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RABIES

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FOREWORD – SEPTEMBER 2019

By : Mazyanga L Mazaba

Authors, reviewers, editors and readers,

Welcome to the September 2019 THP-Z issue. In this issue the editorial focuses on Rabies in celebration of the 13th World Rabies day which fell on 28th September 2019. Although rabies continues to threaten public health security globally, it is preventable and a global agenda to have zero deaths by rabies gives us hope. A summary on some facts about rabies is included in this issue.

We invite you to also update yourself on the occurrences of notifiable diseases in Zambia, well-articulated in our ZNPHI published IDSR bulletin. Also published in the September 2019 issue is a Ministry of Health, Virology Laboratory monthly report on Influenza established through the Influenza Sentinel

**Once again we invite you to submit your articles to THP-Z using the link
<https://mc.manuscriptcentral.com/thpz>.**

Editorial

By : R. Hamoonga¹

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Citation Style For This Article: Hamoonga R. Rabies: Vaccinate to Eradicate. Health Press Zambia Bull. 2019; 3(9); pp 3-4.

The theme for this year's world rabies day commemoration couldn't be more appropriate: Vaccinate to eradicate! Despite rabies disease being 100% vaccine preventable, an average of 20 human rabies deaths are recorded annually in Zambia. Studies in similar settings as Zambia indicate that the number of human rabies deaths can be 10 to 100-fold that captured by health facilities [1]. This could indicate that several community deaths are occurring unnoticed, or even when attended to, these deaths are not being reported into the nation's integrated disease surveillance and response system.

What then can be done about this, is vaccination the answer? Surprisingly, the solution to the burden of human rabies chiefly lies with merely carrying out vaccination campaigns. The domestic dog, largely regarded as man's best friend, continues to account as the cause of human rabies. Globally, dog-mediated human rabies has been responsible for nearly 60,000 deaths annually, with nearly half of these deaths occurring in rural settings [2]. WHO and partners recommend that vaccination campaigns targeting 70% and above of the dog population can effectively disrupt occurrence of rabies outbreaks in dog populations [3, 4]. Vaccinating at least 70% of the dog population means there is a large enough number of immune dogs in the dog population able to prevent the occurrence of an outbreak. Chances are that if an infected dog is introduced, the infectivity cycle will reach as a dead end as the next dog the rabid will attempt to infect will be immune to the disease having been vaccinated. This offers a simple yet effective way of protecting not only dog populations, but importantly human communities.

Zambia, with the rest of the global community has pledged to eradicate dog-mediated human rabies by the year 2030 [4]. This stems from the realization that it is unacceptable to continue losing lives to rabies disease when it is a fully vaccine preventable disease. If the 2030 goal is to be attained, it is important to introspect and critically decide what measures need to be actualized and set into motion. While human anti-rabies vaccines are available, their costs and availability make it an unsustainable option. This leaves dog vaccination as the only viable option.

Presently, Zambia's dog population stands at 960,000. Vaccination coverage in dog populations continue to decline sharply. Vaccination coverage for the years 2015 to 2018 were reported at 7.5%, 35.8%, 0.4% and 4.5% respectively. The less than 5% of vaccination coverage presently reported is a far cry from the 70% coverage needed to break rabies transmission in dog population. The rates of dog bites are equally high. In 2018 alone, about 16,000 people reported to have been bitten by a dog to the Veterinary department. As of June 2019, the ministry of health reported a total of 19 cases of rabies in humans, a number that equals the annual average in just a six-month period.

Truly, a solution to all this lies in breaking this vicious cycle. While government may provide vaccines for dog vaccinations and while by-laws are in place, it all comes down to responsible dog ownership. Every dog owner must ensure their pet is fully vaccinated. An initial single shot, followed by a booster at 6 months and then annual vaccination is all it takes to protect a dog from rabies. Let us vaccinate our dogs to end rabies in Zambia.

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4. World Health Organization: Rabies vaccines: WHO position paper, April 2018-Recommendations. Vaccine 2018, 36(37):5500-5503

SOME FACTS ON RABIES

1

Rabies is a zoonotic viral infection caused by viruses belonging to the Lyssavirus genus. It is transmitted by saliva through bites and scratches of infected mammals.

2

Dogs are the main source of human rabies deaths, contributing up to 99% of all rabies transmissions to humans.

3

More than 150 countries worldwide still report rabies cases and yet rabies is a vaccine-preventable viral disease; by epidemiological week 37 of 2019(9-15 September), Zambia alone had notified 10,858 dog bites country wide through its Integrated Disease Surveillance and Response program..

4

Rabies can be fatal; the majority of deaths due to rabies infections occur mainly in Asia and Africa at 95%; death commonly occurs within 1 to 2 weeks of manifestation of symptoms

5

The best feasible strategy that would contribute to interruption of rabies transmission is vaccination of dogs and prevention of dog bites.

6

40% of people bitten by suspect rabid animals are children under 15 years of age.

7

First AID to prevent rabies - Immediate, thorough wound washing with soap and water or povidone iodine for a minimum of 15 minutes after contact with a suspect rabid animal is crucial and can save lives.

8

An alliance of some organisations in the human and animal sector, "United Against Rabies" launched a drive Zero by 30: the global strategic plan to end human deaths from dog-mediated rabies by 2030 towards "Zero human rabies deaths by 2030".

9

The alliance membership comprises of the Food and Agriculture Organization (FAO), International Organisation for Animal Health (OIE) and the Global Alliance for Rabies Control (GARC) with the World Health Organisation (WHO) as the lead organisation.

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1. World Health Organisation. <https://www.who.int/health-topics/rabies>
2. IAMAT. <https://www.iamat.org/country/zambia/risk/rabies>
3. Health Protection Surveillance Center. Ireland. <https://www.hpsc.ie/a-z/zoonotic/rabies/factsheet/>

INTEGRATED DISEASE SURVEILLANCE AND RESPONSE (IDSR) WEEK 39 23-29 SEPTEMBER 2019

Surveillance Report

Surveillance and Disease Intelligence Unit
Zambia National Public Health Institute

Citation Style For This Article: Surveillance and Disease Intelligence Unit. Intergrated Disease Surveillance and Response. Health Press Zambia Bull. 2019; 3(6); pp 10-18.

Current outbreaks and public health threats

- Vaccine Derived Poliovirus 2 Event: Fourteen (14) samples from contacts in Chiengi, district Luapula province tested negative for polioviruses. Eighteen (18) results are pending.
- A 22 year old AFP case residing in village of index case absconded without full investigation
- Cholera: Four (4) suspected cholera cases from Northern (3) and Lusaka (1) province were investigated for cholera. Two cases from Nsama District tested positive for V. Cholerae O1 Inaba

Immediately notifiable diseases

- Acute Flaccid Paralysis (AFP): Eight (8) cases were reported from Western (4), Luapula (3) and Copperbelt (1) provinces. Samples are under investigation for poliovirus
- Measles: A total of nine (9) cases were reported this week from Lusaka (6), Copperbelt (1), Central (1) and Luapula Province (1). Six (6) specimens were investigated for measles & rubella
- Maternal Deaths: Twenty (20) maternal deaths were registered in Lusaka (4), Copperbelt (4), Muchinga (3), Northern (2), Western (2), Eastern (1), Southern (1), Luapula (1), North Western (1) and Central (1) Provinces

