



INTERIM SITUATION REPORT, 2 June 2023

(Based on laboratory testing data up until 31 May 2023)

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

Highlights

- The NICD has tested 6193 serum samples for measles since epidemiological week 40, 2022, of which 1034 (17%) were confirmed positive, all from outbreak-affected provinces. In the past weeks (week 20 up until week 21, 18/05/2023) there have been 19 laboratory-confirmed measles cases detected across the country, of which the majority were from Limpopo (14).
- The percentage of samples testing positive (PTP) decreased from 21% of 76 samples tested in week 19 to 20% of 56 samples tested in week 20.
- Following the national vaccination campaign, there has been a notable decrease in the number of measles cases reported in all provinces affected by the outbreak.
- In week 20, Limpopo province reported a total of 9 new measles cases, while sporadic cases were also reported in Gauteng (1), Mpumalanga (1) and Western Cape (1) provinces. No new cases were reported in Northern Cape and KwaZulu-Natal provinces in the past 6 weeks.
- 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 (23%) and 10-14 age groups (20%).
- Vaccination campaigns included all children including those aged 1 to 14 years of age and have been extended across provinces so as to obtain improved coverage rates.
- The majority of cases (66%) were reported from primary healthcare facilities, and the highest proportion of cases reported from hospitals (58%) was reported in children under the age of one.
- Nationally, the reproduction number as of 2023-05-18 was estimated to be 0.81 (0.32 – 1.5), suggesting that infection incidence is likely decreasing. There is a 70% chance that the reproduction number was below 1 as of 2023-05-18.
- At the provincial level, the reproduction number as of 2023-05-18 was estimated to be 0.79 (0.47 – 1.2) in Limpopo and 0.74 (0.5 – 1.1) in Gauteng, suggesting that infection incidence is likely decreasing. Other provinces had too few recent cases for robust reproduction number estimation, suggesting limited ongoing transmission, if any.

- At the district level, the reproduction number as of 2023-05-18 was estimated to be 0.93 (0.67 – 1.3) in Waterberg, suggesting that infection incidence is likely decreasing. In contrast the reproduction number was estimated to be 0.6 (0.36 – 0.97) in Greater Sekhukhune, 0.48 (0.24 – 0.9) in Mopani, and 0.27 (0.11 – 0.53) in Ekurhuleni Metro, suggesting that infection incidence is decreasing. Other districts had too few recent cases for robust reproduction number estimation, suggesting limited ongoing transmission, if any.

Outbreak overview

From epidemiological week 40, 2022 (ending 8 October 2022) to week 21, 2023 the NICD has tested 6193 serum samples for measles of which 1040 (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 21 of 2023, 1034 laboratory-confirmed cases were reported from eight provinces with declared measles outbreaks; Limpopo (459 cases), Mpumalanga (109 cases), North West (217 cases), Gauteng (175 cases), Free State (32 cases), Western Cape (15), KwaZulu-Natal (20) and Northern Cape (7) (Table 1). The geographical distribution of cases across South Africa from week 40 of 2022 until week 21 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 decreased from 76 in week 19 to 56 in week 20.

