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ADDRESS: PLOT 13, REEDBUCK ROAD, KABULONGA, LUSAKA.

Malaria Trends: An Update

Email: editor.heathpress@znphi.co.zm
Website: http://znphi.co.zm/thehealthpress/
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IMPACT OF COVID-19 EPIDEMIC ON MALARIA: LIMITATIONS TO ACHIEVING MALARIA ELIMINATION

EDITORIAL

By : S. Siziya
Michael Chilufya Sata School of Medicine, Copperbelt University, Ndola, Zambia

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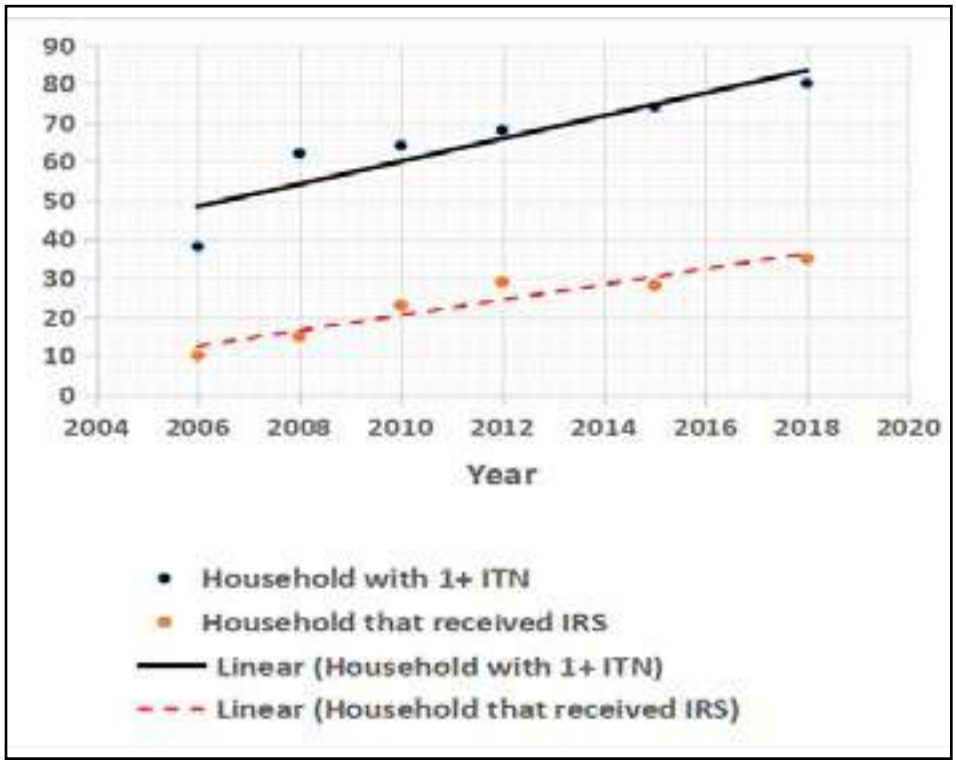
Malaria remains a major public health problem in Zambia despite the sustained reduction in the number of cases. Highest prevalence rates for malaria have been reported in northern (Luapula, Northern, North-western and Muchinga provinces) regions of the country (20% or higher), followed by middle (Eastern, Central, Copper-belt and northern parts of Western provinces) regions of the country (10-20%) and least southern (Lusaka, Southern and the southern parts of Western provinces) regions of the country (<10%) [1]. While the impact of malaria interventions might have greater impact in high malaria prevalence regions, elimination of malaria is easier attained in regions of low prevalence rates. Given that the goal of malaria control is to reduce the number of cases to a very low level, then malaria control in Zambia should be targeted to northern and central regions of the country. Meanwhile, malaria elimination efforts should be targeted to southern regions of the country.

