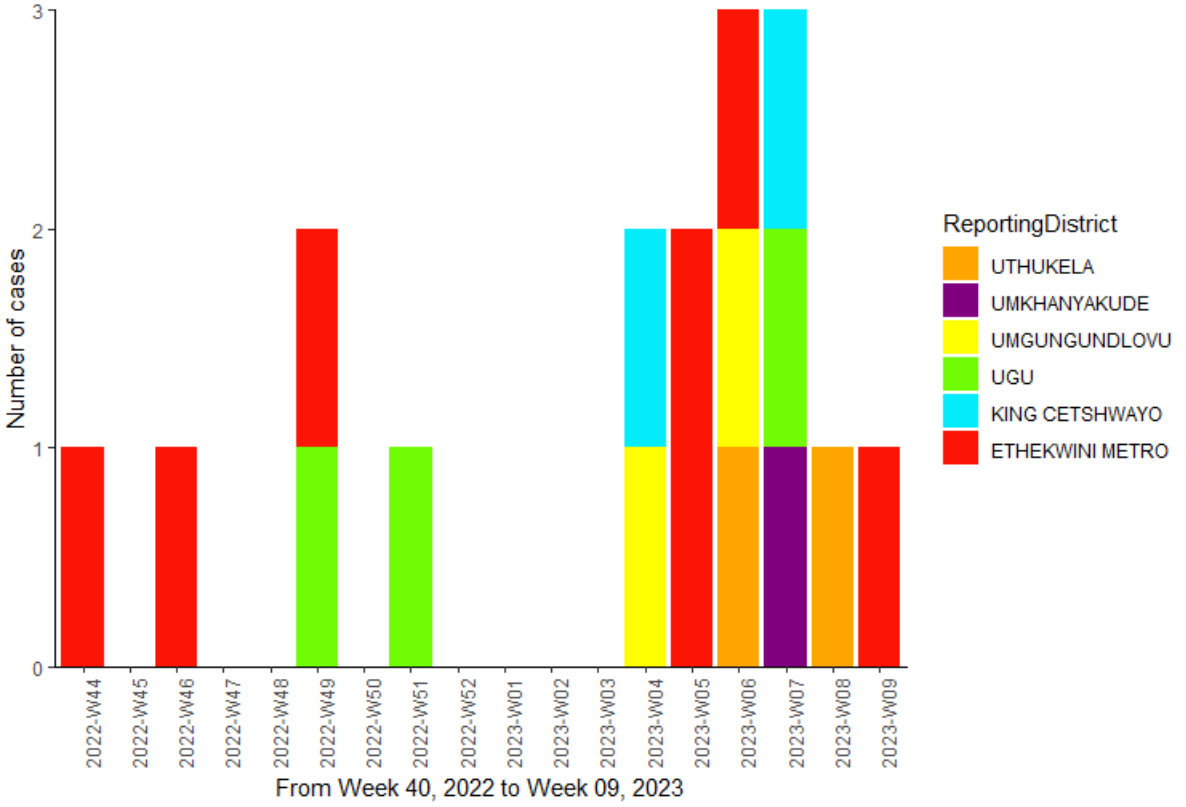

Figure 12. The epidemiological curve of the number of laboratory–confirmed measles cases in districts of KwaZulu-Natal Province from epidemiological week 44, 2022 to week 09, 2023 by specimen collection dates.

Conclusion

The total number of laboratory-confirmed measles cases continues to increase and the outbreak has moved to eight of the nine provinces in South Africa. The number of specimens submitted for testing has decreased when compared to previous weeks. 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 the district and province to complete the vaccine status on the investigation forms for the 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/.

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