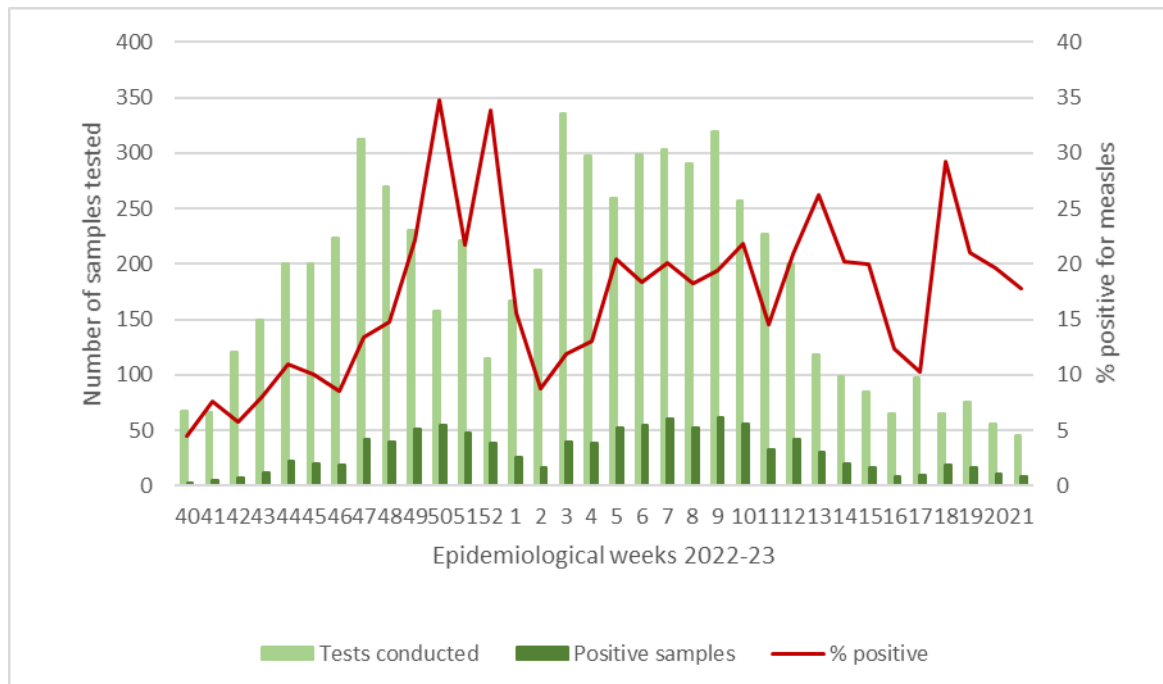


Figure 1. Number of serum samples submitted to the NICD for measles, week 40 2022, until week 21, 2023, and the number (dark green) and % tested positive (red line), by epidemiological week using the date the specimen was collected. *Data from week 21 will be updated in next week’s situation report, when complete data from samples collected that week becomes available.

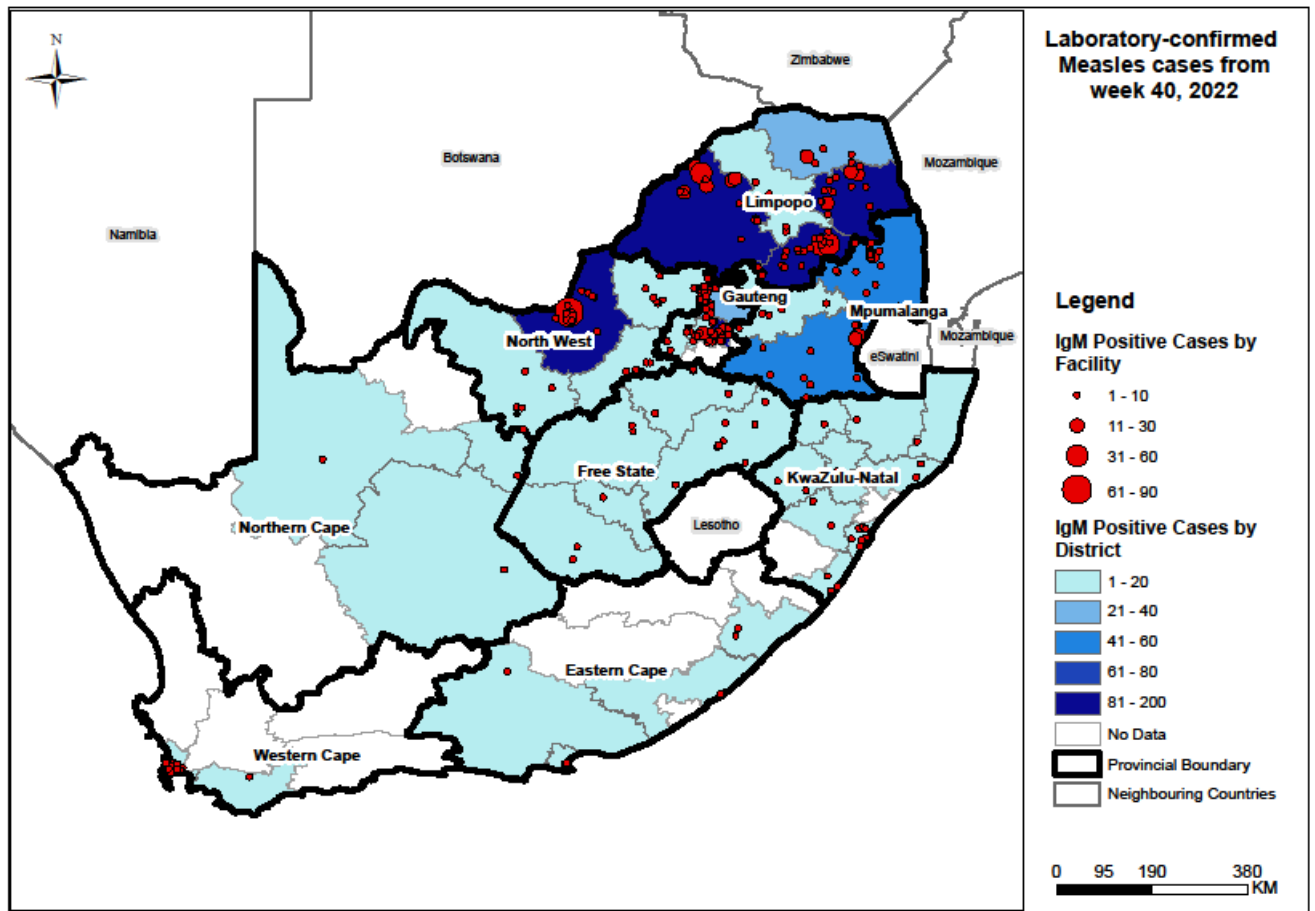


Figure 2. Distribution of laboratory-confirmed measles cases by testing site (red dots – the size of the dot indicates the number of cases from that facility) and district of South Africa (deepening colour of blue indicates the total number of cases by sub-district), from week 40 to week 21, 2023.