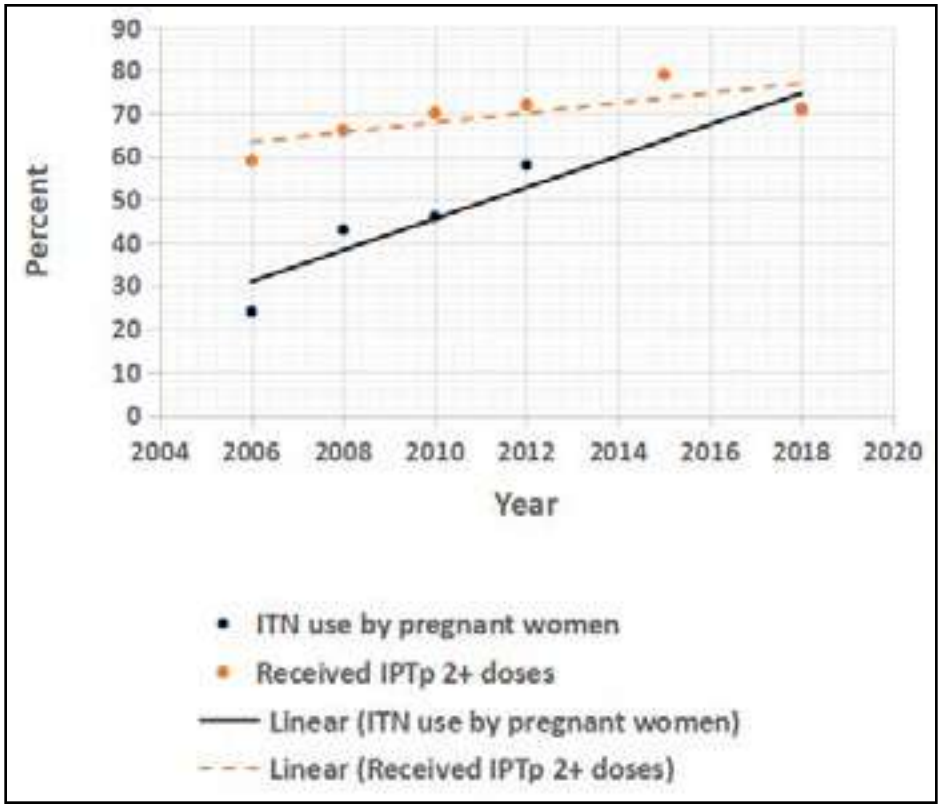
In its National malaria elimination strategic plan of 2017-2021, Zambia opted to eliminate local malaria infection and disease in Zambia by 2021 with the following elimination interventions: Vector control (Indoor residual spraying (IRS), Long Lasting Insecticide-treated mosquito nets (LLINs) and Larval source management); Case management (Diagnosis, Treatment and Integrated community case management); Malaria in pregnancy (Intermittent preventive treatment during pregnancy (IPTp)); Parasite clearance (Mass drug administration (MDA), Reactive case investigation and Focal drug administration); Health promotion (Advocacy with key policy and decision-makers on malaria elimination, Community engagement and SBCC for mobile and migrant populations including cross-border collaboration); Enhanced surveillance, monitoring, evaluation, and research for informed decision-making (Quality and timely facility/community reporting); Incorporation of emerging tools as they become available and are epidemiologically relevant; Health systems capacity (Staffing and Decentralisation); and Financing (Domestic, Donor and Non-traditional/innovative sources (such as private, religious and community) [2]. Clearly, the elimination goal for the entire country will not be attained by the end of next year, 2021.

Although Zambia has made progress in increasing the intervention coverages (Figures 1and 2), these have been below 80% coverage and not ensuring head immunity.

