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

the National Institute for Communicable Diseases

NOTIFIABLE MEDICAL CONDITIONS SURVEILLANCE SYSTEM

NMCSS Annual report 2023

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Introduction

The Notifiable Medical Conditions Surveillance System (NMCSS) is a national surveillance system that collects data on notifiable medical conditions (NMCs) from all provinces in South Africa. Notifiable Medical conditions are stipulated in the National Health Act (Act 61 of 2003) and the National Health Act Regulations (2017). The most recent list of notifiable medical conditions was gazette.

Data is collected through both laboratory and clinical notifications. These notifications make up signals which are verified by the relevant centers at the National Institute for communicable Diseases (NICD). Verification is done by means of review and epidemiological classification. The NMCSS is used to monitor trends in NMCs, detect outbreaks, and inform public health interventions. While data is reviewed daily by public health professionals, data is disseminated into the publica domain monthly. This report forms the annual dissemination of data which involved the ability to analyse some trends of conditions over time.

Report purpose

This report aims to describe the notifications received by the NMCSS in 2023. It is intended for use by public health professionals, epidemiologists, and other stakeholders involved in the surveillance and control of NMCs in South Africa. This report is important as it provides a summary of the NMCSS data for the year, providing some estimates of disease burden post-COVID-19. It has also recorded outbreaks that occurred in 2023, namely Cholera, Measles, and Rubella.

The reader is urged to read the table or figure captions before interpreting the information. The report details notifications designed to demonstrate the systems sensitivity. The epidemiological classifications are also presented and assist in standardizing case numbers to other countries. If you encounter data that raises concerns, please verify the order in which the numbers are presented.

This report also provides information on surveillance system attributes, such as where notification come from, data quality, and timeliness. Interest in these attributes may vary depending on the stakeholder, however, we strongly encourage anyone involved in the diagnosis, collection and reporting of Notifiable Medical Conditions, especially clinicians, to review the data quality and timeliness of the report so that these attributes may be improved.

We will describe the epidemiology of notifications received relating to the outbreaks mentioned earlier. We will report on some data quality attributes of importance to these conditions. We will then describe notifications more generally. If there are definitions you are unsure of, please see **appendix no.3**. While the NMCSS is a national surveillance System, it does not capture everything, please see NMCSS interpretation before inferring and extrapolating anything from the data presented.

If you have any questions relating to this report for please contact media@nicd.ac.za for media queries; for specific NMC queries please contact the NMC epidemiologist brianb@nicd.ac.za and/or matimbam@nicd.ac.za

Highlights

- A total of 143 332 cases were notified in January 2023 and the majority were category 2 conditions.
- Category 1 cases were reported in median (IQR) of 0 (0, 2) days.

NMC Reporting application.

- NMC Reporting App is available on both web and mobile platforms
- Use recommended browsers to access NMC reporting App for notifications, searching of cases and reports.
- Register if you have no NMC account and you can reset the password if you have not used the application over 12 months.

NOTES: For any additional information contact the NMC national technical team: NMCAppSupport@nicd.ac.za or NMC hotline 072 621 3805. Please refer to Appendices for NMC data flow, definitions and interpretation of epidemiology data in this report.

DATA IS CONTINUOUSLY CLEANED, DE-DUPLICATED, AND UPDATED, HENCE IS SUBJECT TO CHANGE. ALL NUMBERS REPORTED ARE PRELIMINARY UNLESS OTHERWISE STATED. DATE OF DIAGNOSIS IS USED FOR REPORTING.

Overview of Category 1 Conditions

Table 1: The number of notifications that are suspected and confirmed for category 1 conditions in South Africa, January – December 2023

Condition	**Overall**, N = 15 809[1]	**Confirmed**, N = 8 615[1]	**Suspected**, N = 7 194[1]
Acute flaccid paralysis	215	0	**215**
Acute rheumatic fever	8	0	**8**
Anthrax	1	0	**1**
Botulism	0	0	0
Cholera	1 267	195	**1 072**
Congenital rubella syndrome	140	1	**139**
Covid-19	0	0	0
Crimean-congo viral haemorrhagic fever (human)	1	1	0
Diphtheria	52	11	**41**
Ebola virus (VHF)	0	0	0
Enteric fever (typhoid or paratyphoid fever)	125	111	**14**
Food borne illness outbreak	716	12	**704**
Haemolytic uraemic syndrome (HUS)	4	0	**4**
Listeriosis	74	43	**31**
Malaria	6 543	6 543	0
Marburg virus (VHF)	1	0	**1**
Measles	3 023	216	**2 807**
Meningococcal disease	132	85	**47**
Mpox	0	0	0
Pertussis	2 404	1 156	**1 248**
Plague	0	0	0
Poliomyelitis	0	0	0
Rabies	11	10	**1**
Respiratory disease caused by a novel respiratory pathogen	25	0	**25**
Rift valley fever (human)	0	0	0
Rubella	1 066	231	**835**
Smallpox	0	0	0
Waterborne illness outbreak - undefined	0	0	0
Yellow fever	1	0	**1**

[1]Suspected and confirmed cases are independent and are not totaled - suspected and confirmed cases are distinct.

NMC data summary, January 2023

A total of n=144 363 cases were notified to the NMCSS in January 2023 **(See Appendix no.3 for definitions)**. There were 143 332 current notifications; the majority (n=125 845, 88%) were category 2 conditions. The provinces with the highest number of notifications were GP (34 503, 24%), KZN (32 890, 23%), and WC (23 152, 16%). The provinces with the least number of notifications were NC (5 580, 3.9%), and NW (5 715, 4.0%). (**Figure 1**) There were 1031 back captured clinical notifications diagnosed between October 2013 and January 2023 and only notified in January 2023. The majority () of those notifications were "TB: pulmonary". (**See Appendix no.1**).

Most of the notified cases were males (84 819, 59%). Individuals in the 35–39-year age group represented the majority (15 825, 12%) of notified cases. At the time of notification, 30 420 (21%) of the notified cases were reported to be hospitalized, while 1 184 (0.8%) were transferred to another healthcare facility. There were 1 543 notifications with death reported for the vital status with case fatality ratio of 1.1%.

Table 2: Description of NMC notifications by case source

NMC Category	**Total,** N=143 332	**Clinical notifications**, n = 101 397	**Merged Cases**, n = 6 087	**Laboratory notifications**, n = 35 848
Category 1	15 809 (11%)	7 795 (7.7%)	2 476 (41%)	5 538 (15%)
Category 2	125 845 (88%)	93 602 (92%)	3 374 (55%)	28 869 (81%)
Category 3	1 678 (1.2%)	0 (0%)	237 (3.9%)	1 441 (4.0%)

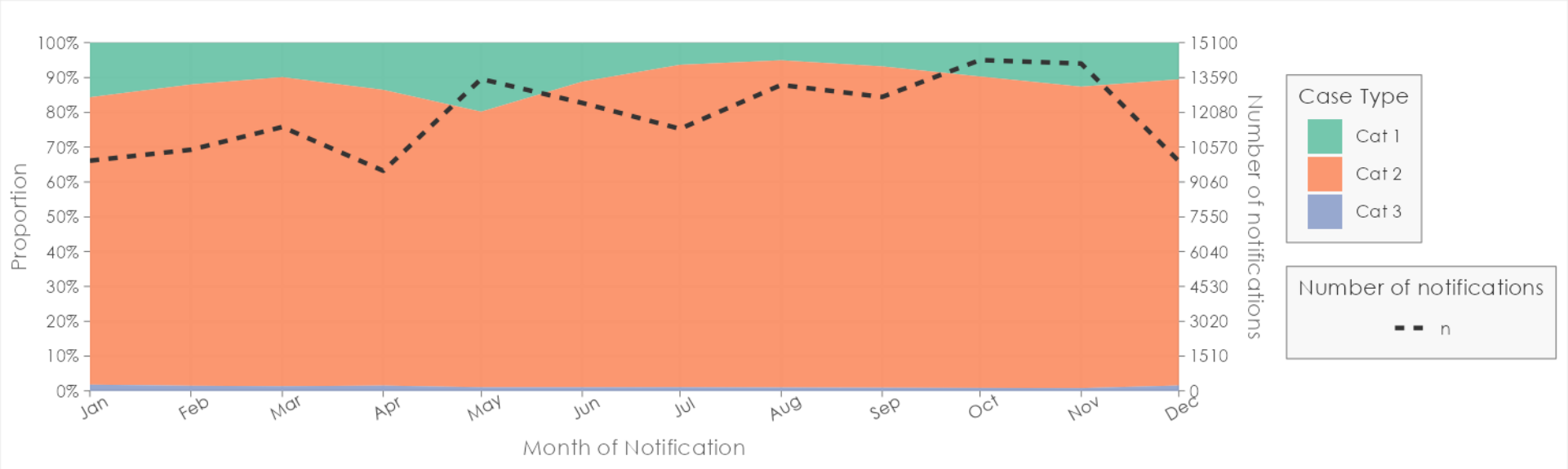


Figure 1: The proportion of Categories of Notifications Notified to the NMCSS in 2023

Distribution of Category 1 NMCs by province and case definition

Malaria was the most common (6 543, 41%) category 1 notification. The province with the highest number of notifications for Malaria was Limpopo (3151 ,48.2%).

Table 3: The number of *notifications* in each province and the number of notifications that are confirmed or suspected in South Africa during 2023

	Provinces									Case		Deaths	
Condition[1]	**EC**	**FS**	**GP**	**KZN**	**LP**	**MP**	**NC**	**NW**	**WC**	**Confirmed**	**Suspected**	**Confirmed**	**Suspected**
Acute flaccid paralysis	13	5	51	61	23	8	5	3	46	0	215	0	0
Acute rheumatic fever	1	1	2	1	1	0	0	0	2	0	8	0	0
Anthrax	0	0	1	0	0	0	0	0	0	0	1	0	0
Cholera *	28	223	812	6	52	96	1	49	0	195	1 072	17	36
Congenital rubella syndrome	11	9	15	41	2	2	12	3	45	1	139	0	4
Crimean-congo viral hemorrhagic fever (human)	0	0	0	0	0	0	0	1	0	1	0	0	0
Diphtheria †	2	2	4	7	0	0	2	1	34	11	41	2	1
Enteric fever (typhoid or paratyphoid fever)	4	2	64	16	1	2	0	7	29	111	14	2	0
Food borne illness outbreak	234	22	251	96	12	64	2	11	24	12	704	0	6
Haemolytic uraemic syndrome (HUS)	0	0	0	0	2	1	0	0	1	0	4	0	1
Listeriosis	5	2	18	19	3	0	0	1	26	43	31	11	1
Malaria	85	82	1 344	431	3 151	960	37	181	272	6 543	0	54	0
Marburg virus (VHF)	0	0	0	0	0	1	0	0	0	0	1	0	0
Measles	57	56	635	296	578	115	139	168	979	216	2 807	0	4
Meningococcal disease	14	11	32	9	2	1	3	6	54	85	47	5	9
Pertussis	160	232	777	381	122	146	30	63	493	1 156	1 248	23	13
Rabies	4	0	0	6	1	0	0	0	0	10	1	9	0
Respiratory disease caused by a novel respiratory pathogen	3	3	3	13	0	0	0	2	1	0	25	0	0
Rubella	26	44	39	40	13	7	122	18	757	231	835	0	0
Yellow fever	0	1	0	0	0	0	0	0	0	0	1	0	0

[1]* Serotype information (O1 Ogawa serotype) not available on NMC;
† Toxin producing results not available on NMC