Reproduction number



The figures below show the latest reproduction number estimates at the province and district levels, for regions with a minimum of 40 detected cases since week 40 of 2022 and at least 7 days with cases in the past 60 days.

At the provincial level, the reproduction number as of 2023-05-18 was estimated to be 0.79 (0.47 – 1.2) in Limpopo and 0.74 (0.5 – 1.1) in Gauteng. At the district level, the reproduction number as of 2023-05-18 was estimated to be 0.93 (0.67 – 1.3) in Waterberg, suggesting that infection incidence is likely decreasing. In contrast the reproduction number was estimated to be 0.6 (0.36 – 0.97) in Greater Sekhukhune, 0.48 (0.24 – 0.9) in Mopani, and 0.27 (0.11 – 0.53) in Ekurhuleni Metro. Suggesting limited ongoing transmission.

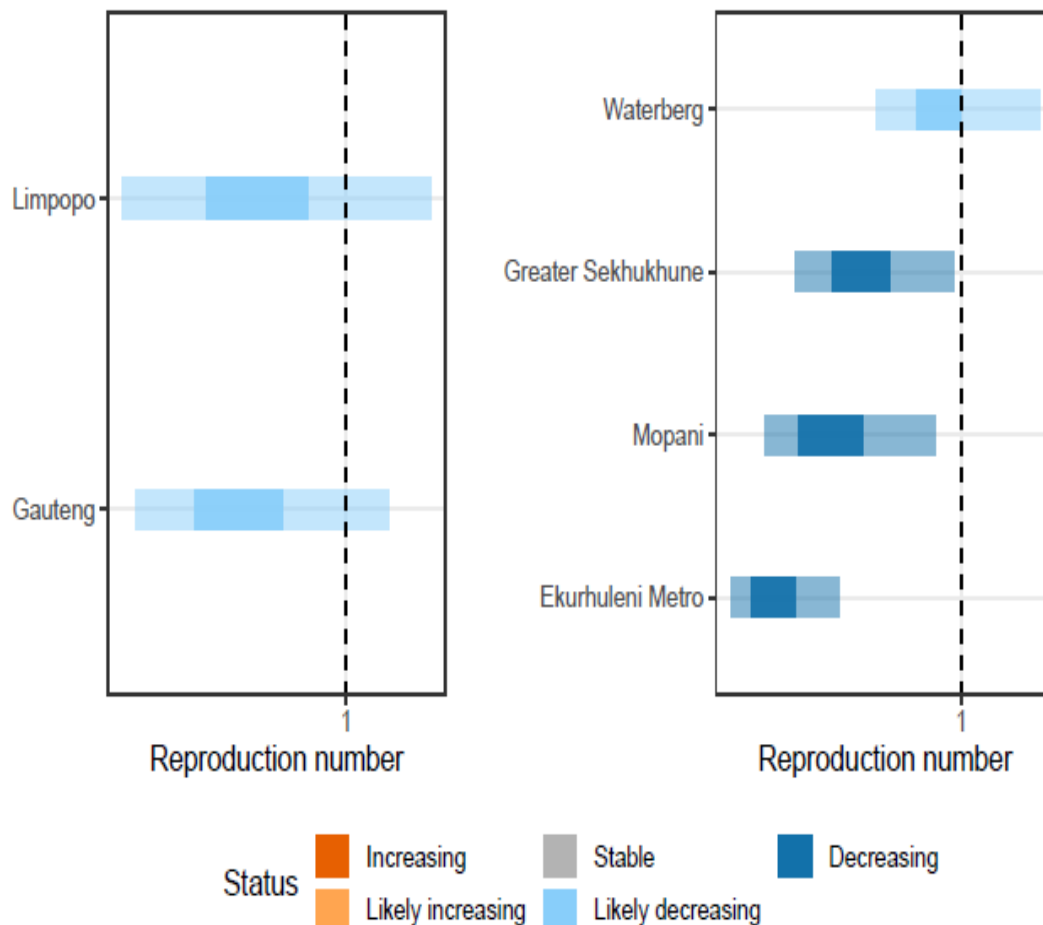


Figure 3. Provincial and district time-varying reproductive estimate from week 40, 2022 to late May 2023