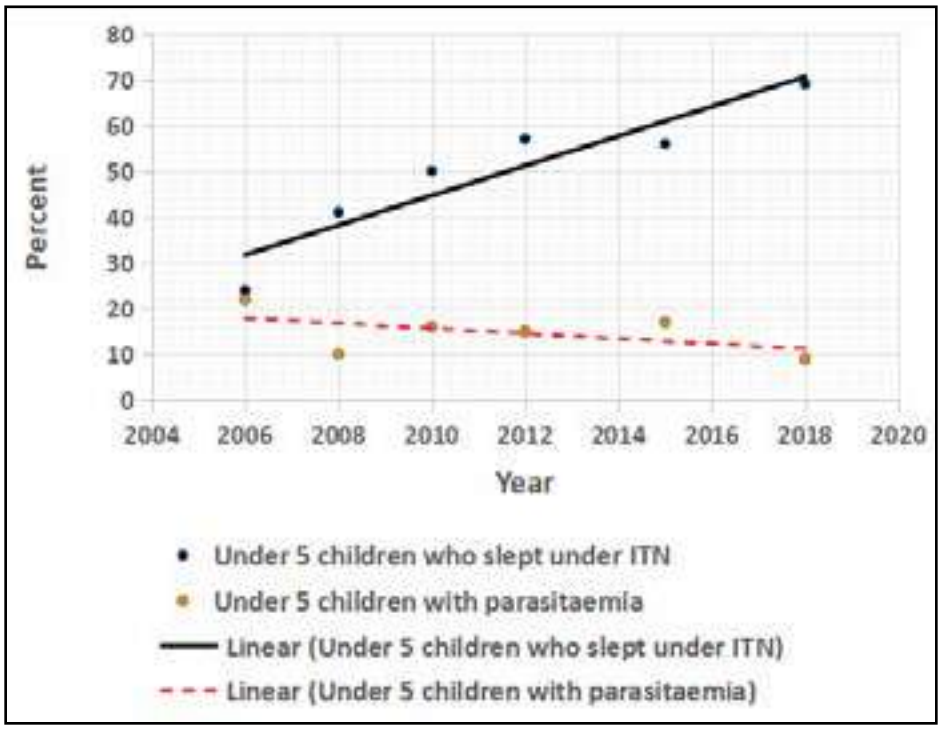
Subsequently, malaria parasitaemia rate among children aged below 5 years has not significantly ($F=1.41$, $p=0.301$) changed between 2006 and 2018 (Figure 3)



Source: Zambia Ministry of Health, 2018. Zambia National Malaria Indicator Survey 2018 [3].
Figure 1: Percent of households with at least one insecticide treated net (ITN) and received insecticide residual spray (IRS).



Source: Zambia Ministry of Health, 2018. Zambia National Malaria Indicator Survey 2018 [3].
Figure 2: Percent of pregnant women who slept under an insecticide treated net (ITN) and received 2+ doses of intermittent preventive treatment in pregnancy (IPTp).



Source: Zambia Ministry of Health, 2018. Zambia National Malaria Indicator Survey 2018 [3].
Figure 3: Percent of under 5 children who slept under an insecticide treated net (ITN) and those who had parasitaemia

Figure 3: Percent of Under 5 children who slept under an insecticide treated net (ITN) and had malaria parasitaemia.

Health coverages of routine health services are affected by outbreaks of epidemics. The model on the Ebola outbreak of 2014-2016 to predict the Ebola epidemic impact on malaria morbidity reported that a 50% reduction in treatment coverage during the Ebola outbreak led to increased malaria-attributable mortality rates by 48.0% in Guinea, 53.6% in Liberia and 50.0% in Sierra Leone [4].

Concerning malaria control, the delivery of ITN and IRS require movement of community health workers and their health facility supervisors to travel to communities. In active case finding at community level, CHW tests everyone living within 140 m radius of the sick person and observes the patient taking the malarial drug [5]. World Health Organization [6] has guided to ensure safety of both the health worker and client/patient from COVID-19 in health facilities and communities in their interaction to deliver malaria interventions.

The reductions in malaria burden have been variable over time in Zambia due to unstable financing and flows of critical antimalarial commodities, such as LLINs, IRS chemicals, antimalarial medicines, and RDT [7]. The major focus has been on containing the COVID-19 epidemic and as result, the malaria elimination program may be negatively affected. However, the Zambia End Malaria Council recommitted

to keep malaria-funding high on the political agenda during the COVID-19 fight. As we strive to control and possible eliminate COVID-19, we should not lose sight of controlling and possibly eliminating malaria.