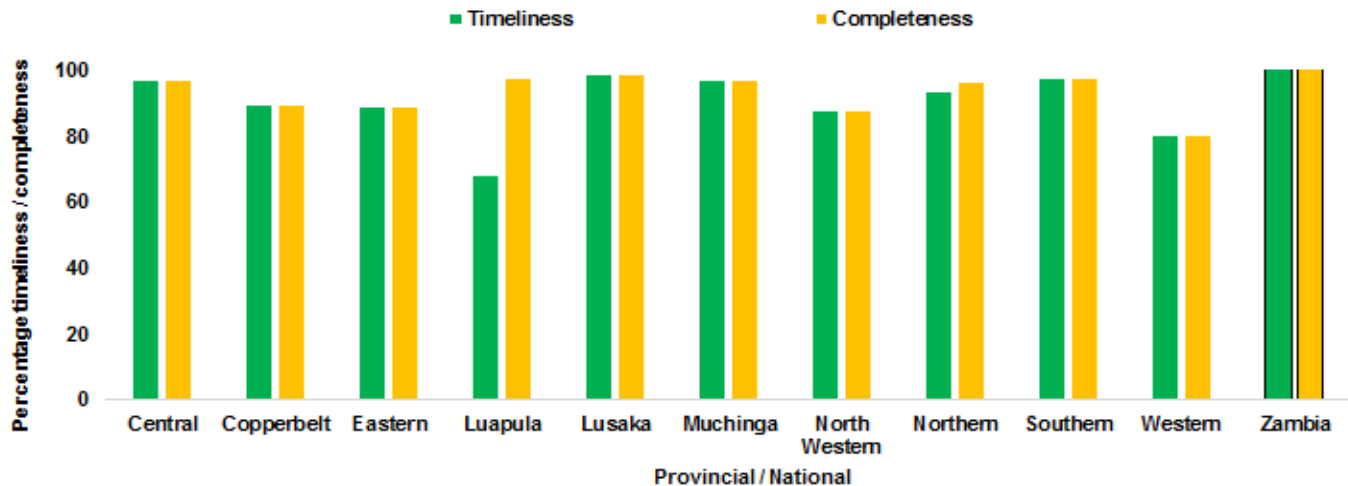
Other diseases /Events

- Rabies: One (1) rabies death was reported from Kalabo district Western province
- Typhoid: Four (4) suspected typhoid cases in Lusaka district tested negative for S Typhi

REGIONAL PUBLIC HEALTH EVENTS (CASES/ CFR)

Ebola	Measles	Cholera	Poliovirus (c VDPD)
DRC : 3,168 CFR 67%	Angola: 3127 CFR 2.0%	DRC: 18, 985 CFR 1.8%	Angola: 19 CFR 0.0%
Uganda : 1, CFR 100%	DRC: 183,837 CFR 2.0%		DRC: 51 , CFR 0.0%

HEALTH FACILITY REPORTING TIMELINESS/ COMPLETENESS



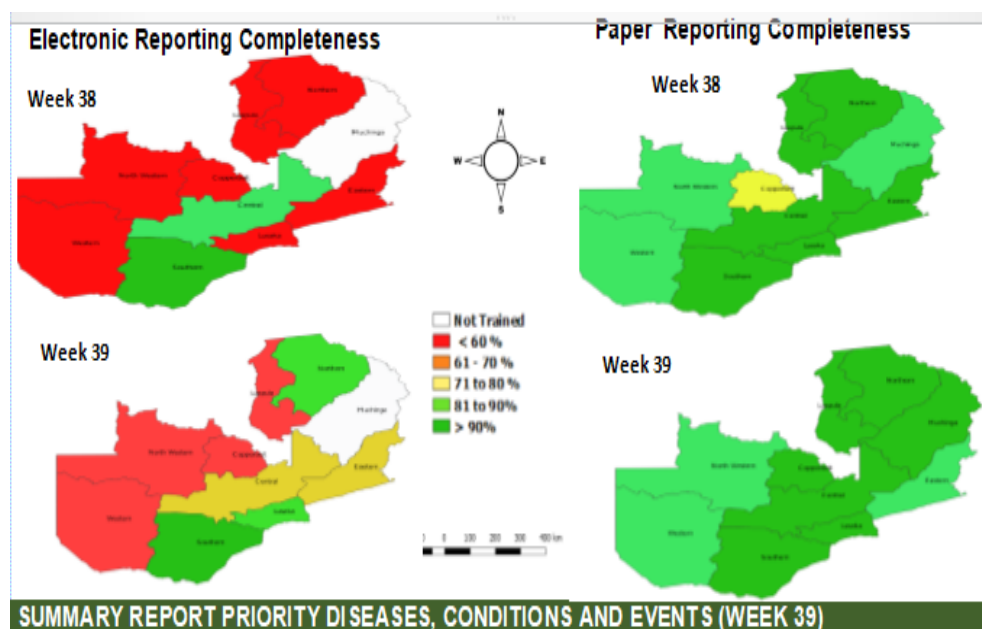
PROVINCIAL TIMELINESS

Province	WEEK 36	WEEK 37	WEEK 38	WEEK 39
Central	T	T	T	T
Copperbelt	T	T	T	T
Eastern	T	T	T	T
Luapula	T	T	T	T
Lusaka	T	T	T	T
Muchinga	T	T	T	T
North Western	T	T	L	T
Northern	T	T	T	T
Southern	T	T	T	T
Western	T	T	T	T

TIMELINESS: 90% (2207/2444)

COMPLETENESS: 91% (2232/2444)

SUMMARY REPORT PRIORITY DISEASES, CONDITIONS AND EVENTS (WEEK 39)

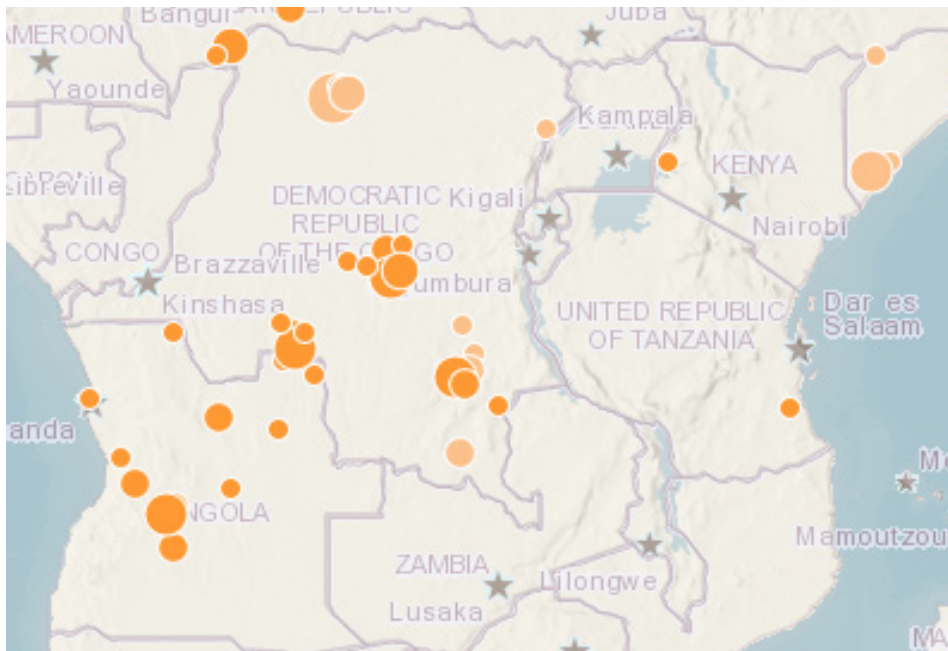


SUMMARY REPORT PRIORITY DISEASES, CONDITIONS AND EVENTS (WEEK 39)

	Week 39			Week 1 to 39 (cumulative)		
	Suspected cases	Tested	Confirmed	Suspected cases	Tested	Confirmed
AFP	8	8	0	136	130	0
Cholera	4	3	2	452	142	103
Meningitis (Neisseria)	1	1	1	105	62	30
Measles	9	6	0	685	212	35
Neonatal Tetanus	0	0	0	0	0	0
Plague	0	0	0	0	0	0
Rabies	1	0	0	23	0	0
Dog bites	291			11,477	0	0
Dysentery	1,299	27	18	31,118	634	263
Typhoid fever	4	4	0	421	113	14
Yellow fever	0	0	0	9	1	0
VHF	0	0	0	0	0	0
Anthrax	0	0	0	9	1	0
Influenza	0	0	0	0	0	0
Non Bloody Diarrhoea	18,838	0	0	486,212	2,861	1,969
Schistosomiasis (Bilharzia)	476	104	49	15,166	2,322	977
Malaria	92,929	92,926	31,501	6,119,554	5,515,910	973,910
HIV	34,409	34,324	2,330	1,774,275	1,656,697	404,658
Tuberculosis (Source NTP)	8572	*	411	233,642	-	13,027
Maternal Death	20			496		
Total	156,860	127,403	34,312	8,673,780	719,085	1,394,986