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 21, 2023. Outbreak-associated cases are contained within the red bordered cells* (FS=Free State; GT=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 21 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 | 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 | | 3 | 3 | 1 | 7 | 5 | 28 | | | 47 |
| 52, 2022 | | 2 | 1 | | 7 | 5 | 24 | 1 | | 40 |
| 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 | | | 3 | | 5 | | | | | 8 |
| 17, 2023 | | | | | 10 | | | | | 10 |
| 18, 2023 | | 1 | 4 | | 13 | | 1 | | | 19 |
| 19, 2023 | | 2 | 2 | | 12 | | | | | 16 |
| 20, 2023 | | | 1 | | 9 | | | | 1 | 11 |
| 21, 2023 | | | 2 | | 5 | 1 | | | | 8 |
| Total | 6 | 32 | 175 | 20 | 459 | 109 | 217 | 7 | 15 | 1040 |

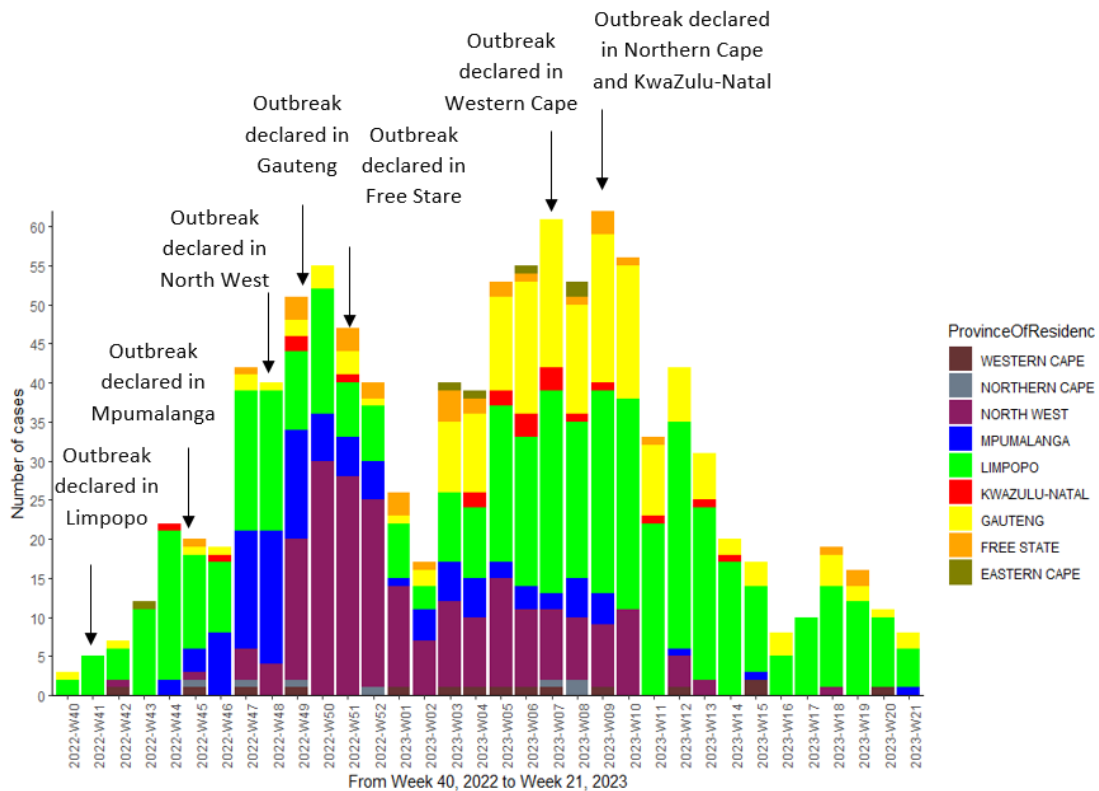


Figure 4. The epidemiological curve of the number of laboratory-confirmed measles cases in South Africa from week 40, 2022 to week 21 2023 by specimen collection dates and by province, indicating the weeks in which outbreaks were declared in Limpopo, Mpumalanga, North West, Gauteng, Free State, Western Cape, Northern Cape and Kwa-Zulu Natal provinces. *Data from week 21 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 441, (43%) were in the 5-9-year age group, followed by 238 (23%) in the 1-4-year age group and 207 (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, 111 (10.9%) of the 1034 cases were vaccinated, 136 (13.2%) were unvaccinated, and the vaccination status of 787 (75.9%) 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.

Table 2. Age distribution of laboratory-confirmed measles cases from epidemiological week 40, 2022 to week 21, 2023, in provinces with a declared measles outbreak with age-specific attack rates.