Dot counts

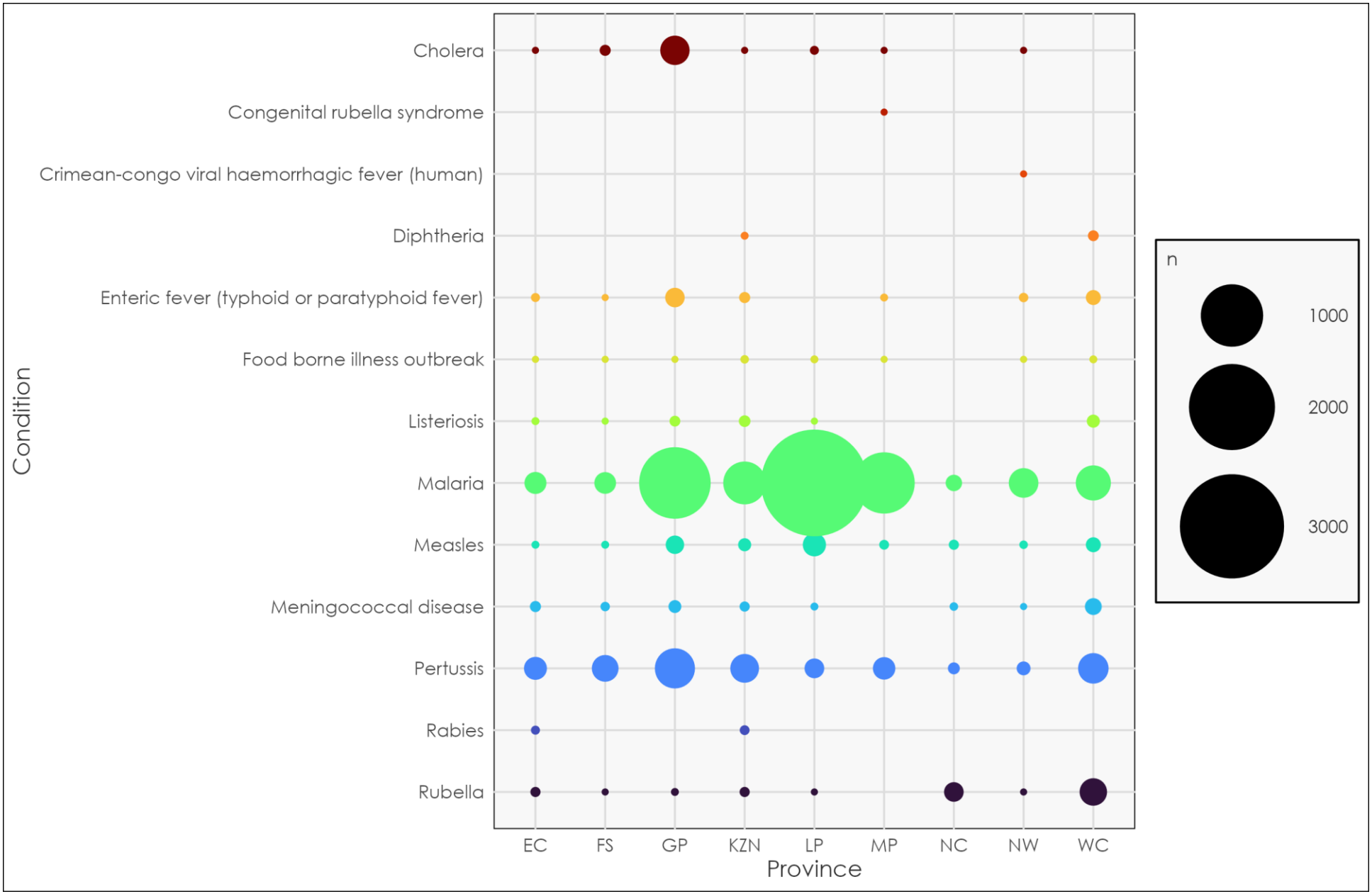


Figure 2: Distribution of the number of Category 1 NMC notifications by province, January-December 2023

Trends

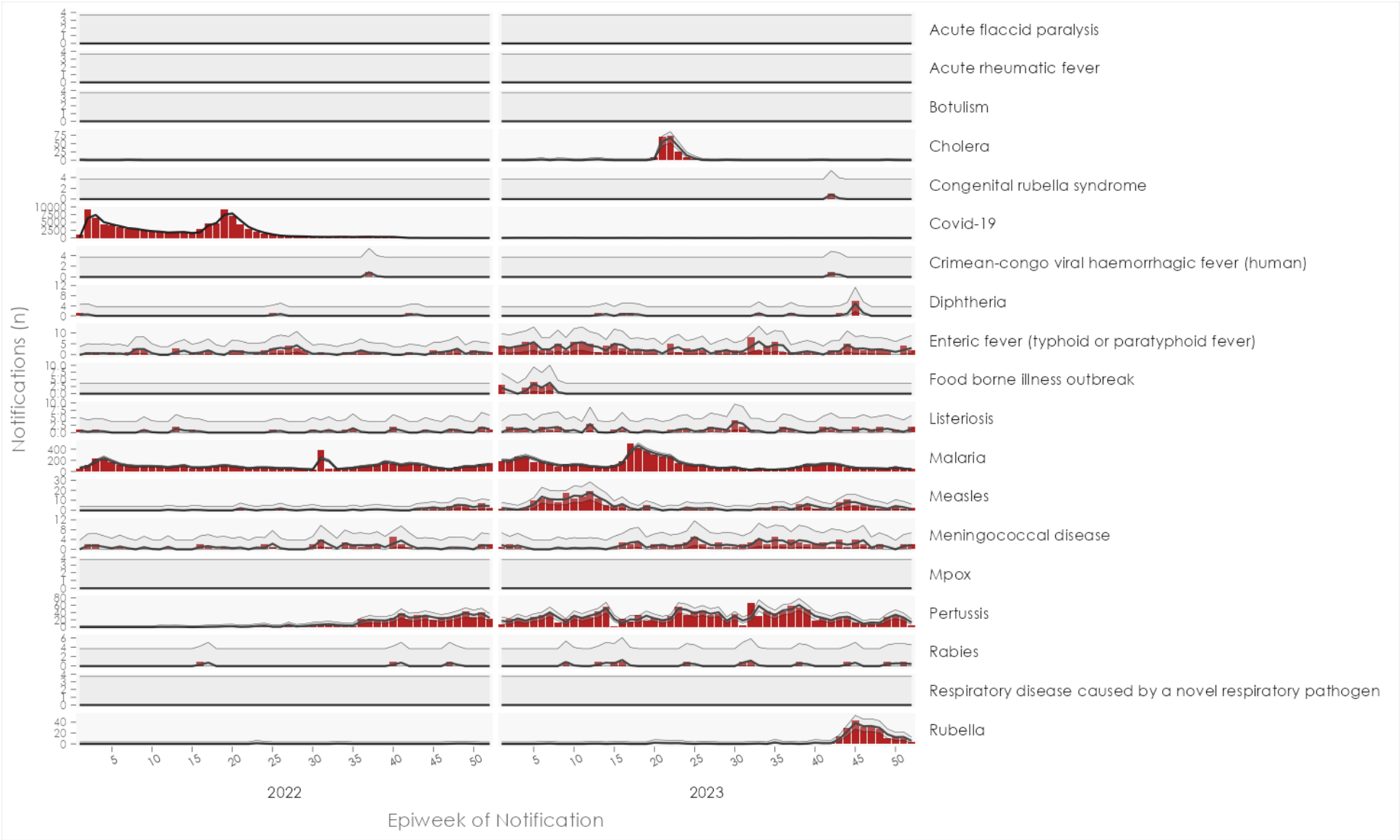


Figure 3: Confirmed Notifications per epiweek of Category 1 NMCs in South Africa, 2022-2023.

Proportions of Notifications

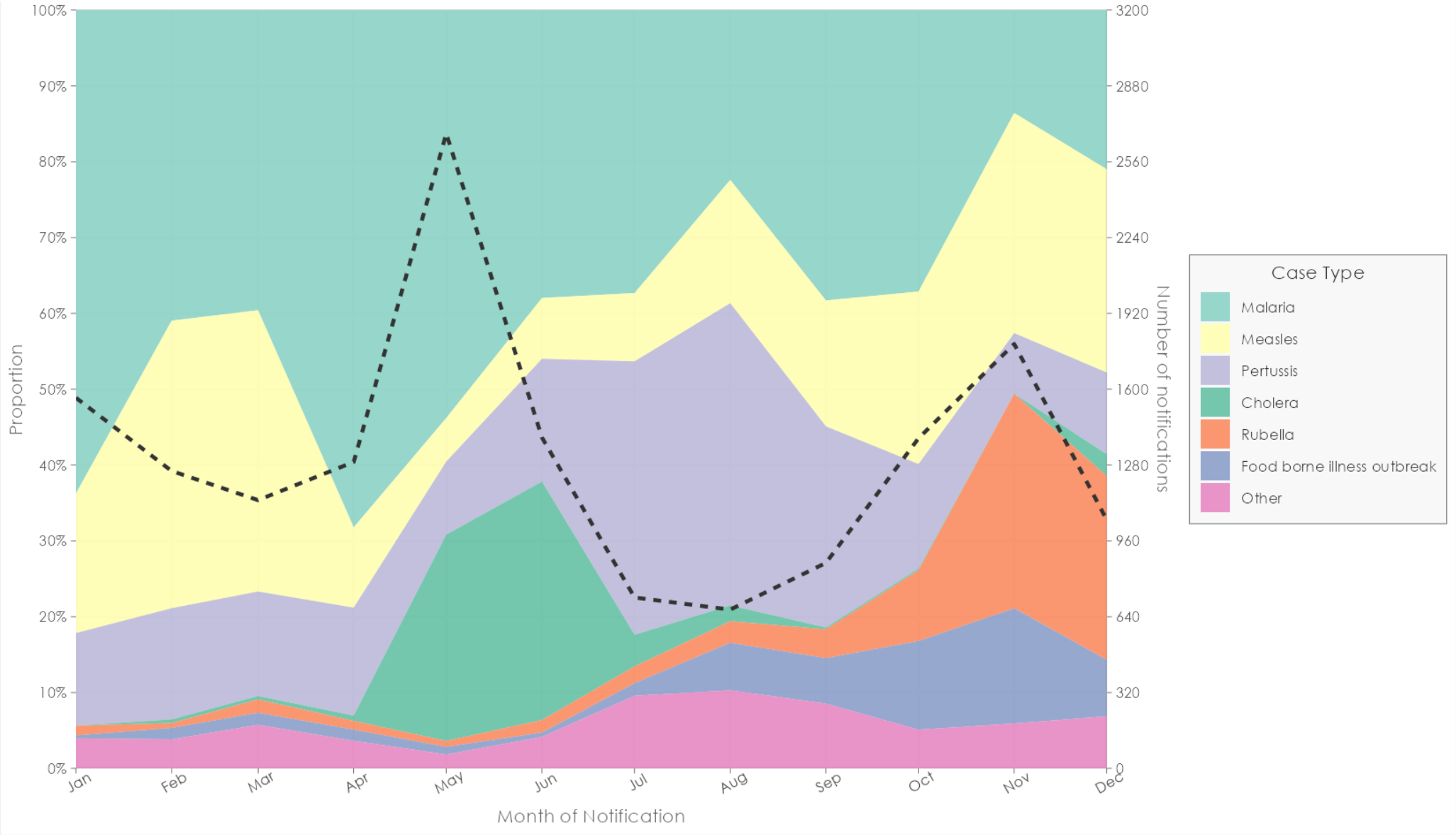


Figure 4: *The proportion of different category 1 condition reported per month and the total number of Category 1 notifications per month, South Africa, January-December 2023*