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SAVE A CERVIX, SAVE A LIFE! "REINFORCING TEST AND TREAT FOR HIV POSITIVE WOMEN IN ZAMBIA

PERSPECTIVE

By : KM. Banda, D Mwansa, K Rice
National Health Research Authority

Citation Style For This Article: Banda KM , Mwansa D, Rice K,. Save a Cervix, Save a Life! "Reinforcing test and treat for HIV positive women in Zambia. Health Press Zambia Bull. 2020; 4(01); pp 4-8

Key Messages

- *Cervical cancer (CaCx) is the highest cause of all cancer deaths in Zambia.1*
- *About seven women are diagnosed with CaCx and about four women die from CaCx every day in Zambia.2*
- *More than half (53%) of all women with CaCx are HIV positive.2*
- *Only about 20% of HIV positive women have been screened for CaCx.2*
- *Opt-out testing, at 90% screened, decreases the number of estimated HIV positive women at risk of developing late stage CaCx by about 168,828*

Problem Statement

Zambia's double burden of CaCx and HIV

Table 1: World Ranking of Cervical Cancer Incidence (2012)

Rank	Country	Age-Standardised Rate per 100,000
1	Malawi	75.9
2	Mozambique	65.0
3	Comoros	61.3
4	Zambia	58.0
5	Zimbabwe	56.4
6	Tanzania	54.0
7	Swaziland	53.1
8	Burundi	49.3
9	Bolivia	47.7
10	Guyana	46.9
11	Madagascar	44.6
12	Uganda	44.4
13	Mali	44.2
14	Rwanda	41.8
15	Senegal	41.4
16	Kenya	40.1
17	Guinea	38.4
17	Lesotho	38.4
19	Suriname	38.0
20	Fiji	37.8

- Zambia ranks 4th highest in overall incidence of CaCx and highest in age-specific incidence of CaCx compared to the rest of the world. (See Table 13 and Figure 14)
- Zambia has a high prevalence of HIV (about 15%) in the adult women population.5
- The significant intersect of HIV prevalence and CaCx risk has contributed greatly to the increase of CaCx and worsening of its prognosis.6-9

Increasing Screening Reduces the Cost of CaCx and Saves Lives

Unlike many other cancers, there is incredible evidence that screening for cervical cancer is one of the most efficient preventive measures with effective results. For instance, there was a dramatic fall in cervical cancer mortality as screening became widespread in North America and Western Europe between 1950s and 1970s, and meta-analysis of CaCx trends of countries in five continents showed that in countries where effective screening had been in place for a long time the consequences of underlying increases in cohort-specific risk were largely avoided 10.

However, in Zambia, only about 21% of all women aged 25-49 had screened for cervical cancer11 and only an estimated 20% of the HIV positive women had screened for CaCx.2 CaCx screening is particularly important for the women living with HIV/AIDS as their risk of infection is higher compared to the general population.[2,7]

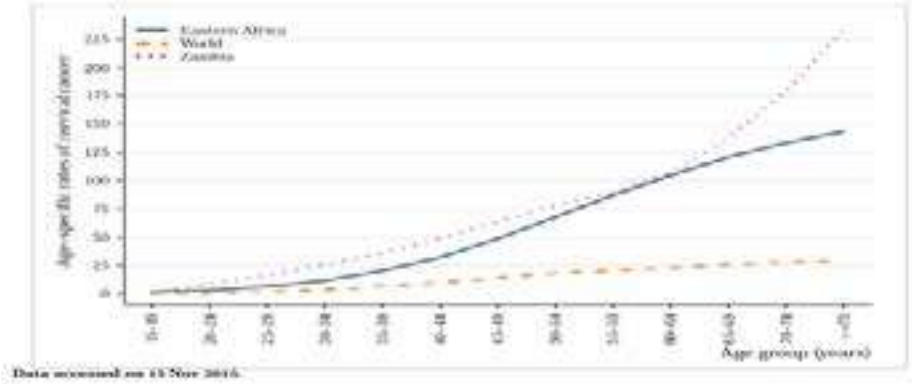


Figure 1: Estimated CaCx Age-specific Incidence Rates

What are we saying?