| Age group | FS | | GT | | 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 | 17 | 6.45 | 19 | 14.40 | 5 | 5.52 | 8 | 9.90 | 3 | 2.50 | 0 | 0.00 | 1 | 0.41 | 57 | 5.65 |
| 1-4 years | 11 | 5.24 | 34 | 3.27 | 89 | 16.49 | 32 | 9.17 | 56 | 17.79 | 6 | 1.29 | 2 | 1.97 | 8 | 0.83 | 238 | 5.98 |
| 5-9 years | 13 | 4.87 | 71 | 5.66 | 207 | 31.06 | 38 | 8.89 | 99 | 25.28 | 1 | 0.18 | 3 | 2.38 | 9 | 0.76 | 441 | 9.03 |
| 10-14 years | 4 | 1.38 | 29 | 2.36 | 110 | 16.48 | 23 | 4.97 | 36 | 8.82 | 2 | 0.34 | 2 | 1.59 | 1 | 0.08 | 207 | 4.17 |
| ≥15 years | 0 | 0.00 | 24 | 0.19 | 34 | 0.86 | 11 | 0.32 | 18 | 0.60 | 3 | 0.05 | 0 | 0.00 | 1 | 0.01 | 91 | 0.23 |
| Total | 32 | 1.10 | 175 | 1.09 | 459 | 7.73 | 109 | 2.31 | 217 | 5.18 | 15 | 0.21 | 7 | 0.53 | 20 | 0.17 | 1034 | 1.92 |

FS= Free State; GT= 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 21, 2023 in provinces with a declared measles outbreak.

| Vaccination status | FS | GT | LP | MP | NW | WC | NC | KZN | Total |
|--------------------|-----------|------------|------------|------------|------------|-----------|----------|-----------|-------------|
| Vaccinated | 9 | 13 | 39 | 15 | 18 | 7 | 3 | 7 | 111 (10.9%) |
| Unvaccinated | 3 | 13 | 71 | 18 | 30 | 0 | 0 | 1 | 136 (13.2%) |
| Unknown | 20 | 149 | 349 | 76 | 169 | 8 | 4 | 12 | 787 (75.9%) |
| Total | 32 | 175 | 459 | 109 | 217 | 15 | 7 | 20 | 1034 |

Table 4: Age distribution of vaccinated persons from epidemiological week 40, 2022 to week 21, 2023 in provinces with a declared measles outbreak.

| Age group | FS | GT | LP | MP | NW | WC | NC | KZN | Total |
|---------------|----------|-----------|-----------|-----------|-----------|----------|----------|----------|------------|
| < 1 year | 2 | 2 | 3 | 0 | 0 | 3 | 0 | 0 | 10 |
| 1 – 4 years | 2 | 4 | 12 | 2 | 5 | 3 | 0 | 3 | 31 |
| 5 – 9 years | 2 | 7 | 18 | 9 | 12 | 1 | 2 | 4 | 55 |
| 10 – 14 years | 3 | 0 | 6 | 4 | 1 | 0 | 1 | 0 | 15 |
| ≥15 years | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 9 | 13 | 39 | 15 | 18 | 7 | 3 | 7 | 111 |

Table 5. The facility type where laboratory-confirmed measles cases have been identified, for epidemiological week 40, 2022 to week 21, 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 | 24 | 156 | 301 | 143 | 62 | 686 (66) |
| From a hospital (%) | 33 (58) | 82 (35) | 140 (32) | 64(31) | 29(32) | 348 (34) |
| Total | 57 | 238 | 441 | 207 | 91 | 1034 |

An overview of the outbreak in the Limpopo Province

In total, 459 cases of laboratory-confirmed measles were reported between epidemiological week 40, 2022 to week 21, 2023 with the majority of the measles cases reported in the Waterberg, Greater Sekhukhune and Mopani districts. Figure 6 shows an epidemiological curve from week 40, 2022 to week 21 of 2023 in Limpopo province. Waterberg district reported the highest number of measles cases which is 186 cases, Mopani district reported 98 cases, Greater Sekhukhune district reported 132 cases, Vhembe district reported 35 cases and Capricorn district reported eight cases. Dilokong hospital reported 54 cases out of the 132 from Greater Sekhukhune. Amongst the 35 cases reported from the Vhembe district, 32 cases originated from Makhado (Louis Trichardt Hospital and Clinic). In Waterberg district, 53 cases of 186 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 31.06 per 100,000 persons. This was followed by the 1-4 years' age group with an attack rate of 16.50 per 100,000 persons. Of the 459 measles cases in Limpopo province, 349 (76%) had an unknown –vaccination status, 39 (9%) were vaccinated, and 71 (15%) were unvaccinated (Table 3).