Notifications Category 1

Table 4: *The number of notifications per month, South Africa, January-December 2023*

Condition	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Acute flaccid paralysis	20	8	19	8	21	16	20	16	30	21	18	18
Acute rheumatic fever	2	0	1	2	0	1	0	1	0	0	1	0
Anthrax	0	0	0	0	0	0	0	0	0	1	0	0
Botulism	0	0	0	0	0	0	0	0	0	0	0	0
Cholera	0	6	5	9	729	439	30	14	2	3	0	30
Congenital rubella syndrome	8	9	13	5	2	5	19	7	6	15	32	19
Covid-19	0	0	0	0	0	0	0	0	0	0	0	0
Crimean-congo viral haemorrhagic fever (human)	0	0	0	0	0	0	0	0	0	1	0	0
Diphtheria	0	0	2	2	6	4	0	4	4	2	23	5
Ebola virus (VHF)	0	0	0	0	0	0	0	0	0	0	0	0
Enteric fever (typhoid or paratyphoid fever)	17	15	13	13	6	8	7	12	6	9	10	9
Food borne illness outbreak	6	19	18	19	27	8	12	42	52	163	272	78
Haemolytic uraemic syndrome (HUS)	0	1	0	0	1	0	0	0	1	1	0	0
Listeriosis	6	7	7	3	1	5	10	7	3	7	6	12
Malaria	997	514	448	882	1 441	530	269	150	332	517	243	220
Marburg virus (VHF)	0	0	0	0	0	0	0	0	1	0	0	0
Measles	288	476	420	137	154	112	65	109	144	317	520	281
Meningococcal disease	7	3	8	8	7	18	12	18	18	13	14	6
Mpox	0	0	0	0	0	0	0	0	0	0	0	0
Pertussis	191	184	156	184	258	226	260	267	230	192	143	113
Plague	0	0	0	0	0	0	0	0	0	0	0	0
Poliomyelitis	0	0	0	0	0	0	0	0	0	0	0	0
Rabies	0	1	2	1	0	1	0	2	1	0	1	2
Respiratory disease caused by a novel respiratory pathogen	2	3	0	5	5	0	1	2	4	1	1	1
Rift valley fever (human)	0	0	0	0	0	0	0	0	0	0	0	0
Rubella	20	8	20	15	21	23	16	19	33	130	507	254
Smallpox	0	0	0	0	0	0	0	0	0	0	0	0
Waterborne illness outbreak - undefined	0	0	0	0	0	0	0	0	0	0	0	0
Yellow fever	0	1	0	0	0	0	0	0	0	0	0	0

Confirmed Category 1 cases

Table 5: The number of notifications per month, South Africa, January-December 2023

Condition	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Acute flaccid paralysis	0	0	0	0	0	0	0	0	0	0	0	0
Acute rheumatic fever	0	0	0	0	0	0	0	0	0	0	0	0
Anthrax	0	0	0	0	0	0	0	0	0	0	0	0
Botulism	0	0	0	0	0	0	0	0	0	0	0	0
Cholera	0	6	5	0	123	59	1	0	0	0	0	1
Congenital rubella syndrome	0	0	0	0	0	0	0	0	0	1	0	0
Covid-19	0	0	0	0	0	0	0	0	0	0	0	0
Crimean-congo viral haemorrhagic fever (human)	0	0	0	0	0	0	0	0	0	1	0	0
Diphtheria	0	0	1	1	0	0	0	1	1	1	6	0
Ebola virus (VHF)	0	0	0	0	0	0	0	0	0	0	0	0
Enteric fever (typhoid or paratyphoid fever)	17	11	13	12	4	7	5	12	6	8	9	7
Food borne illness outbreak	6	6	0	0	0	0	0	0	0	0	0	0
Haemolytic uraemic syndrome (HUS)	0	0	0	0	0	0	0	0	0	0	0	0
Listeriosis	3	4	4	2	1	4	9	1	3	4	4	4
Malaria	997	514	448	882	1 441	530	269	150	332	517	243	220
Marburg virus (VHF)	0	0	0	0	0	0	0	0	0	0	0	0
Measles	7	46	63	15	6	8	4	7	15	16	22	7
Meningococcal disease	4	1	2	7	6	13	6	11	12	9	9	5
Mpox	0	0	0	0	0	0	0	0	0	0	0	0
Pertussis	57	79	100	56	61	173	100	93	202	93	51	91
Plague	0	0	0	0	0	0	0	0	0	0	0	0
Poliomyelitis	0	0	0	0	0	0	0	0	0	0	0	0
Rabies	0	1	1	1	0	1	0	2	1	0	1	2
Respiratory disease caused by a novel respiratory pathogen	0	0	0	0	0	0	0	0	0	0	0	0
Rift valley fever (human)	0	0	0	0	0	0	0	0	0	0	0	0
Rubella	0	0	1	1	5	4	0	3	2	30	145	40
Smallpox	0	0	0	0	0	0	0	0	0	0	0	0
Waterborne illness outbreak - undefined	0	0	0	0	0	0	0	0	0	0	0	0
Yellow fever	0	0	0	0	0	0	0	0	0	0	0	0

Distribution of Category 2 NMCs by province and case definition

Tuberculosis: pulmonary was the most common (69 107 (55%)) category 2 notification. The province with the highest number of notifications for Tuberculosis: pulmonary was Gauteng (17890, 25.9%)

Table 6: The number of notifications by notification type and the number of notifications that are confirmed by appropriate center, South Africa, **January-December 2023**

	Provinces									Case		Deaths	
Condition	**EC**	**FS**	**GP**	**KZN**	**LP**	**MP**	**NC**	**NW**	**WC**	**Confirmed**	**Suspected**	**Confirmed**	**Suspected**
Agricultural or stock remedy poisoning	41	184	622	9	40	21	9	24	63	0	1 013	0	86
Bilharzia (schistosomiasis)	829	10	352	5 511	2 826	1 802	4	22	227	823	10 760	2	3
Brucellosis	3	3	2	1	2	0	1	2	3	2	15		
Congenital syphilis	1 049	282	836	2 775	126	353	176	177	1 021	936	5 859	12	22
Haemophilus influenzae type B	13	6	16	13	6	4	2	0	21	16	65	0	3
Hepatitis A	325	200	1 077	1 024	469	280	149	230	1 554	964	4 344	5	4
Hepatitis B	1 111	518	868	8 389	76	203	118	699	230	616	11 596	14	16
Hepatitis C	7	10	97	19	4	32	1	0	11	4	177	0	2
Hepatitis E	1	4	45	1	0	2	0	4	7	3	61		
Lead poisoning	1	0	2	1	0	2	0	0	0	0	6		
Legionellosis	7	2	11	3	0	1	0	3	29	26	30	3	4
Maternal death (pregnancy, childbirth and puerperium)	1	0	35	5	20	1	1	1	2	0	66	0	61
Soil transmitted helminths	0	1	12	1	0	0	0	0	2	0	16		
Tetanus	1	1	1	3	2	3	0	0	2	0	13	0	2
Tuberculosis: extensively drug - resistant (XDR -TB)	15	2	45	36	13	5	5	2	20	0	143	0	2
Tuberculosis: multidrug- resistant (MDR -TB)	328	68	726	553	60	45	53	52	364	1	2 248	0	80
Tuberculosis: extra-pulmonary	1 324	859	7 516	2 172	850	369	497	714	2 634	1	16 934	0	286
Tuberculosis: pulmonary	9 413	4 123	17 890	10 804	4 368	1 682	4 200	3 259	13 368	9	69 098	0	729

Dot counts

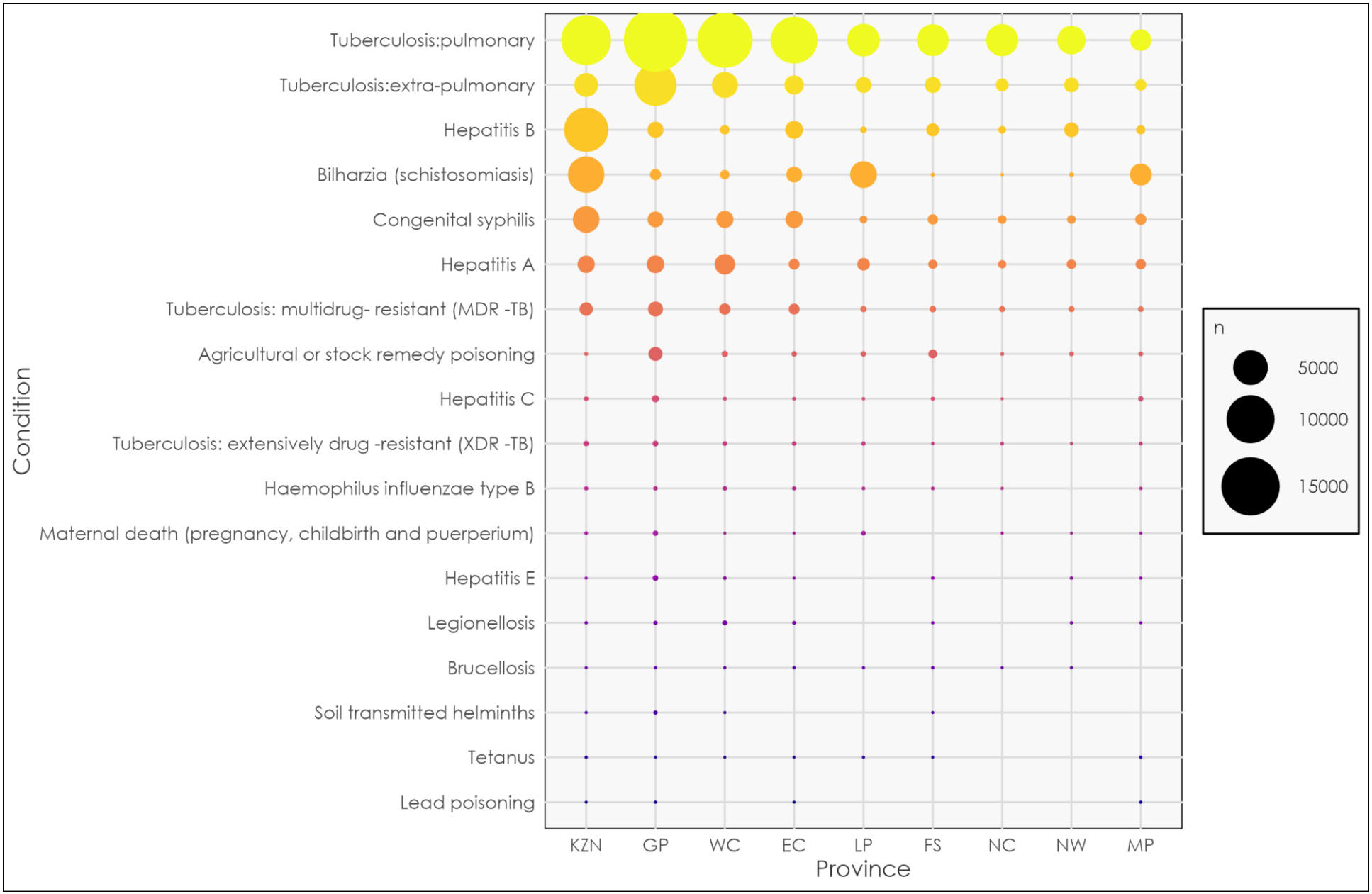


Figure 5: *Distribution of Category 2 NMCs by province, South Africa, January-December 2023*