EVENTS/ OUTBREAKS

Vaccine Derived Polio Virus Type 2 Event (Currently no Evidence of Circulation)



Field Investigation Summary

New VDPV Cases Week 39: 0
Total Confirmed Cases : 1
Infected Province (s) : Luapula
Infected District (s) : Chiengi

Epidemiological Summary Index Case

Location	Chiengi District
Town	Kazembe
Village (s)	Pillashi & Kalim
Onset of Paralysis	16-Jul-19
Age	2 Years 8 Month
Sex	Male
Vaccination Status	Unvaccinated
Genetic Sequencing	Vaccine Derived Poliovirus 9 Nucleotide

Infected Province/ District

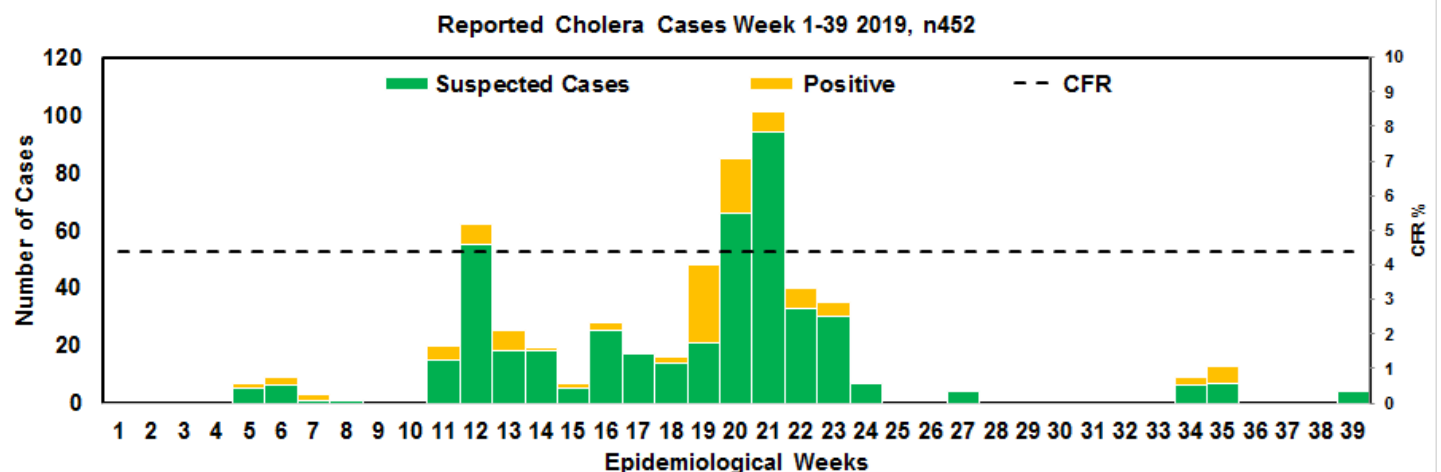
Village	Case(s) / Contacts	Lab Results				
		Negativ	NPE	VDPV	Pending	
Pillashi Index	1	0	0	1	0	
Pillashi Contact	1	0	0	0	1	
Pillashi Community	16	3	3	0	10	
Kallima Contact	1	0	0	0	1	
Kallima Community	13	5	2	0	6	
Total	32	8	5	1	18	

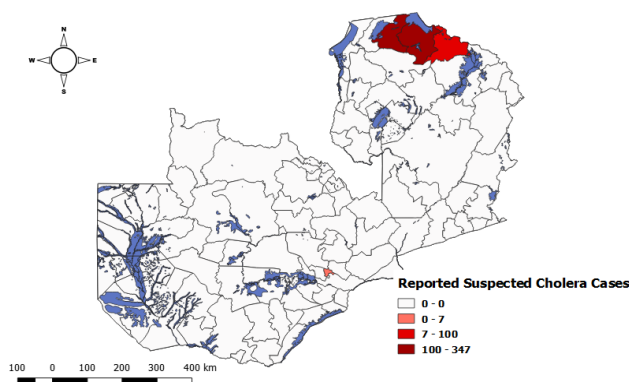
VDPV : Vaccine Derived Polio Virus

NPEV : Non Polio Enteroviruses

- One (1) VDPV2 was confirmed on September 18 2019, blood samples are being investigated for an immunodeficiency VDPV
- Results currently show no country transmission from the eleven (11) negative results including a close contact. Eighteen results from the remaining contacts are pending results.
- Heightened surveillance and line listing for AFP cases and contacts has continued. The district continue to promote social mobilization and sensitization for AFP in the affected area (s)
- There have been no reported deaths

CHORELA





- Two cases of Vibrio Cholerae O1 Inaba were confirmed from Nsama district
- This is the third (3) outbreak of cholera in Nsama district this year
- Plans for a reactive vaccination response campaign are underway

VACCINE PREVENTABLE DISEASES

Poliovirus Surveillance

Performance of AFP Surveillance, 2019, Zambia

(Data submitted from provinces week 39, 2019)

Provinces	2019 estimates	Annual Expected	All Reported	Only AFP	Annualized Non-polio	AFP cases with 2 stools within 14 days		Confirmed		Compatible (virologic Classification system)
	<15 pop (million)	Cases	Cases in database	cases	AFP rate	(0-14d)	%	VDPV	Wild	
Central	0.8	16	18	18	3.0	16	89%	0	0	0
Copperbelt	1.2	24	35	35	3.9	28	80%	0	0	0
Eastern	0.9	18	9	9	1.3	8	89%	0	0	0
Luapula	0.6	11	18	18	4.0	18	100%	1	0	0
Lusaka	1.5	30	5	5	0.5	4	80%	0	0	0
Muchinga	0.5	9	11	11	3.1	11	100%	0	0	0
North Western	0.4	8	9	9	2.8	9	100%	0	0	0
Northern	0.7	13	18	18	3.6	17	94%	0	0	0
Southern	0.9	17	5	5	0.8	4	80%	0	0	0
Western	0.5	10	13	13	3.5	12	92%	0	0	0
Zambia	7.9	158	141	141	2.4	127	90%	1	0	0

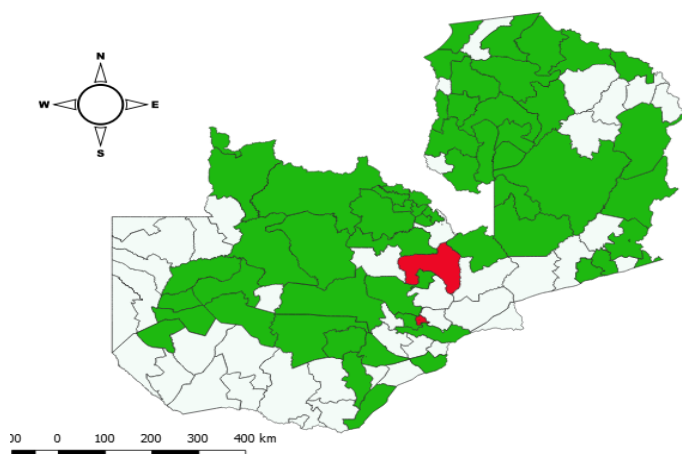
Surveillance gap

Yellow for NPAFP rate - certification level BUT surveillance gap for stool adequacy