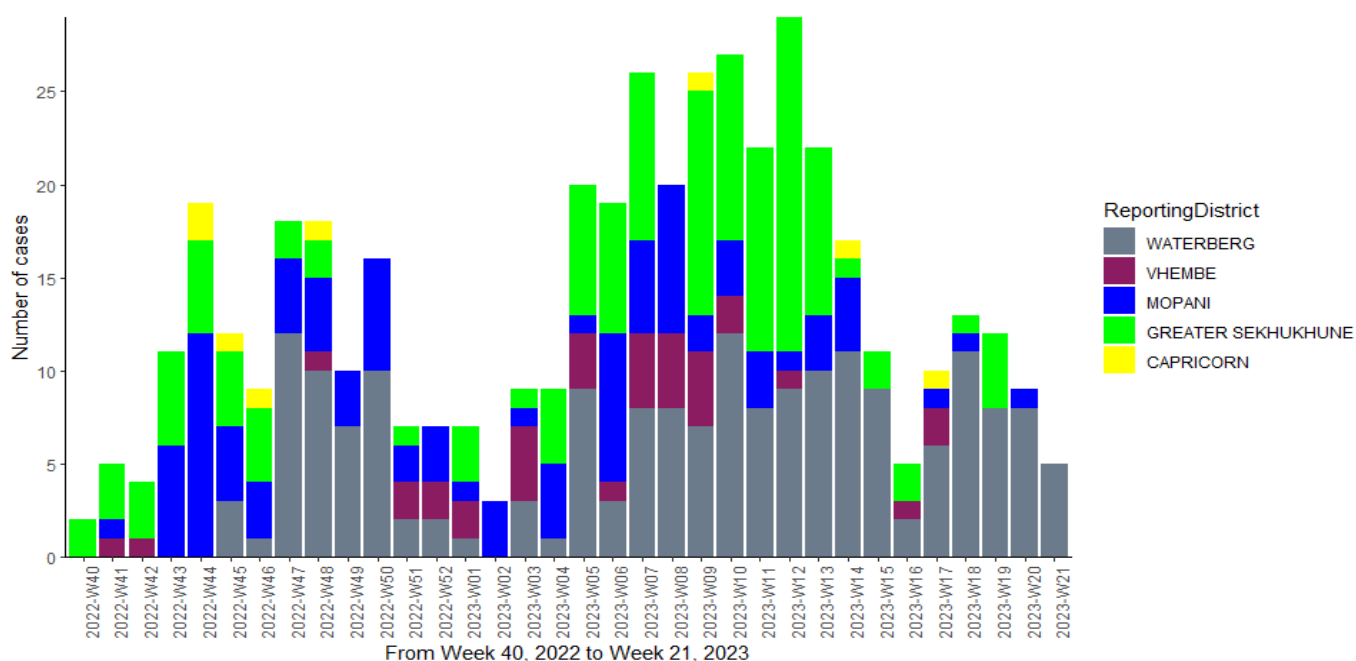


Figure 5. The epidemiological curve of the number of laboratory-confirmed measles cases by districts of Limpopo Province from epidemiological week 40, 2022 to week 21, 2023 by specimen collection dates.

Gauteng

A total of 175 laboratory-confirmed measles cases have been reported from epidemiological week 40, 2022 to week 21, 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, 109, have been reported from the City of Ekurhuleni, 37 from the City of Tshwane, 18 cases from the City of Johannesburg, and 11 cases from West Rand. Amongst these 175 cases, 149 have unknown vaccination status while 13 cases were vaccinated (Table 3). Of the 109 cases in Ekurhuleni, 14 were identified at Daveyton's main clinic in Ekurhuleni.