Category notification

Table 7: The number of notifications of category 2 notifications per month, South Africa, January-December 2023

	Jan	Oct	Nov	Dec	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Agricultural or stock remedy poisoning	104	124	91	82	67	69	82	72	56	94	70	102
Bilharzia (schistosomiasis)	810	1 048	969	598	870	952	788	1 129	1 135	987	1 348	949
Brucellosis	0	3	3	1	0	0	1	2	3	3	1	0
Congenital syphilis	584	512	548	475	563	645	539	734	661	492	496	546
Haemophilus influenzae type B	5	16	10	0	2	5	3	5	7	13	8	7
Hepatitis A	276	479	633	517	447	429	360	409	406	421	495	436
Hepatitis B	901	1 100	1 044	814	1 021	1 081	876	1 094	1 028	1 004	1 092	1 157
Hepatitis C	4	15	18	24	18	17	16	26	8	9	15	11
Hepatitis E	3	14	7	1	10	8	2	17	0	0	2	0
Lead poisoning	0	0	0	4	0	0	0	2	0	0	0	0
Legionellosis	6	6	3	4	7	2	5	4	6	3	8	2
Leprosy	0	0	0	0	0	0	0	0	0	0	0	0
Maternal death (pregnancy, childbirth and puerperium)	7	10	8	8	4	3	3	3	3	1	1	15
Mercury poisoning	0	0	0	0	0	0	0	0	0	0	0	0
Soil transmitted helminths	0	1	2	4	0	1	2	0	3	1	1	1
Tetanus	0	0	1	2	3	1	4	0	1	0	1	0
Tuberculosis: extensively drug -resistant (XDR -TB)	9	11	13	9	7	13	12	23	13	13	12	8
Tuberculosis: multidrug- resistant (MDR -TB)	127	225	154	175	275	144	130	228	182	173	249	187
Tuberculosis:extra-pulmonary	982	1 641	1 676	1 254	1 142	1 525	1 163	1 360	1 456	1 482	1 610	1 644
Tuberculosis:pulmonary	4 421	7 625	7 111	4 785	4 612	5 263	4 119	5 597	5 994	5 827	7 057	6 696

Notable Outbreaks notified on NMCSS

Vaccine preventable diseases

In 2023, outbreaks of Measles, Mumps (not notifiable in South Africa), Rubella, and Diphtheria were documented. Rubella and Measles notifications are presented as epicurves, maps and descriptive tables that follow. The trends of notifiable vaccine-preventable diseases are presented as a Trends.

Trends

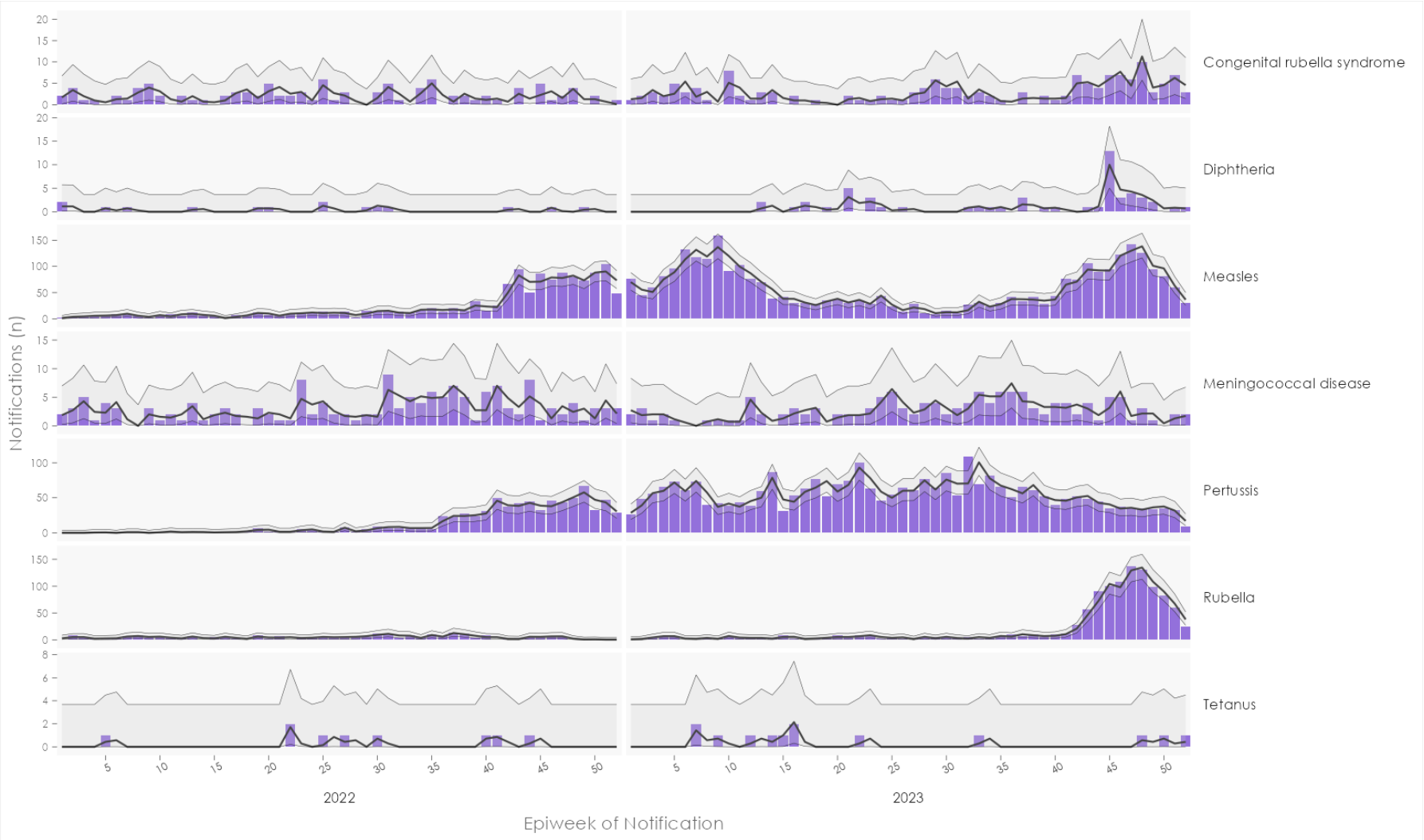


***Figure 8**: Number of notifications per epiweek for vaccine preventable notifications to NMC, South Africa, January-December, 2023*

Measles Outbreak

A measles outbreak was declared in 2022, there have been 3023 notifications received by then NMCSS in 2023. An epicurve and map of measles notifications are presented below. **The number of confirmed cases will differ from official numbers as confirmed cases are harmonised with the NMCSS.**

Table 14: *Characteristics of Rubella notifications Notified on the NMC, South Africa, January-December 2023*notifications include both suspected and confirmed.*

Characteristic	**Overall**, n = 3 113[1]	**Confirmed**, n = 234[1]	**Suspected**, n = 2 879[1]
Age	5.0 (3.0, 9.0)	7.0 (4.0, 11.0)	5.0 (3.0, 8.0)
Unknown (N)	144	0	144
Gender			
Female	1 433 (46%)	121 (52%)	1 312 (46%)
Male	1 678 (54%)	113 (48%)	1 565 (54%)
Unknown (N)	2	0	2
Patient Vital Status			
Alive	2 235 (72%)	223 (95%)	2 012 (70%)
Deceased	4 (0.1%)	0 (0%)	4 (0.1%)
Unknown	874 (28%)	11 (4.7%)	863 (30%)
Vaccination Status			
Not Reported	840 (27%)	20 (8.5%)	820 (28%)
Reported Not Vaccinated	227 (7.3%)	34 (15%)	193 (6.7%)
Reported Unknown	887 (28%)	139 (59%)	748 (26%)
Reported Up-To-Date	1 159 (37%)	41 (18%)	1 118 (39%)

[1]Median (Q1, Q3); n (%)

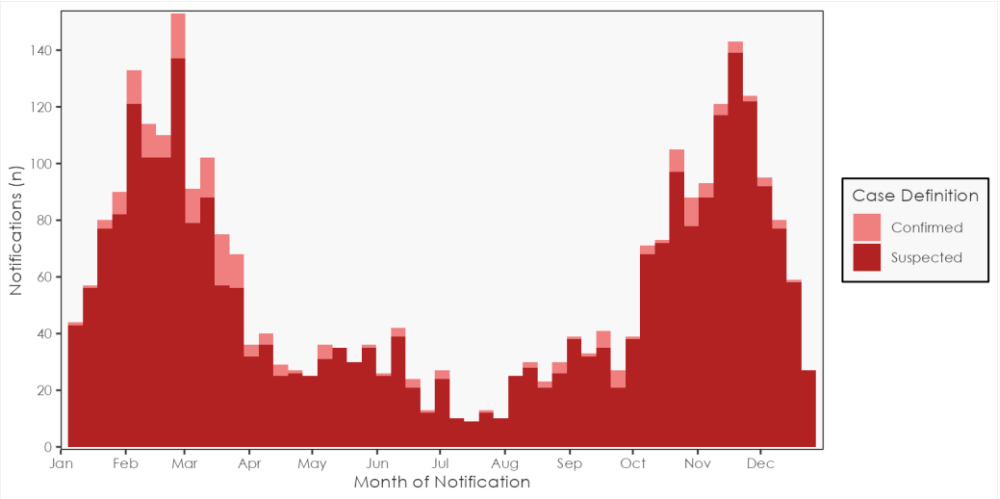


Figure 9: *Epicurve of suspected and confimred measles notifications by month, South Africa, January-December, 2023*

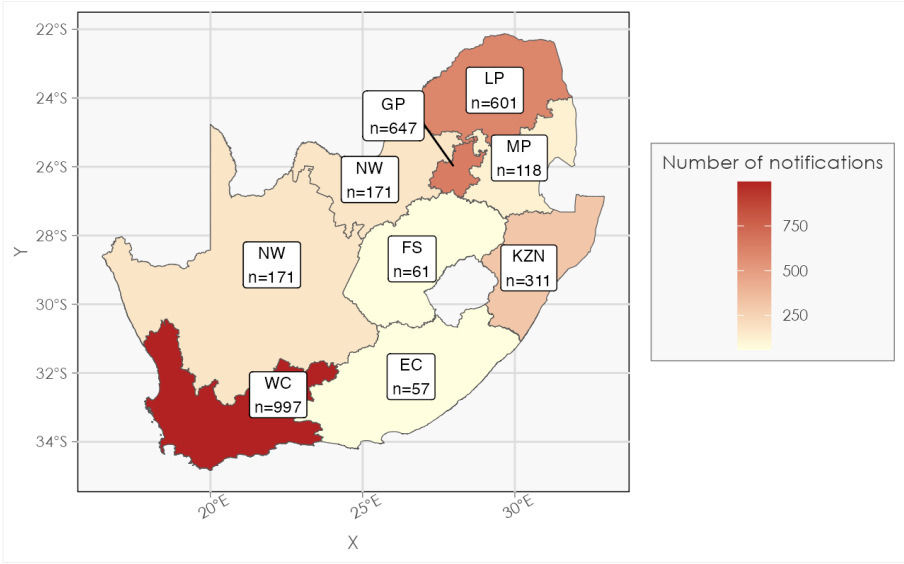


Figure 10: *Map of Measles Notifications Notified to the NMCSS, South Africa, January-December 2023*

Rubella Outbreak

An outbreak of Rubella occurred toward in November and December of 2023. The MR vaccine was recently introduced to the National Department of Health's Expanded Programme on Immunisation. Notifications of Congenital Rubella Syndrome are received however there is difficulty in confirming cases due to few clinical notes being received by surveillance officers. Clinicians, such as Ophthalmologists screening for retinopathy of prematurity are encouraged test Retina tissue and to notify cases to the NMC.