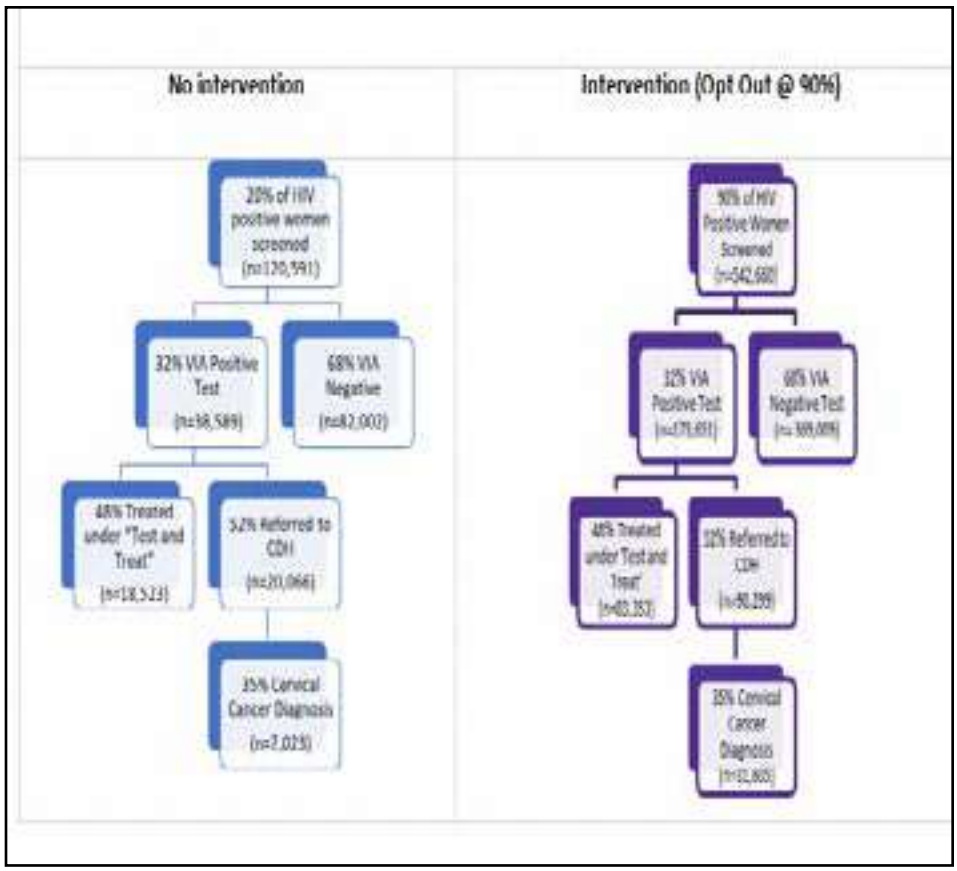


Figure 2: Estimated Cases of CaCx Prevented and Diagnosed among HIV Positive Women Screened

Policy Option

"Opt Out" strategy for reinforcing CaCx test and treat for HIV positive women in Zambia"

Developing an "Opt Out" strategy in an effort to reinforce existing guidelines for Treatment and Prevention of HIV will promote testing and treatment of CaCx at early stages. "Opt out" strategy essentially means HIV positive women are told that CaCx screening will be conducted in the standard tests (that is to say, screening will be given to all HIV positive women) unless they decline.

WHAT: Routinely CaCx screening for all HIV positive women with adequate information is provided to them as described in the HIV Treatment and Prevention guidelines during the health facility visits for ART.

WHY: According to the 2017 Zambia Population-based HIV Impact Assessment report, 86% of people living with HIV are on ART, this means that they would visit a health facility at some point for treatment. Currently, estimations show that only about 5% of the HIV positive have screened for CaCx at some point. Routine testing during treatment visits increases the number of women screened and the number of times a woman is screened for CaCx. Literature on a similar strategy employed in increasing HIV testing from Zimbabwe12 and Tanzania13 shows that this strategy has increased HIV testing up to 90%. In our model, applying the opt out strategy for CaCx screening in one year at 45% and 90% screening, would increase the number of women screened and treated by about 37% and 80% respectively.

FEASIBILITY: MEDIUM to HIGH.

This strategy builds on the government's decision to 'test and treat' women for CaCx. It will require increasing the number of facilities providing CaCx screening, clinician's adherence to the guidelines, trained counselors, and an increase in 'test and treat' supplies and equipment.