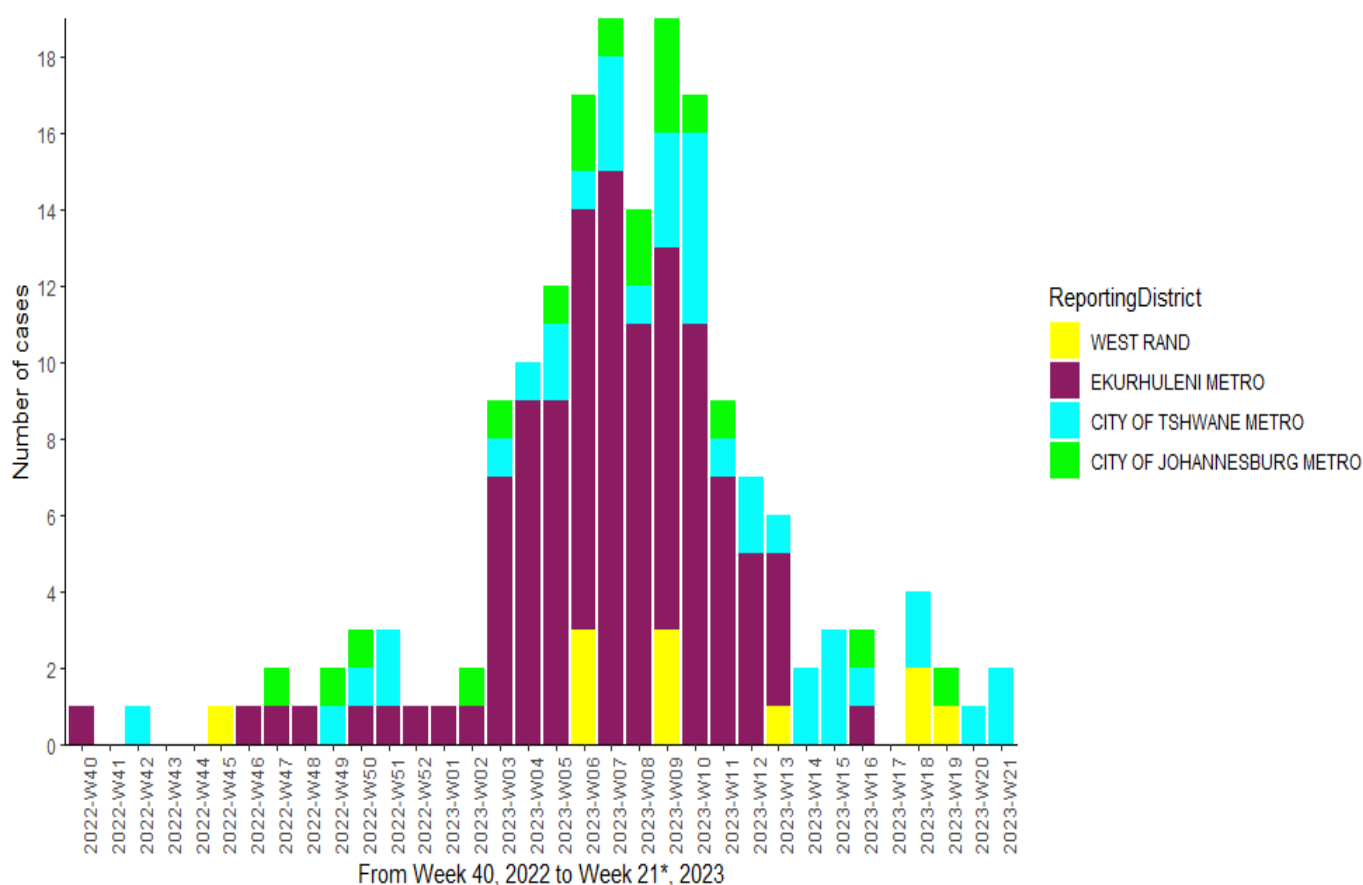


Figure 6. The epidemiological curve of the number of laboratory-confirmed measles cases in districts of Gauteng Province from epidemiological week 40, 2022 to week 21, 2023 by specimen collection dates.

Free State

There are currently 32 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 Thabo Mofutsanyana district. Of the 32 cases, 20 have been reported from Thabo Mofutsanyana district, seven from Fezile Dabi district, two cases from Xhariep district, two cases from Mangaung metro and one case from Lejweleputswa district. Of these 20 cases reported from Thabo

Mafutsanyana district, five were reported by Bethlehem clinic. The vaccination status of 20 cases is unknown, whereas three cases were not vaccinated, and nine were (Table 3).

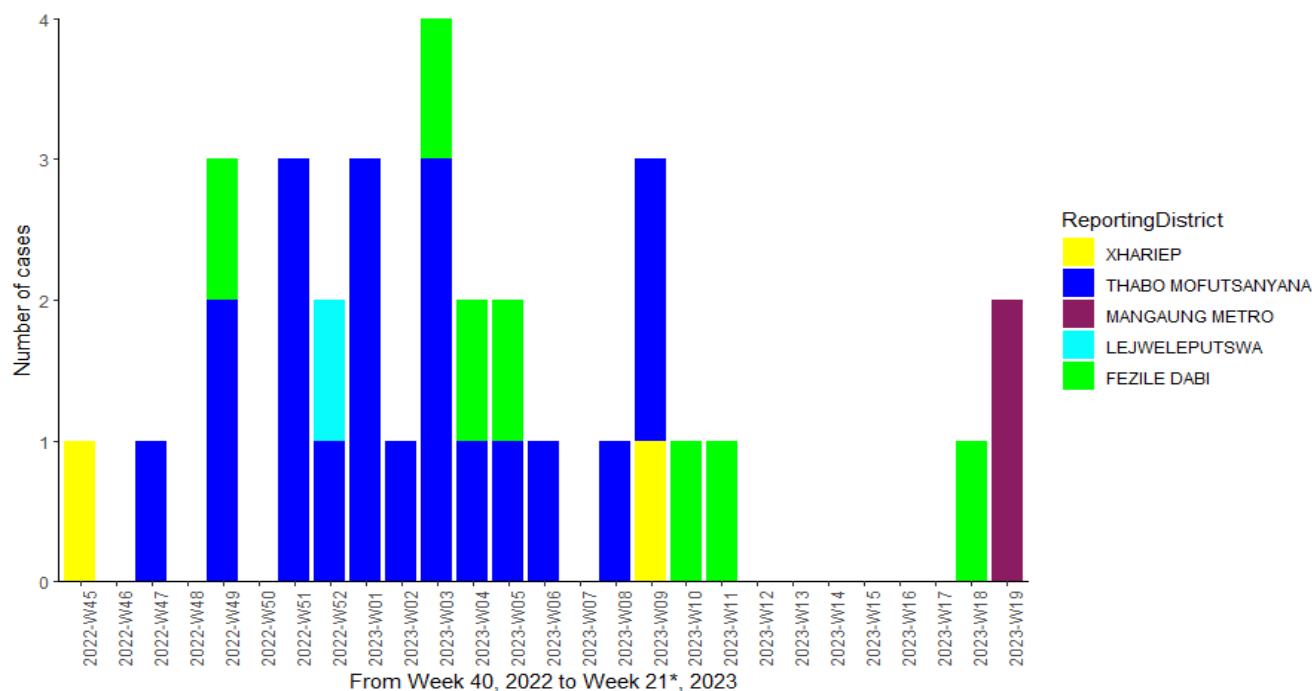


Figure 7. The epidemiological curve of the number of laboratory-confirmed measles cases in districts of Free State Province from epidemiological week 40, 2022 to week 21, 2023 by specimen collection dates.