Both Rubella and Congential Rubella Syndrome are now Catgegory 1 notifiable medical conditions in South Africa and should be reported withing 24 hours of diagnosis.

To note, mumps is not a notifiable disease and the MMR vaccine is not offered in the government health sector in South Africa.

Table 15: *Characteristics of Rubella notifications Notified on the, South Africa, January-December, 2023*
**notifications include both suspected and confirmed.*

Characteristic	**Overall**, n = 1 117[1]	**Confirmed**, n = 239[1]	**Suspected**, n = 878[1]
Age	6 (4, 9)	6 (5, 8)	6 (4, 9)
Unknown (N)	20	0	20
Gender			
Female	576 (52%)	118 (49%)	458 (52%)
Male	541 (48%)	121 (51%)	420 (48%)
Patient Vital Status			
Alive	648 (58%)	235 (98%)	413 (47%)
Unknown	469 (42%)	4 (1.7%)	465 (53%)
Vaccination Status			
Not Reported	668 (60%)	100 (42%)	568 (65%)
Reported Not Vaccinated	18 (1.6%)	3 (1.3%)	15 (1.7%)
Reported Unknown	258 (23%)	96 (40%)	162 (18%)
Reported Up-To-Date	173 (15%)	40 (17%)	133 (15%)

[1]Median (Q1, Q3); n (%)

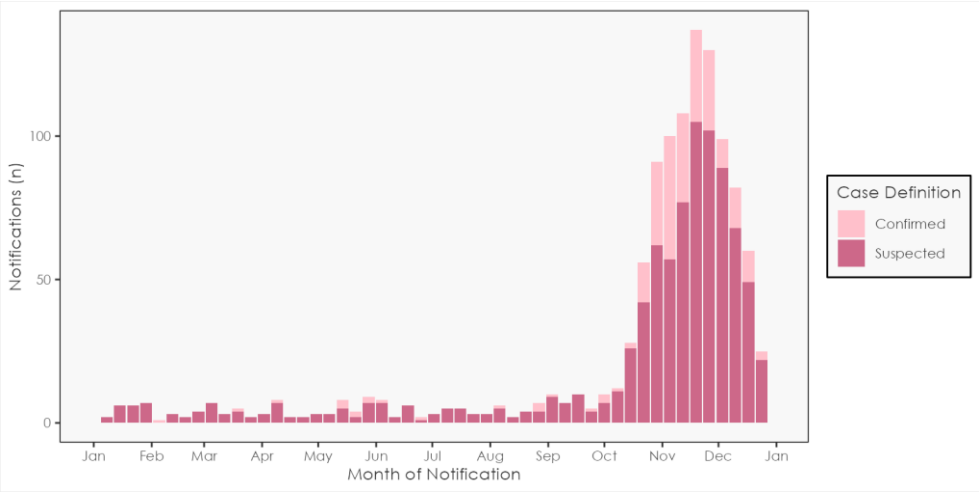


Figure 11: *Epicurve of Rubella Notifications Notified to the NMCSS, South Africa, January-December, 2023*

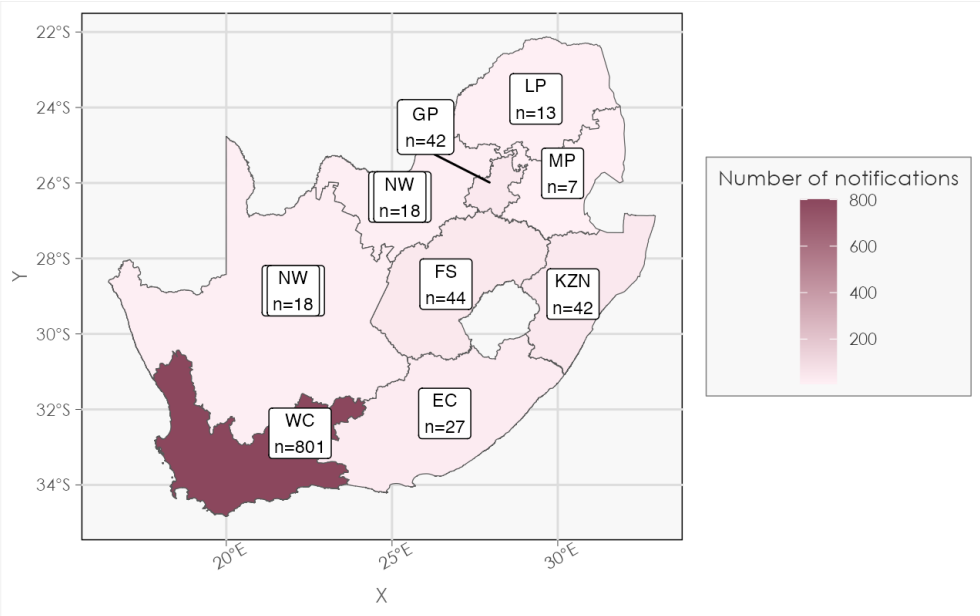


Figure 12: *Map of Rubella Notifications Notified to the NMCSS, South Africa, January-December 2023*

Enteric Diseases

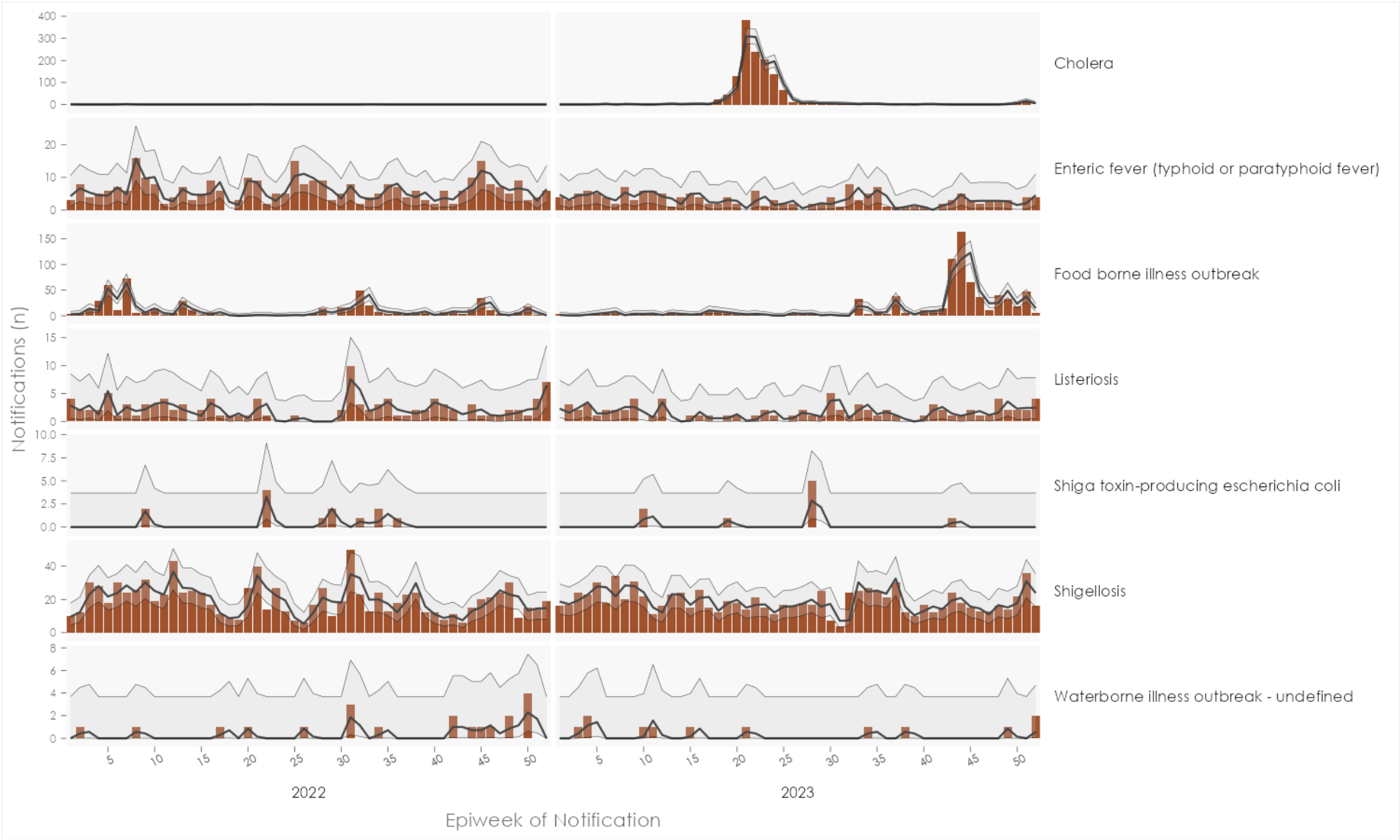


Figure 13: *Number of notifications per epiweek for enteric notifications notified to the NMC, South Africa, January 2022- December 2024*

Cholera Outbreak

In 2023, South Africa experienced an outbreak of Cholera, sporadic cases of toxin-producing Cholera in Gauteng, followed by a notable spike in the middle of the year with confirmed cases in Tshwane region were notified. Efforts were made to ingest suspected case data into the National Notifiable Medical Conditions Surveillance System (NMCSS) from hospitals and clinics within the Greater Tshwane area. The total number of confirmed Cholera cases notified to the NMCSS in 2023 was n=202. Demographic information is tabulated. It's crucial to note that the Cholera outbreak in South Africa is ongoing with sporadic cases. The country remains at high risk of importation from neighboring countries such as Zimbabwe and Mozambique, underscoring the importance of vigilant monitoring and preventive measures. Currently WASH (Water, Sanitation, Hygiene) remains the main preventative measure.