Green indicates provinces with operational + certification-level surveillance

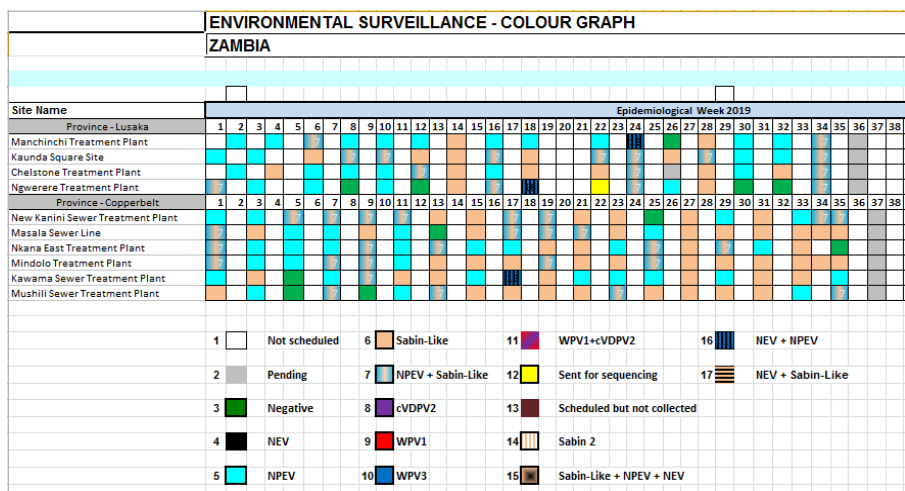
Poliovirus Surveillance

Non Reporting Silent Districts 47 Week 1 -38, 2019



- Eight (8) cases were reported this week
- Of the 141 laboratory investigated AFP cases this year 59% have had U 3 or more doses of OPV
- 113 adequate tested samples have been discarded for polioviruses, 10 are pending results
- Provinces are to conduct 60 day follow ups for inadequate samples

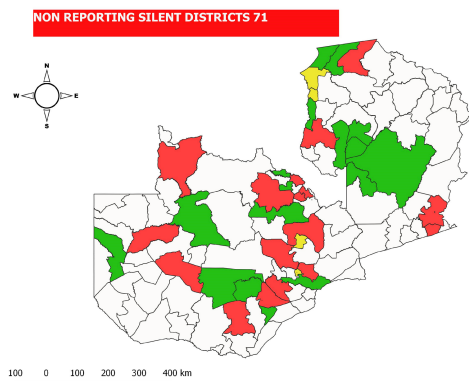
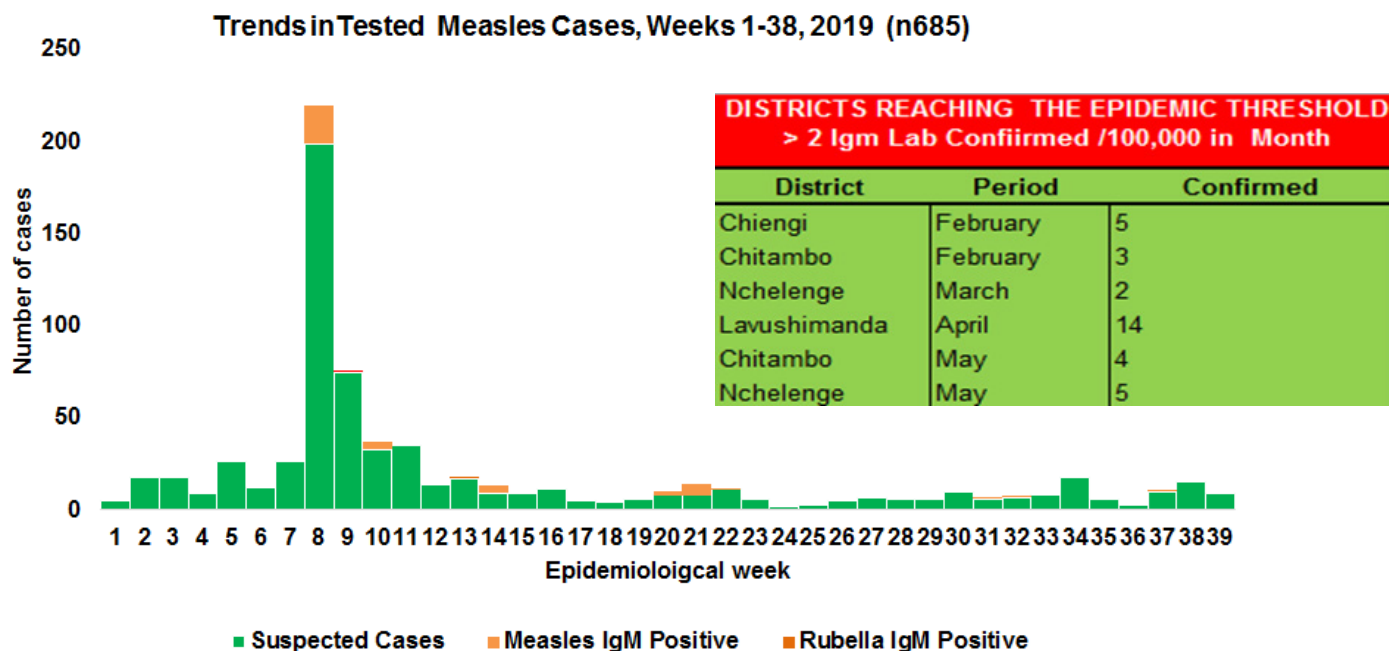
Poliovirus Environmental Surveillance



Scheduled collections from the Lusaka Province was conducted a day late.

Non Polio Enteroviruses detection for environmental surveillance polio virus is U50% isolation while the rate among AFP cases is 8.5% (12/141).

Measles & Rubella surveillance

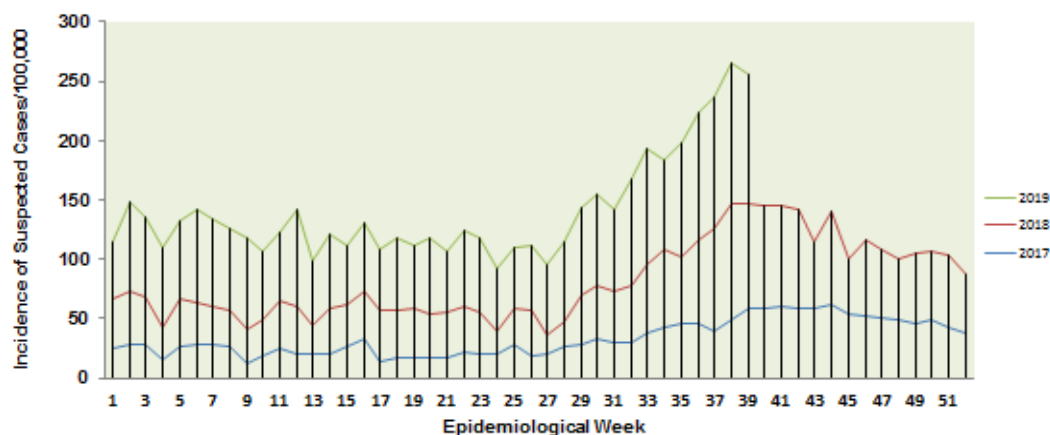


- Nine (9) cases were reported
- Only 29% of the 685 IDSR reported cases have been tested
- Positivity among tested cases for measles IgM is 13.3%(target 10%) and 1.01% for rubella
- 28 % (55) have history of vaccination
- 85% of the positive cases are under 10 years

HIGH BURDEN DISEASES

Non Bloody Diarrhoea

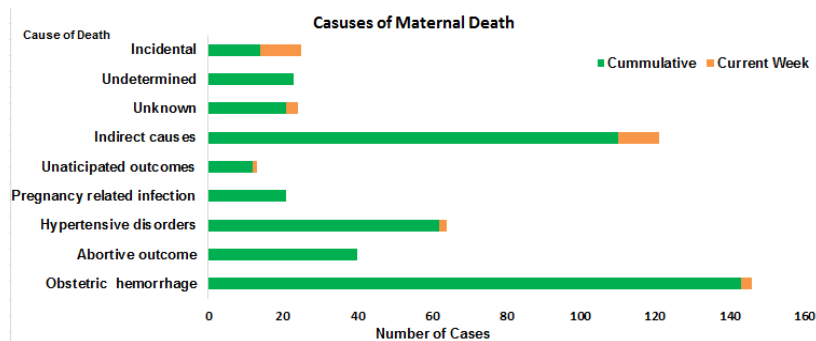
Incidence of IDSR Reported Health Facility Non Bloody Diarrhoea Cases 2017 to 2019