Mpumalanga

In total, 109 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 21, 2023, with Ehlanzeni and Gert Sibande districts reporting the majority of cases, 49 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 1-4 years (Table 2), with an attack rate of 9.17 per 100,000 persons. Of the 109 cases, 76 had an unknown vaccination status, 15 were vaccinated and 18 were unvaccinated (Table 3).

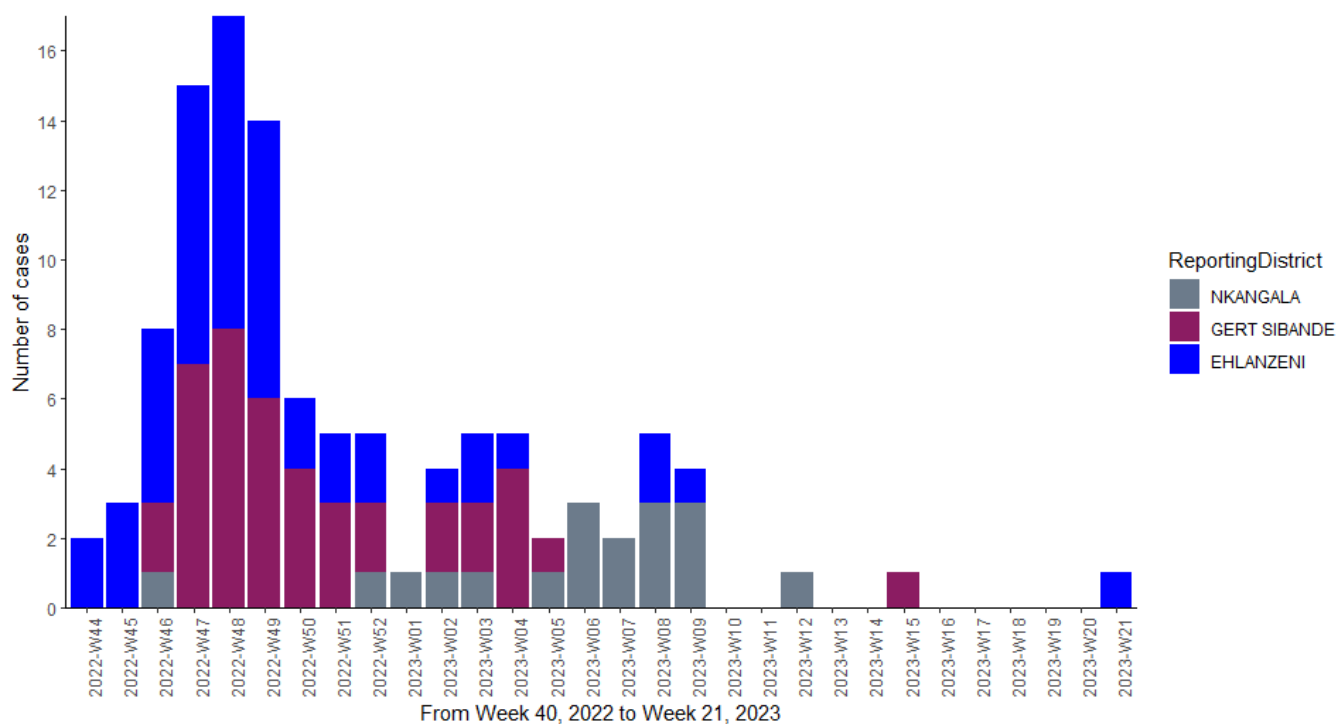


Figure 8. The epidemiological curve of the number of laboratory-confirmed measles cases in districts of Mpumalanga Province from epidemiological week 40, 2022 to week 20, 2023 by specimen collection dates.

Conclusion

Overall, the incidence of measles appears to be decreasing across the country, with reproduction numbers for all provinces <1 . However, the Limpopo province continues to contribute a significant number of cases, primarily within the 5-9 years age group, as observed in the previous week. Strengthening surveillance for measles cases is recommended not to miss sporadic cases in the areas where measles cases are not reported after the measles vaccination campaign. Prevention and control of measles outbreaks can only be achieved through vaccination. The national measles vaccination coverage remain low in the population at risk. It is never too late to vaccinate – children over the age of 6 months to 15 years were 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.