Table 16: *Characteristics of suspected and confirmed cases of Cholera notifications Notified on the NMC, South Africa, January-December, 2023*

Characteristic	Overall N = 1 267	Confirmed N = 195	Suspected N = 1 072
Age	31 (10, 48)	41 (24, 50)	28 (9, 47)
Unknown (N)	40	15	25
Gender			
Female	659 (53%)	99 (51%)	560 (54%)
Male	582 (47%)	96 (49%)	486 (46%)
Unknown (N)	26	0	26
Patient Vital Status			
Alive	700 (93%)	49 (74%)	651 (95%)
Deceased	53 (7.0%)	17 (26%)	36 (5.2%)
Unknown (N)	514	129	385

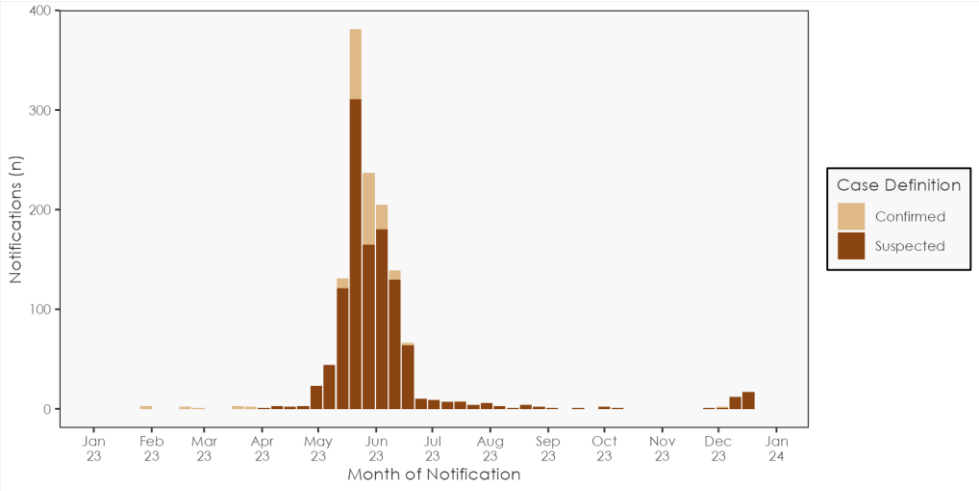


Figure 14: *Epicurve of Cholera notifications Notified to the NMCSS, South Africa, January-December, 2023*

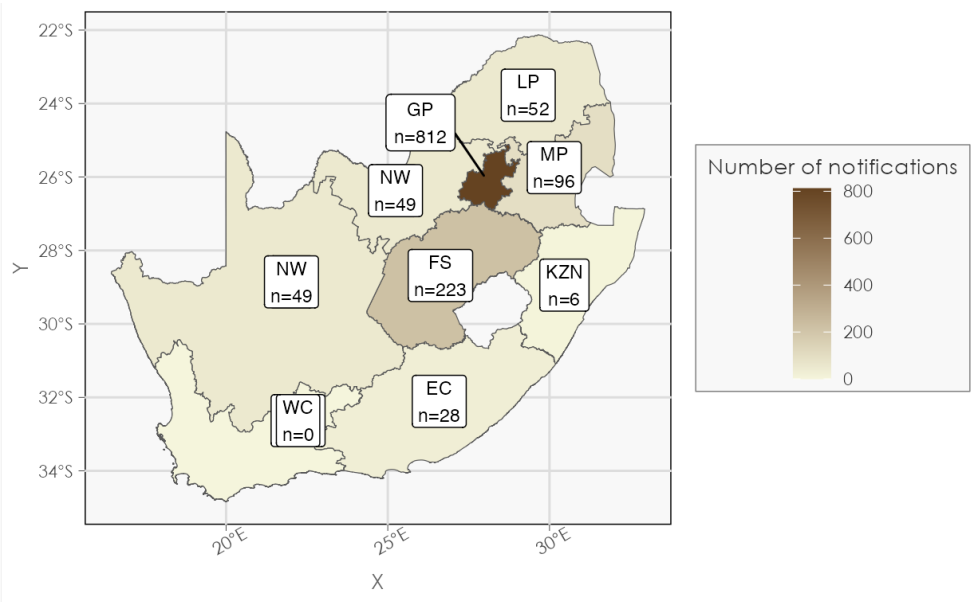


Figure 15: *Map of Cholera Notifications Notified to the NMCSS, South Africa, January-December, 2023*

Leprosy back capturing.

The World Health Organization (WHO) initiated a global campaign to eradicate leprosy in the 1950s. By the 1980s, the focus shifted to control strategies, notably the adoption of multidrug therapy (MDT). While progress was made, the goal to eliminate leprosy as a public health problem by 2000 wasn't fully met globally. However, many countries, including South Africa, made significant strides towards national elimination. Efforts continue to reduce transmission and enhance treatment and rehabilitation services. In South Africa specifically, efforts such as the leprosy mission's back-capture data initiative contribute to these ongoing endeavors. The leprosy mission intend to continue back=capturing in 2024 and further analysis will follow in the next annual report.

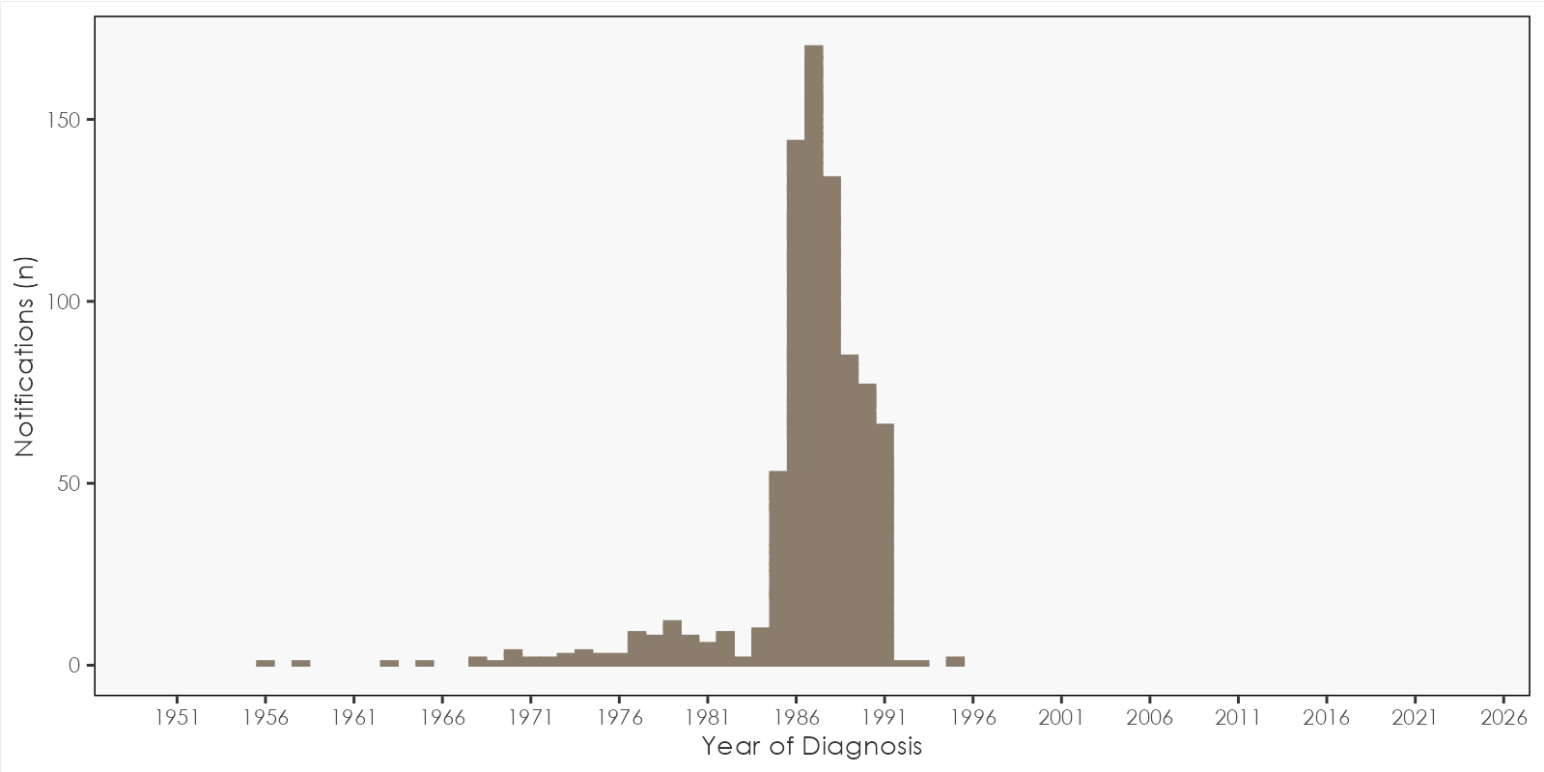


Figure 16: Epicurve of Leprosy notifications Notified to the NMCSS, South Africa, January-December, 2023

NMC app statistics

App use

There were 9 041 (8.4%) Clinical notifications from from the private sector (i.e. private hospitals, private practice and mining industry) compared to 98 426 (92%) in the public sector.

***Table 8**: Clinical notifications notified by provinces, reporting platform, and sector.*

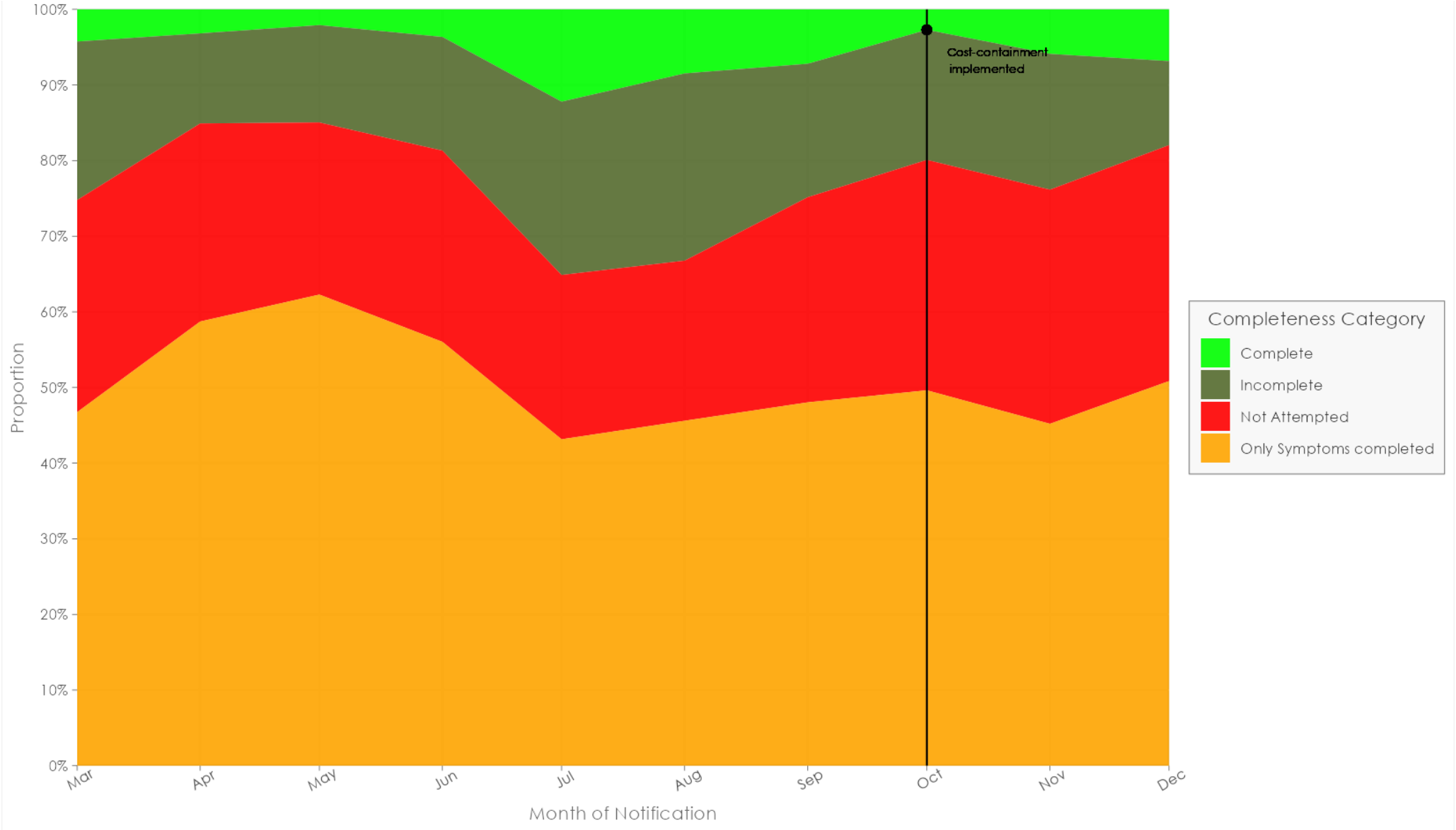
Province	**Overall** N = 143 036	**App - Private**, n = 9 108	**App - Public**, n = 128 042	**Paper-based - Private**, n = 246	**Paper-based - Public**, n = 5 640
GP	34 492 (100%)	3 146 (9.1%)	30 640 (89%)	93 (0.3%)	613 (1.8%)
KZN	32 842 (100%)	1 614 (4.9%)	30 942 (94%)	16 (<0.1%)	270 (0.8%)
WC	23 148 (100%)	1 216 (5.3%)	20 880 (90%)	61 (0.3%)	991 (4.3%)
EC	15 391 (100%)	765 (5.0%)	12 906 (84%)	20 (0.1%)	1 700 (11%)
LP	12 647 (100%)	416 (3.3%)	11 976 (95%)	12 (<0.1%)	243 (1.9%)
FS	7 036 (100%)	589 (8.4%)	6 185 (88%)	21 (0.3%)	241 (3.4%)
MP	6 185 (100%)	460 (7.4%)	5 253 (85%)	4 (<0.1%)	468 (7.6%)
NW	5 715 (100%)	639 (11%)	4 098 (72%)	15 (0.3%)	963 (17%)
NC	5 580 (100%)	263 (4.7%)	5 162 (93%)	4 (<0.1%)	151 (2.7%)