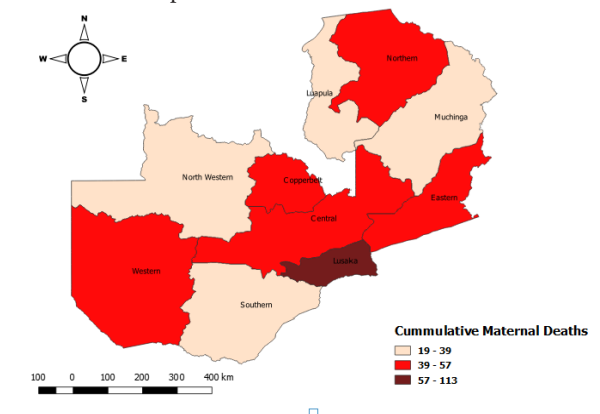
- Countrywide incidence of reported suspected non-bloody diarrheas this week is 108/ 100,000 population
- North Western, Central and Southern Provinces have respectively recorded the highest incidence of reported weekly cases since week 1.
- Following a seasonal increase in cases reported from week 24, the epi curve this week showed a decline cases similar to trends seen in 2018 and 2017. There is a notable continued increase in reported cases this year compared to the previous two years.
- North Western, Central, and Luapula Provinces have reported the highest cases of non bloody diarrhoea from week 1

HIGH PRIORITY DISEASES

Maternal Deaths



Cumulative Reported Maternal Deaths Week 1 to 39

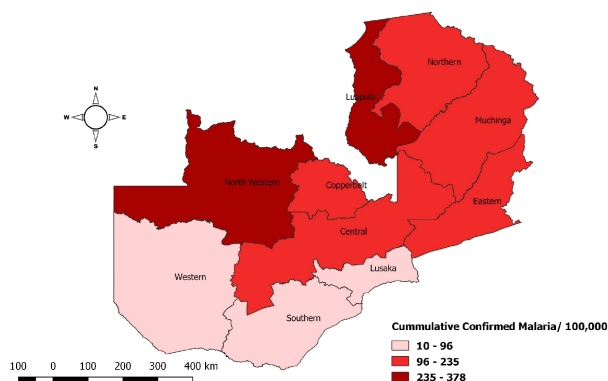
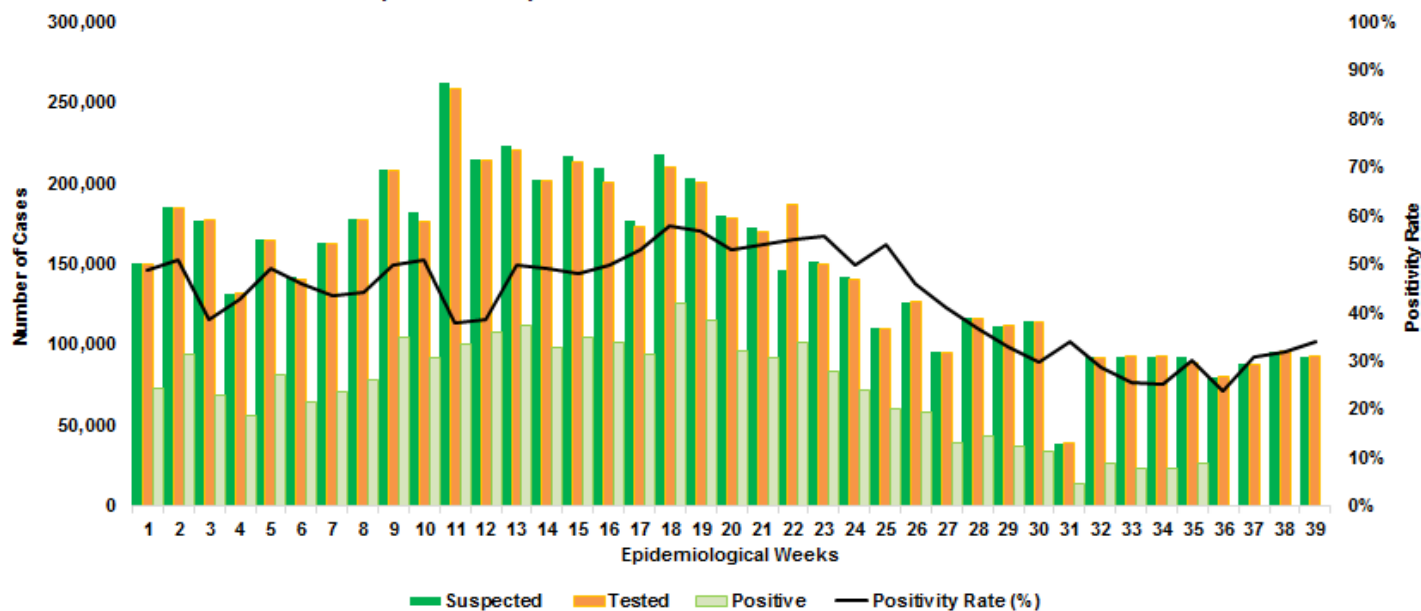


- Twenty (20) maternal deaths were registered this week
- Obstetric hemorrhages continue to be the leading cause of death.
- Lusaka province has cumulatively recorded the highest number of deaths since week 1.

HIGH BURDEN DISEASES

Malaria

Trends of Reported , Suspected and Confirmed Malaria cases Weeks 1 to 39, 2019

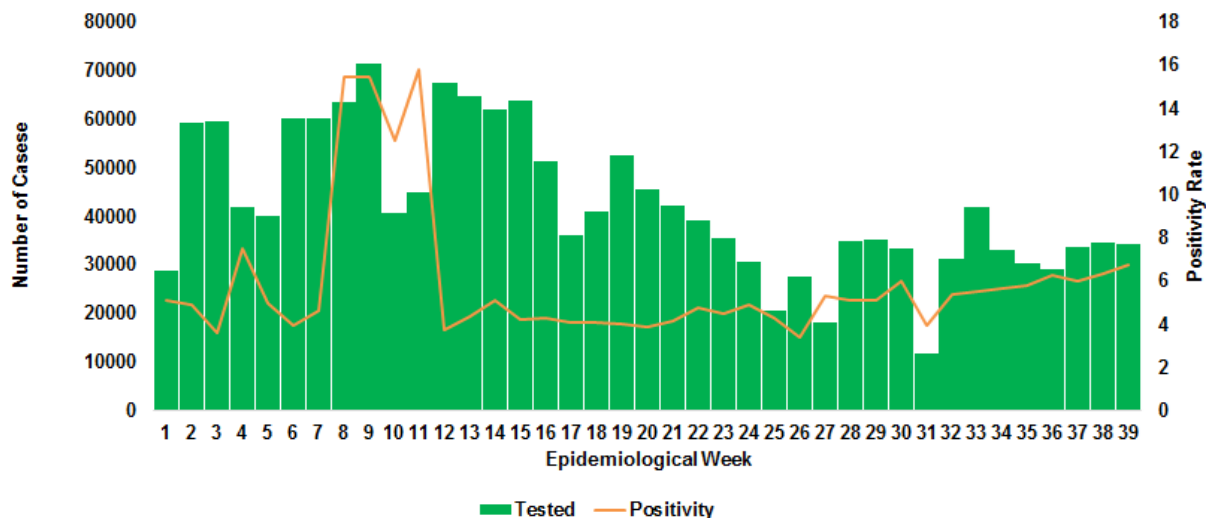


- Malaria is the leading cause of morbidity accounting for 72% of all reported cases
- 92,929 suspected cases were reported this week; with a positivity rate of 34 % among the 92, 929 tested cases.
- Northwestern and Luapula provinces recorded the highest cumulative incidence of malaria cases from week 1 to 39

HIGH BURDEN DISEASES

HIV

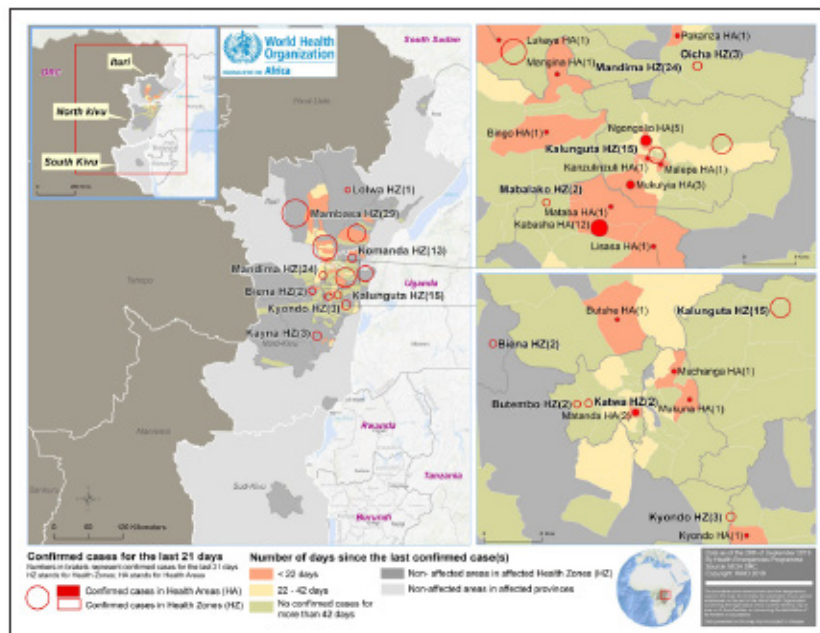
Health Facility HIV Testing and Positivity Rates Weeks 1-39, 2019



- 34,324 people were tested for HIV in the week under review, with a positivity rate of 6.78%.
- Central, Lusaka and Luapula provinces have cumulatively reported the highest incidence of confirmed HIV of 880, 679 and 503 cases per 100,000 population, respectively, from week 1.

Ebola Virus, DRC and Uganda, 2018-2019

Geographical distribution of confirmed Ebola virus disease cases reported from 8 to 28 September 2019, North Kivu, South Kivu and Ituri provinces, Democratic Republic of the Congo

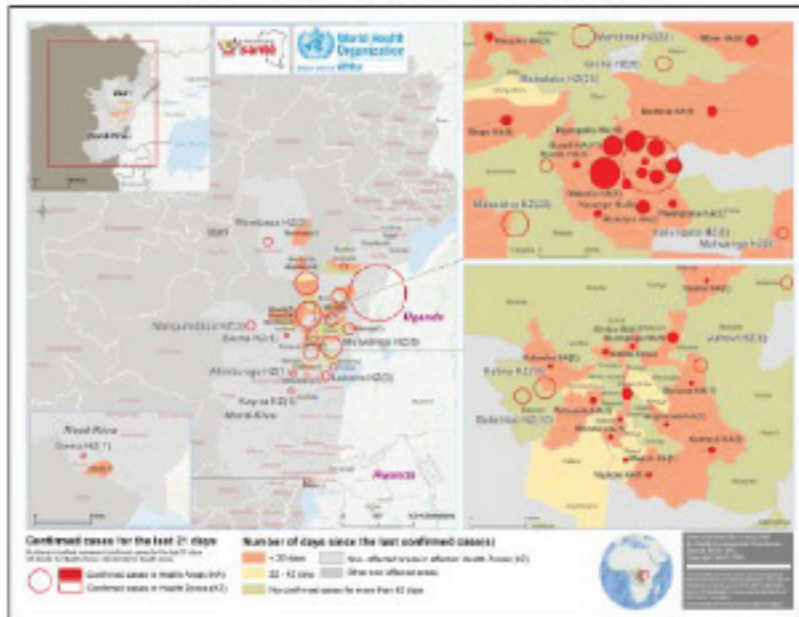


- The EVD outbreak was declared a Public Health Emergency of International Concern in DRC on 17 July 2019
- 21 new confirmed cases and 14 new deaths were reported in the current week.
- Cumulative cases stand at 3188 of which 3074 are confirmed and 2129 deaths occurred (CFR is 67%).
- Active transmission is ongoing with 13 of the 29 health reporting zones confirming cases in the last 21 days.
- The regional risk of spread remains high
- Partners and Zambia continue preparing EVD surveillance & preparedness in at risk districts

EARLY WARNING DISEASES

Ebola Virus, DRC and Uganda , 2018-2019

Geographical distribution of confirmed and probable Ebola virus disease cases reported from 1 May 2018 to 27 July 2019, North Kivu and Ituri provinces, Democratic Republic of the Congo.



- The EVD outbreak was declared a Public Health Emergency of International Concern
- 81 new confirmed cases and 45 new deaths were reported in the current week.
- Cumulative cases stand at 2659 which 2565 are confirmed and 1,688 deaths occurred (CFR is 66%).
- Active transmission is ongoing with 13 of the 23 health reporting zones confirming cases in the last 7 days; .
- The regional risk of spread remains high

PUBLIC HEALTH ACTIONS

General Recommendations

- Response pillars at ZNPHI to continue working with partners to strengthen surveillance, laboratory and epidemic preparedness for EVD, Polioviruses, Cholera, Measles and other public health threats
- Provincial health and veterinary municipalities to quickly respond to suspected rabies cases, promote vaccination of dogs and sensitize communities on rabies prevention/treatment
- Provinces to oversee that epidemic preparedness consumables (including vaccines, water testing kits and chlorine distribution) are distributed to districts at risk of outbreaks
- Provinces should ensure that epidemic preparedness committees (provincial and districts) are functional, represented by all key multisector stakeholders & hold regular meetings

Heightened Vaccine-Preventable Disease Surveillance in Silent Districts

- Chiengi district is to increase the annualized Non Polio AFP rate from 2 to 4 cases /100,000 of detected children under 15 years
- All district in Luapula Province to ensure timely reporting from all health facilities
- Conduct and report active geocoded searches at priority sites as per recommended schedule
- Provinces to ensure silent districts not reporting AFP/measles cases are supported for active surveillance of cases
- Provinces are to ensure health workers are sensitized for improved detection, reporting and investigation of suspected measles and AFP cases
- Provincial health offices to ensure sub regional attainment of the Non-Polio AFP and non Febrile Rash rate of 2 cases per 100,000

Ebola Virus Disease Preparedness

- All provinces to strengthen EVD surveillance among all health care providers and raise community awareness of EVD prevention
- Provide weekly reports in IDSR reports of active searches including zero reporting in at risk districts, including ports of entry
- Ensure epidemic preparedness measures for detecting cases, sample testing/ transportation and managing cases are effected
- All border districts to strengthen point of entry EVD screening including facilitation of cross boarder monitoring and reporting of suspected EVD cases

Heightened Surveillance in Cholera Hotspots

- Nsama and neighbouring districts to continue to support the response to the ongoing outbreak through heightened active surveillance, management of cholera cases and timely reporting of epidemiological changes
- Health education to sensitize communities and health workers on cholera preventative measures
- WASH continue water monitoring and distribution of chlorine in identified at risk populations
- Provincial epidemic preparedness committee's to engage all relevant government stakeholders and multisector partners required to prevent cholera outbreaks
- Case is to continues at established Cholera treatment center, rapid response teams are

- Writers: Chanda Groeneveld, Muzala Kapin'a, Moses Banda, Nkomba Kayeyi, Mazyanga M Liwewe, Victor Mukonka, Edward Chentulo, Paul Simusika, Mwaka Monze and Zambia National Public Health Institute (ZNPHI)

INFLUENZA SENTINEL SURVEILLANCE REPORT

Perspective

National Influenza Center – Pathology and Microbiology Department,
University Teaching Hospital, Virology Laboratory

Citation Style For This Article: National Influenza Center – Pathology and Microbiology Department University Teaching Hospital, Virology Laboratory. Influenza Sentinal Surveillance Report. Health Press Zambia Bull. 2019; 3(6); pp 28-32.

Program	Influenza Sentinel Surveillance ILI and SARI	
Start Year	2008	
Provinces (Sites)	Lusaka [UTH Pediatric, UTH Adult Hospital, Chipata Clinic] Copperbelt [Ndola Central Hospital, Arthur Davison Hospital, New Masala Clinic]	
Type of site	Out Patient Clinics (ILI)	In Patient Hospital (SARI)
Case definition	Influenza-Like Illness (ILI): Out-patient consultation AND temperature 38°C and above or history of fever AND cough or sore throat	Severe Acute Respiratory Illness (SARI): 5 yrs. and above: Patient admitted with less than 7 days duration of illness AND temperature 38°C and above or history of fever AND cough or sore throat AND difficulty breathing. 2m-5yrs: Patient admitted with less than 7 days duration of illness AND cough or difficulty breathing AND one of symptoms Tachypnoea (2m-1yr RR >50; 1-5yrs RR >40 Unable to drink or breastfeed Lethargic or unconscious Vomits everything (not only occasional) Convulsions Chest in-drawing (retractions under ribcage/stridor in a calm child)
Specimen collected	Nasal-pharyngeal/ Oral-Pharyngeal Swab	
Main pathogen tested	Influenza	

Methodology for Establishment of Epidemic Thresholds

Thresholds are calculated using Moving Epidemic Methods (MEM), a sequential analysis using R language available from: <http://CRAN.R-project.org/web/package=mem> designed to calculate the duration, start and end of the annual influenza epidemic. MEM uses the 40th, 90th and 97.5th percentile established from available years of historical data to calculate threshold activities. Threshold activity for influenza is categorized as: below epidemic threshold, low, moderate, high or very high. Transmissibility of influenza can be inferred from ILI data while SARI data gives an indication of severity.