Hospital Form Completeness

Table 9: *Completion of hospitalisation form for notifications reported as inpatients with category 1 conditions. Complete refers to >80% of variables completed***.**

Hospital Form Completed	**Complete**, n = (4.1%)	**Incomplete**, n = (14%)	**Not Attempted**, n = (30%)	**Only Symptoms completed**, n = (52%)
Acute flaccid paralysis	19 (9.9%)	32 (17%)	40 (21%)	101 (53%)
Acute rheumatic fever	1 (17%)	1 (17%)	1 (17%)	3 (50%)
Anthrax	0 (0%)	0 (0%)	1 (100%)	0 (0%)
Cholera	12 (4.9%)	53 (22%)	71 (29%)	107 (44%)
Congenital rubella syndrome	0 (0%)	10 (56%)	3 (17%)	5 (28%)
Diphtheria	3 (11%)	7 (26%)	7 (26%)	10 (37%)
Enteric fever (typhoid or paratyphoid fever)	1 (2.3%)	5 (11%)	25 (57%)	13 (30%)
Food borne illness outbreak	12 (4.8%)	35 (14%)	81 (33%)	121 (49%)
Haemolytic uraemic syndrome (HUS)	0 (0%)	0 (0%)	1 (50%)	1 (50%)
Listeriosis	1 (2.2%)	5 (11%)	32 (70%)	8 (17%)
Malaria	0 (0%)	0 (0%)	651 (32%)	1 360 (68%)
Measles	20 (7.2%)	62 (22%)	38 (14%)	159 (57%)
Meningococcal disease	9 (10%)	21 (23%)	43 (48%)	17 (19%)
Pertussis	114 (7.9%)	417 (29%)	382 (26%)	530 (37%)
Rabies	1 (11%)	0 (0%)	4 (44%)	4 (44%)
Respiratory disease caused by a novel respiratory pathogen	0 (0%)	2 (11%)	1 (5.6%)	15 (83%)
Rubella	1 (3.8%)	5 (19%)	10 (38%)	10 (38%)

Category 1 condition case-notifications that are hospitalized should have a hospital form completed. The hospital form includes information such as height and weight, medication, comorbidities, symptomatology and others. Where 80% or more of the available variables are complete, we consider them to be completed hospital forms. Very few notifications have a complete hospital form , most hospital forms have symptoms completed. Enteric fever has the highest proportion of hospital forms filled. .



The hospital form was implemented in March of 2023 and had improving completion rates, especially during the cholera outbreak, however, cost-containment measures resulted in cutbacks in training sessions and the hospital form completeness reduced.

Table 10: NMC data completeness of clinical notifications on both reporting platforms

	App N = 95 854	Paper-based N = 5 890
Folder Number	77 427 (81%)	3 252 (55%)
First Name	95 854 (100%)	5 890 (100%)
Surname	95 854 (100%)	5 890 (100%)
Symptom Onset Date	94 654 (99%)	5 771 (98%)
Date of Diagnosis	95 854 (100%)	5 890 (100%)
Outcome	95 854 (100%)	5 890 (100%)

Vaccination history of vaccine preventable diseases

Table 11: Vaccination Status completeness for vaccine preventable diseases

Characteristic	Overall, n = 6 830[1]	Measles, n = 3 023[1]	Pertussis, n = 2 404[1]	Rubella, n = 1 066[1]	Congenital rubella syndrome, n = 140[1]	Meningococcal disease, n = 132[1]	Diphtheria, n = 52[1]	Tetanus, n = 13[1]
Reported Not Vaccinated	429 (9.1%)	211 (9.7%)	175 (9.1%)	17 (4.1%)	6 (24%)	12 (11%)	6 (12%)	2 (15%)
Reported Unknown	2 429 (51%)	841 (39%)	1 206 (63%)	236 (58%)	14 (56%)	84 (77%)	39 (76%)	9 (69%)
Reported Up to date	1 859 (39%)	1 132 (52%)	544 (28%)	157 (38%)	5 (20%)	13 (12%)	6 (12%)	2 (15%)
Not reported	2 113	839	479	656	115	23	1	0

[1]n (%)

ID number completeness

Table 12: Length of ID numbers inputted on NMC system.

Length of ID number	**Web**, n = [1]	**Microstrategy/SDW**, n = [1]	**Android**, n = [1]	**Paper-based**, n = [1]	**iOS**, n = [1]	**HISP.IMPORT**, n = [1]
Not complete	19 785 (32%)	40 268 (97%)	11 095 (37%)	3 647 (62%)	1 938 (43%)	277 (100%)
1	1 (<0.1%)	1 (<0.1%)	0 (0%)	0 (0%)	1 (<0.1%)	0 (0%)
2	1 (<0.1%)	0 (0%)	0 (0%)	0 (0%)	1 (<0.1%)	0 (0%)
3	1 (<0.1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
4	3 (<0.1%)	0 (0%)	0 (0%)	0 (0%)	1 (<0.1%)	0 (0%)
5	10 (<0.1%)	1 (<0.1%)	0 (0%)	0 (0%)	1 (<0.1%)	0 (0%)
6	5 025 (8.2%)	87 (0.2%)	27 (<0.1%)	0 (0%)	354 (7.9%)	0 (0%)
7	45 (<0.1%)	0 (0%)	0 (0%)	0 (0%)	2 (<0.1%)	0 (0%)
8	918 (1.5%)	10 (<0.1%)	1 (<0.1%)	0 (0%)	22 (0.5%)	0 (0%)
9	189 (0.3%)	0 (0%)	0 (0%)	0 (0%)	9 (0.2%)	0 (0%)
10	1 065 (1.7%)	16 (<0.1%)	3 (<0.1%)	0 (0%)	24 (0.5%)	0 (0%)
11	41 (<0.1%)	0 (0%)	0 (0%)	0 (0%)	4 (<0.1%)	0 (0%)
12	439 (0.7%)	2 (<0.1%)	1 (<0.1%)	3 (<0.1%)	4 (<0.1%)	0 (0%)
13	33 589 (55%)	926 (2.2%)	19 147 (63%)	2 240 (38%)	2 107 (47%)	0 (0%)

[1]n (%)

Timeliness

Timeliness is measured by the number of days from the time of diagnosis of the NMC to the time of notification. Overall, it took a median (IQR) of 0 (0, 2) days to report category 1 NMCs.

Table 13: *Symptoms of patients clinically notified and merged with lab notifications to the NMC*

Characteristic	Category 1, n = 15 809	Category 2, n = 125 843	Category 3, n = 1 678
Time to Notification	0 (0, 3)	2 (0, 10)	5 (3, 6)
Unknown	5 023	28 924	7
Back Capture Classification			
Back capture	3 (<0.1%)	11 (<0.1%)	0 (0%)
Current	16 765 (100%)	121 805 (97%)	1 678 (100%)
Delayed	44 (0.3%)	507 (0.4%)	0 (0%)
unknown	28 (0.2%)	3 522 (2.8%)	0 (0%)

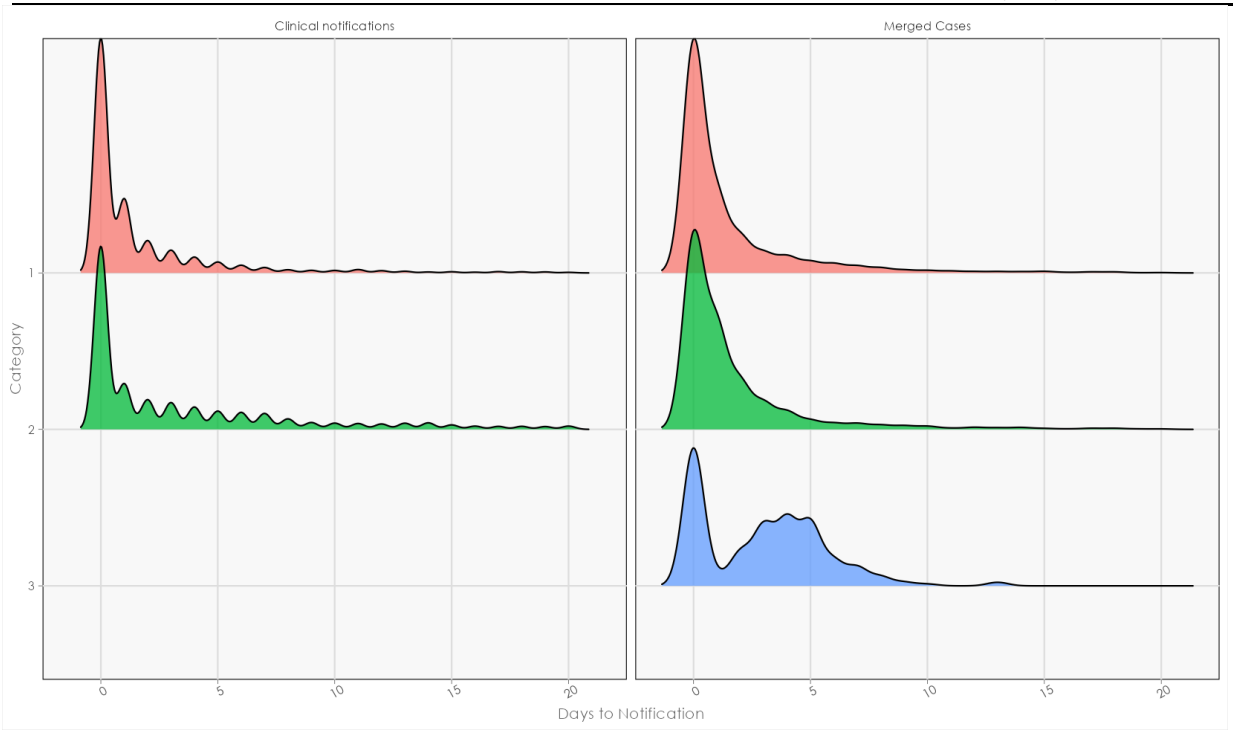


Figure 7: *Trends of the Time to Notification of Laboratory and Merged Notifications in 2023.*

Most of the notification are notified within 1 day of the diagnosis. Laboratory notifications are notified to the NMC automatically and these notifications do not have a diagnosis date and therefore time to notification cannot be calculated.

Conclusion

There were 144 363 notifications received during 2023, of which 143 332 were current notifications and 1031 back captured clinical notifications. A total of x users was registered on the NMCSS. Three notable outbreaks of measles, rubella and cholera were recorded on the NMCSS. We commend the notification of historical leprosy cases by the leprosy mission in KZN, this is critical in the elimination of non-tropical diseases (NTDs). Most notifications were clinical notifications. There is ongoing data improvement for the hospital form of category 1 diseases who are hospitalized, this has been challenging with recent fiscal tightening and reduced training facilitation. The NMC at the NICD is assisting in reporting IDSR priority conditions which are notifiable together with the National Department of Health, a draft reporting template is completed for notifications in South Africa from 2023 in **appendix 4**. The NMC remains committed to the surveillance of disease of public health importance in South Africa. We welcome collaboration form institutions and feedback from stakeholders.

Recommendations

- We recommend the use of the epi-classification module by role-based users on the NMC to assist in the correct epidemiological classification of disease so that case-definitions can be applied and numbers are harmonised across platforms.
    - For this to be efficient, relevant CRF/CIFs can be completed for relevant conditions when notifying. Ensure sufficient details exist in order to meet the case definition.
- We encourage clinicians to interact and report cases with as much clinical detail as possible.
- We welcome the implementation of eIDSR and the role the NMC at the NICD has to play in accurate and timely reporting.
- We encourage collaboration with other institutions who have databases of notifiable conditions collected prior to NMC regulations. The NMC is able to ingest data to allow the surveillance system to monitor trends from periods prior to 2017.
- Thorough reporting of vaccination history accompanying notifications of vaccine-preventable diseases is strongly encouraged.
- We recommend the expedition of NMC App "whitelisting" on the provincial departmental intranet to make the electronic notification platform more accessible to health facilities.
- We recommend that clinicians should complete all patient clinical and demographic details to improve completeness.
- NMC Trainers to emphasize the importance of timeous reporting of Category 1 and 2 NMCs, in order to ensure real-time availability of data for public health action.
- Training material, videos, and documents should reviewed by those interacting with the system to ensure good quality data be entered into NMC: https://www.nicd.ac.za/nmc-overview/notification-forms/

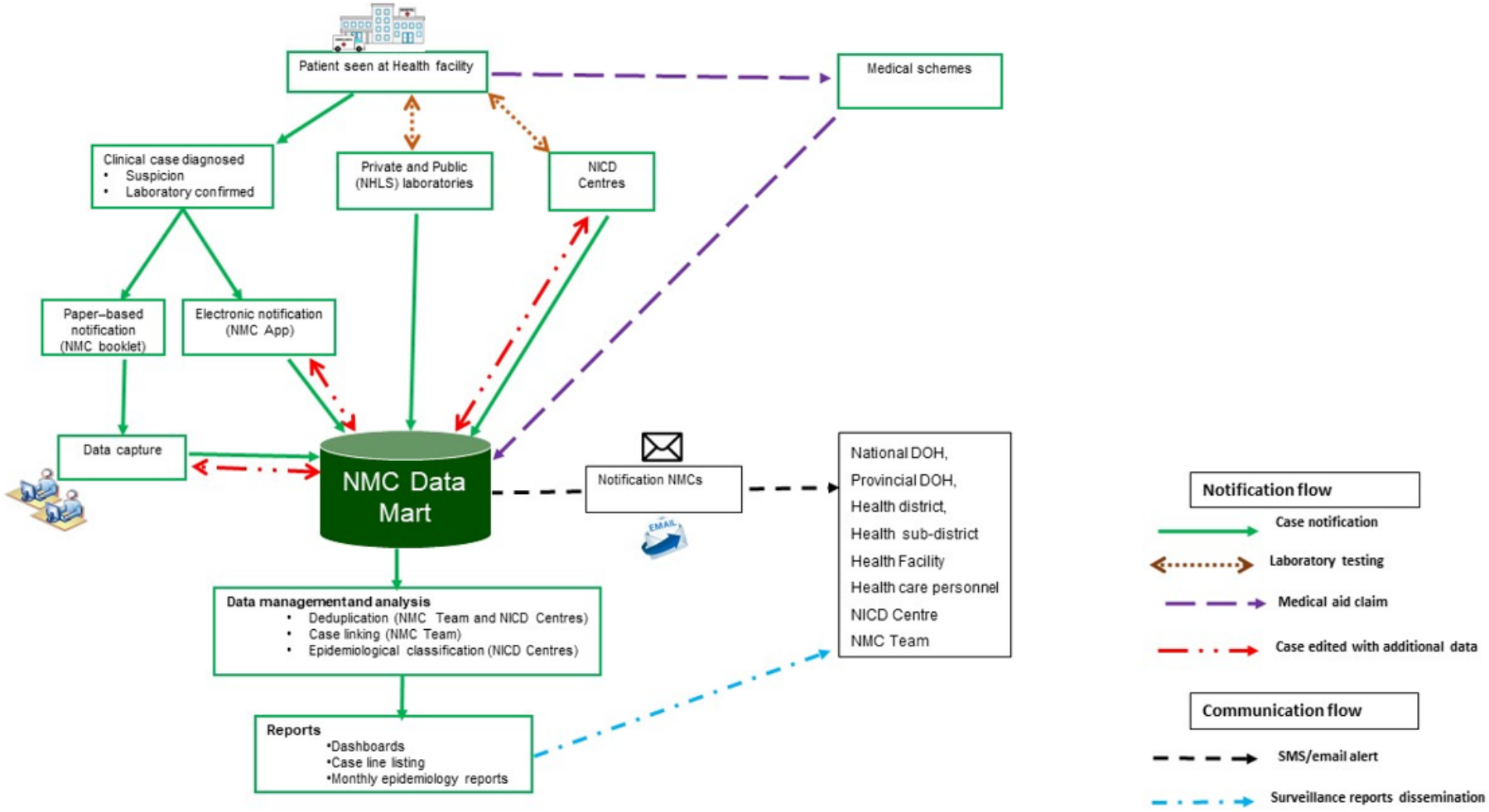
Appendices

Appendix no.1: Back captured clinical notifications

Table 17: Back captured notifications by reporting province for Notifications received in 2023

Condition	Overall	Province								
	Overall, n =	**EC**, n =	**FS**, n =	**GP**, n =	**KZN**, n =	**LP**, n =	**MP**, n =	**NC**, n =	**NW**, n =	**WC**, n =
Acute flaccid paralysis	27 (2.6%)	2	1	11	4	2	1	2	0	4
Acute rheumatic fever	3 (0.3%)	0	0	1	1	0	0	0	0	1
Cholera	70 (6.8%)	2	10	43	0	8	3	0	4	0
Congenital rubella syndrome	6 (0.6%)	0	0	0	3	1	1	0	0	1
Diphtheria	2 (0.2%)	0	0	1	0	0	0	0	0	1
Enteric fever (typhoid or paratyphoid fever)	38 (3.7%)	3	2	24	2	0	1	0	0	6
Food borne illness outbreak	67 (6.5%)	2	1	18	39	1	4	0	0	2
Haemolytic uraemic syndrome (HUS)	2 (0.2%)	0	0	0	0	1	0	0	0	1
Listeriosis	7 (0.7%)	0	0	2	2	0	0	0	0	3
Malaria	180 (17%)	3	1	48	22	77	12	1	1	15
Measles	90 (8.7%)	0	5	12	15	23	3	11	3	18
Meningococcal disease	7 (0.7%)	1	1	0	1	1	0	1	1	1
Pertussis	477 (46%)	66	77	129	65	32	47	4	27	30
Rabies	1 (<0.1%)	1	0	0	0	0	0	0	0	0
Respiratory disease caused by a novel respiratory pathogen	3 (0.3%)	0	0	1	2	0	0	0	0	0
Rubella	51 (4.9%)	1	0	3	2	0	0	1	0	44

Appendix no.2: Summary of NMCSS Data Flow



Appendix no.3: NMC Categories, and Case Classification definitions
NMC categories

Category 1: NMCs notified by the most rapid means available upon diagnosis, followed by a written or electronic notification to the Department of Health within 24 hours of diagnosis by healthcare providers, private health laboratories or public health laboratories. These conditions must be notified based on clinical suspicion irrespective of laboratory confirmation.

Category 2: NMCs notified through a written or an electronic notification to the Department of Health of clinical or laboratory diagnosis within 7 days by healthcare providers, private health laboratories or public health laboratories.

Category 3: NMCs notified through a written or electronic notification to the Department of Health within 7 days of diagnosis by public and private health laboratories.

Category 4: NMCs notified through a written or electronic notification to the Department of Health within 1 month of diagnosis by public and private health laboratories.

Case Type definitions

Clinical type: are notifications reported to the NMC by health care providers at facilities, either through completion of a paper form that is faxed, emailed to National Institute of Communicable Diseases (NICD), or by direct data entry into the NMC application on a PC, laptop or mobile device. The diagnosis is made by the clinician on the basis of case definitions published on the NICD website.

Laboratory type: are notifications that are downloaded into the NMC database directly from the National Health Laboratory Services (NHLS) laboratory information system. The NMC application applies the case definitions that are published on the NICD website. Private sector data is being sourced.

Merged type: are notifications where a clinical notifications and laboratory notification are found to be in the same person and associated with the same diagnosis. The NMC App is set up to automatically detect and link clinical and laboratory notifications. The NICD specialist centres and NMC data team review all cases and manually link any remaining clinical and laboratory cases.

Notification capture times definitions

Current notification: All cases diagnosed and notified in the current month

Delayed notification: All cases diagnosed in the last 14 days from the previous month

Back capture notification: All cases diagnosed in previous months and before the last 14 days of the previous month.

Appendix no.4: IDSR reporting template for IDSR conditions existing on NMC by under-5 and 5-and-over years and vital status.

Table 18: The number of IDSR conditions laboratory Notified to the NMC using the IDSR reporting template of under and 5-and-above years by vital status.

	Notified/Suspected				Confirmed
Condition	**Under 5 A**, N = 2 573[1]	**5 & over A**, N = 4 317[1]	**5 & over D**, N = 49[1]	**Under 5 D**, N = 25[1]	**N = 8 615**[1]
Acute flaccid paralysis	117	98	0	0	0
Acute rheumatic fever	0	8	0	0	0
Anthrax	0	1	0	0	0
Botulism	0	0	0	0	0
Cholera	190	822	30	5	195
Congenital rubella syndrome	124	4	0	4	1
Covid-19	0	0	0	0	0
Crimean-congo viral haemorrhagic fever (human)	0	0	0	0	1
Diphtheria	4	36	1	0	11
Ebola virus (VHF)	0	0	0	0	0
Enteric fever (typhoid or paratyphoid fever)	2	12	0	0	111
Food borne illness outbreak	55	643	4	2	12
Haemolytic uraemic syndrome (HUS)	1	2	1	0	0
Listeriosis	5	24	1	0	43
Malaria	0	0	0	0	6 543
Marburg virus (VHF)	1	0	0	0	0
Measles	1 102	1 557	3	1	216
Meningococcal disease	5	31	8	1	85
Mpox	0	0	0	0	0
Pertussis	687	517	1	12	1 156
Plague	0	0	0	0	0
Poliomyelitis	0	0	0	0	0
Rabies	1	0	0	0	10
Respiratory disease caused by a novel respiratory pathogen	10	15	0	0	0
Rift valley fever (human)	0	0	0	0	0
Rubella	269	546	0	0	231
Smallpox	0	0	0	0	0
Waterborne illness outbreak - undefined	0	0	0	0	0
Yellow fever	0	1	0	0	0

[1]A = Cases who are alive.
D = Cases who are deceased.

END