Summary

There was increased influenza activity in the third quarter of 2019 between epi-weeks 27 and 34. Rates of Influenza-Like Illness (ILI) and Severe Acute Respiratory Infection (SARI) attributable to influenza virus infection were within the moderate - high threshold and remained within the low seasonal threshold in week 39. This second cycle of activity was of a moderate transmissibility and high severity. Children below five years of age were most affected.

ILI Surveillance:

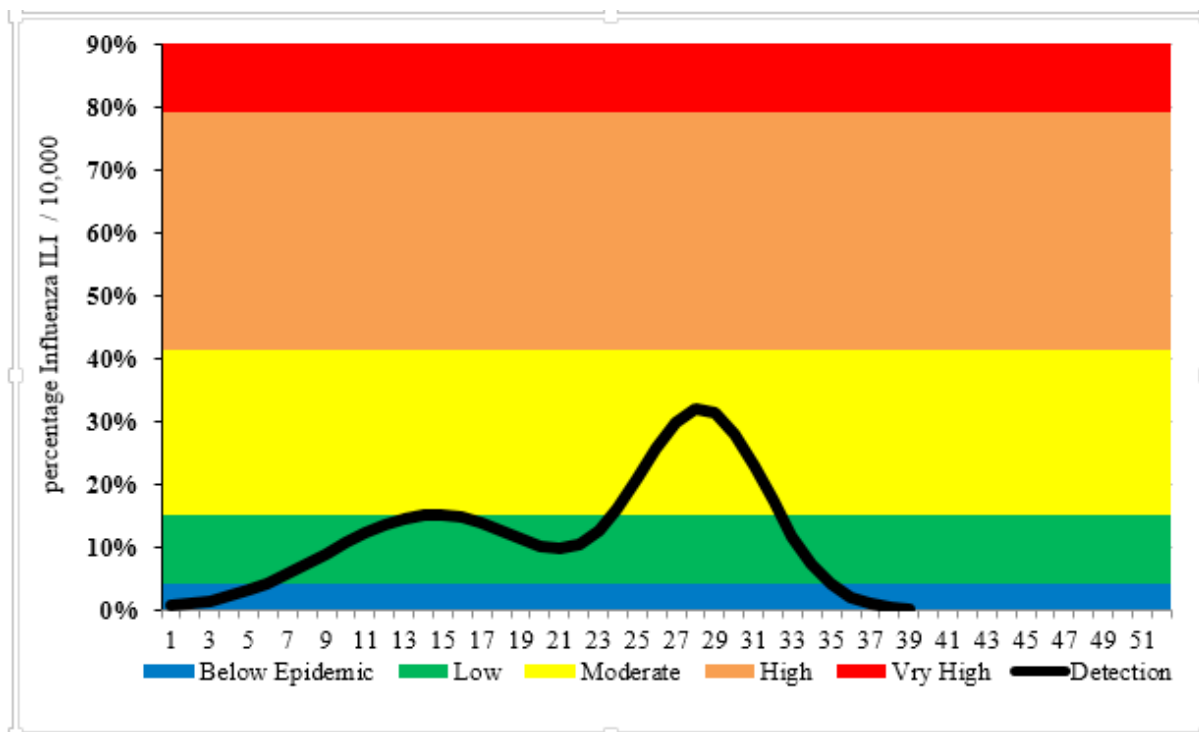
Specimens from 749 outpatients were received from two ILI surveillance sites. 637 (85%) were adequately sampled and tested. Influenza virus was detected in 89 (14%) of these samples of which, 58 (65%) were identified as Influenza B, 6 (7%) Influenza A H3N2, 11(12%) Influenza A H1N1 (pandemic), 7 (8%) influenza A Untyped and 4(4%) as Influenza A unsubtypeable.

SARI Surveillance:

During this same period, specimens were received from 1390 patients admitted to four SARI surveillance sites. 854 (61%) were adequately sampled and tested. Influenza was detected in 114 (13%) specimens; 80 (70%) of which were identified as Influenza B, 1 as Influenza A H3N2 (1%), 5 (4%) as Influenza A H1N1 (pandemic), 25(22%) influenza A Untyped and 3(3%) as Influenza A unsubtypeable.

Influenza Transmissibility

Fig 1: Percentage of Influenza Positive ILI Cases¹ (Out-Patient Visit Surveillance) per Epi-Week Against Epidemic Thresholds Set Using 2013 - 2018 Data

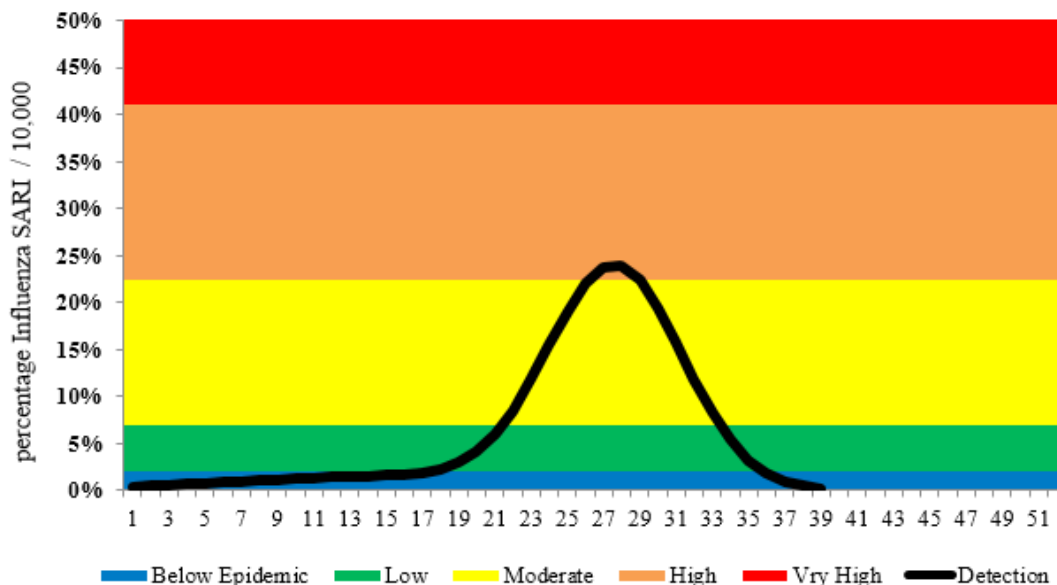


¹ILI Case / Total ILI Sampled *100

In September 2019, ILI outpatient visits attributable to influenza virus infection were below epidemic threshold between weeks 35 and 39.

Influenza Severity (Impact)

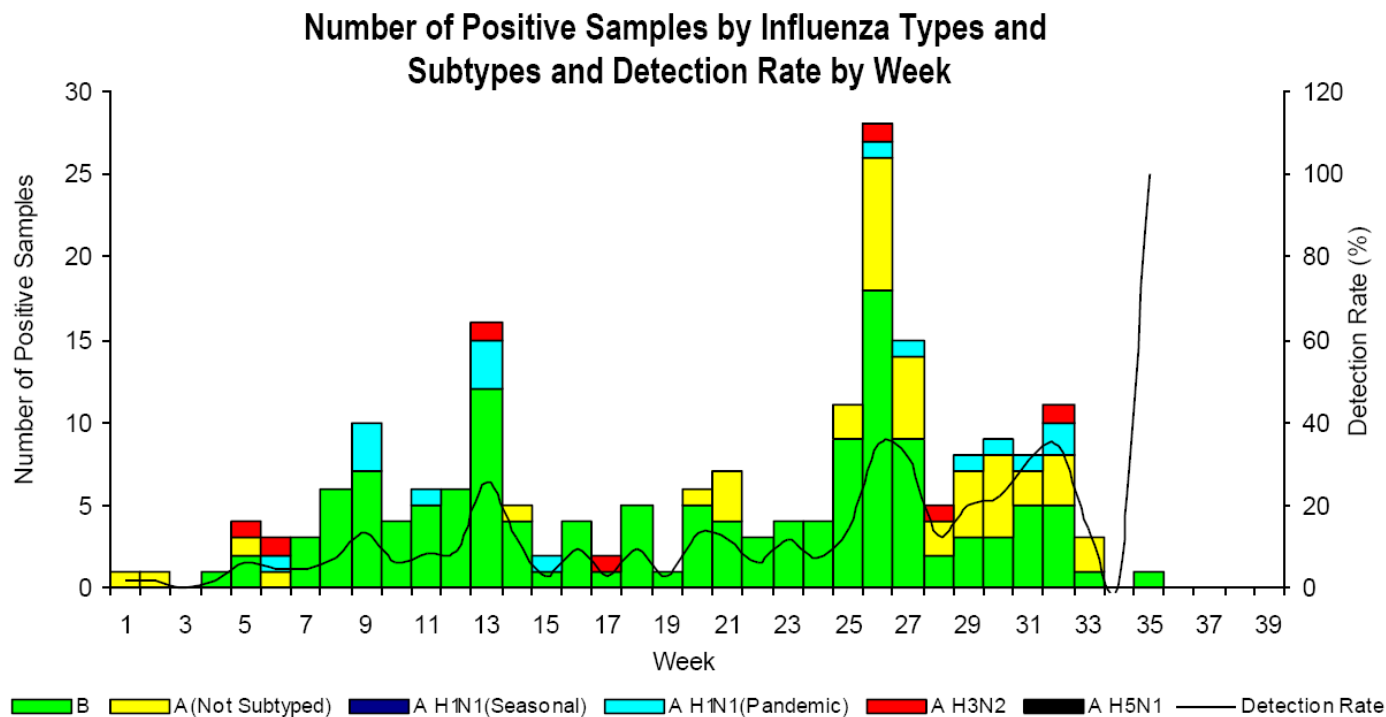
Fig 2: Percentage of Influenza Positive SARI Cases¹ (Hospital Admission Surveillance) per Epi-Week against Epidemic Thresh-



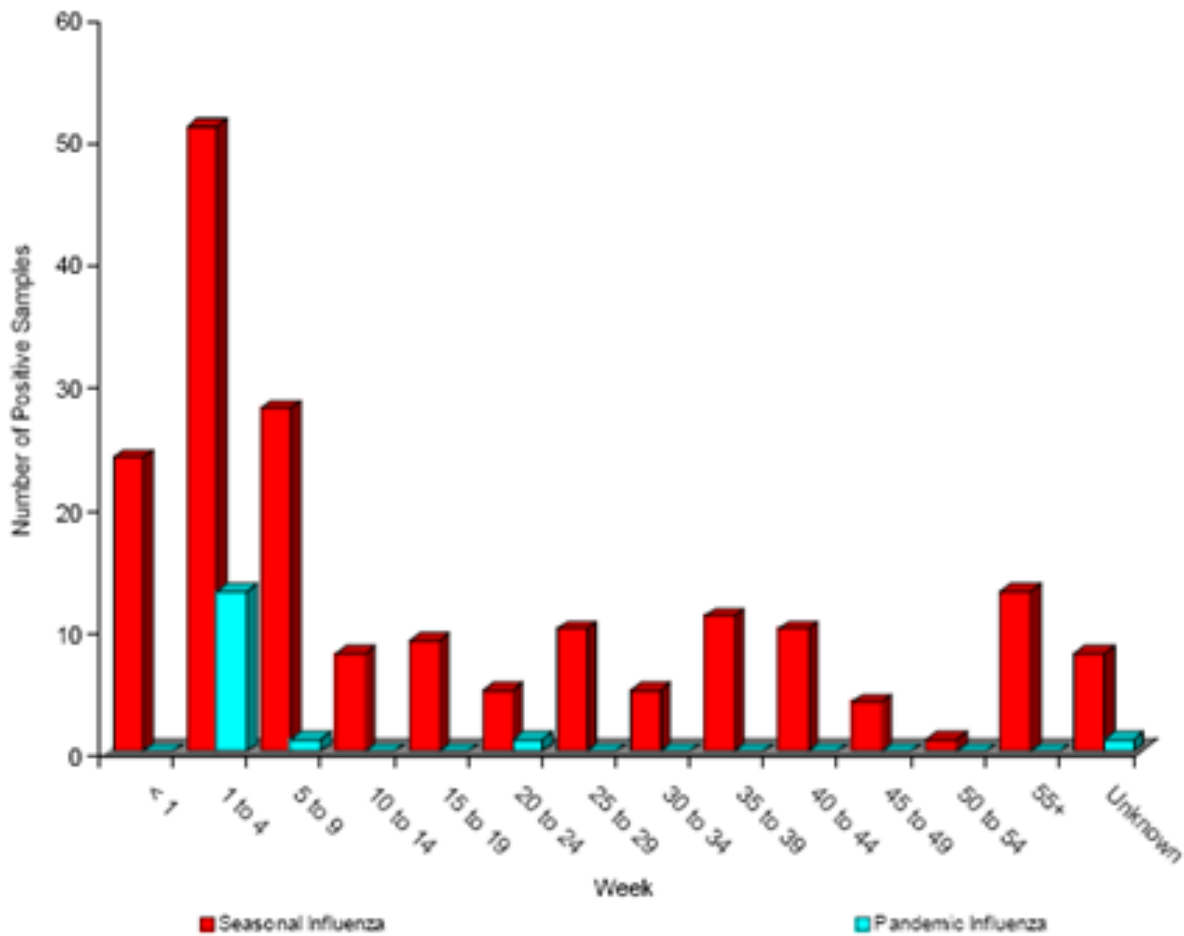
¹ SARI Influenza Positive Cases / Total Admissions Sampled *100

In September 2019, all SARI admission attributable to influenza virus infection declined to below epidemic threshold in week 35 but has remained in low epidemic threshold from week 35 to week 30

Fig 3: Positives samples* by influenza type and detection rate by epi-week in 2019.**



Influenza viruses circulating in the 3rd quarter of 2019 were predominantly influenza B. There was also random detection of influenza A. Among the influenza A viruses that have been subtyped, H1N1 (Pandemic) and H3N2 were seen in weeks 26 -32. Most viruses were detected between weeks 5 and 33.



The virus circulation was greater at either end of the age spectrum but the most affected age groups were the under-fives.

Fig: 5: Cumulative number of influenza types and subtypes and total number of samples tested by sentinel sites.

	Case	B	A (Not typed)	AH1N1 (Seasonal)	AH1N1 (Pandemic)	A H3N2	A H5N1	Total Samples Tested
	ILI	54	14	0	11	6	0	636
	SARI	49	18	0	1	1	0	858
	Unknown	35	10	0	4	0	0	332
	Total	138	42	0	16	7	0	1826

District	Hospital/ Clinic	B	A (Not typed)	AH1N1 (Seasonal)	AH1N1 (Pandemic)	A H3N2	A H5N1	Total Samples Tested
Lusaka	UTH Filter	10	11	0	0	0	0	341
	UTH Pediatric	19	7	0	0	0	0	228
	Chipata Clinic	2	7	0	1	1	0	235
Ndola	Ndola Central	26	6	0	0	0	0	385
	Arthur Davison	22	4	0	5	1	0	215
	New Masala	56	7	0	10	5	0	422
Others Sites	Other Hospital/Clinic	0	0	0	0	0	0	0
	Total	138	42	0	16	7	0	1826

The total number of samples collected as at 30th September 2019, is 2139; 1822(85%) were tested. 203 (11%), were positive for influenza virus and 1619 (89%) were negative.