Policy Option Scenarios

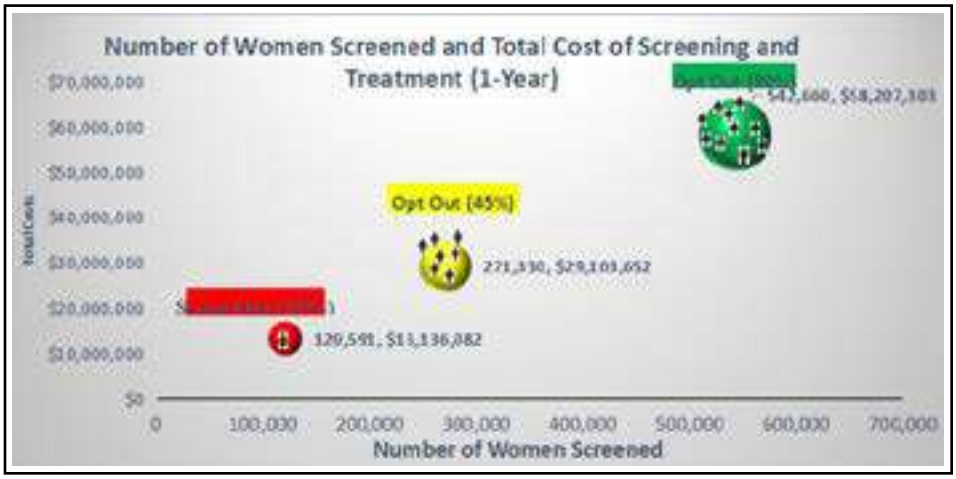
Table 2 provides a comparison of costs and effects under two scenarios proposed to increase screening. We compare the existing status quo to an "Opt Out" strategy to increase screening, targeting 45% or 90% of HIV positive women.

We estimated the number of women remaining under each scenario at risk of developing late stage CaCx if left unscreened. We based the estimated numbers on high-risk HPV prevalence in HIV positive women (20-40%) using proxy data on US women from the National Center for Health Statistics14. Opt-out testing at 90% screening can potentially decrease the number of estimated HIV positive women at risk of developing late-stage CaCx of approximately 200,000 women (the maximum at risk if only 5% are screen (229,123) minus the maximum at risk if 90% are screened (24,118)).

Table 2: Estimated cost of cervical cancer screening and treatment of HIV Positive women in Zambia

# of unscreened HIV positive women (n= 592,556)	# of women screened (1-year time frame)	# of VIA Negatives found + VIA positives found with successful treatment	Cancers Found	Total direct medical cost of screening and treatment	# of unscreened HIV positive women remaining	# of unscreened HIV positive women at risk of developing late stage CaCx
Status quo @22% Screened	120,591	113,568	7,023	$13,136,082	432,365	96,473 - 192,946
Opt Out @45% Screening Achieved	271,330	255,528	15,802	$29,103,652	331,626	66,325 - 132,650
Opt Out @90% Screening Achieved	542,660	511,036	31,605	$58,207,303	60,255	12,050 - 24,100

Figure 3 shows total number of women screened and estimated total costs for each of the scenarios proposed in Table 1. The figure shows the combined total costs of delivering a screen and treat program and costs of cancer treatment and care for women diagnosed with CaCx at each opt out level over one year, compared to the status quo.



We include all financial costs from the Ministry of Health perspective, which include the overhead cost of operating medical facilities for cervical cancer screening and treatment, costs for VIA test kits and supplies, costs for medical equipment and supplies for cold coagulation and LEEP procedures, medication, cancer treatment costs, and all personnel labor (physicians and/or nurses).

Recommendations and Next Steps

An opt-out strategy for reinforcing HIV

treatment guidelines is a feasible option to increase CaCx 'Test and Treat' among HIV positive women in this analysis. This strategy has been adopted for HIV testing in countries like Zimbabwe and Tanzania and henceforth could provide similar effective results for CaCx in Zambia.

The opt-out strategy reduces the potential future burden of CaCx on the country and saves women's lives in the long term. Successfully implementing this strategy will require:

- Expanding CaCx screening to more facilities in all the provinces.
- Ensuring clinicians' adherence to the guidelines.
- Increasing close collaboration between the CaCx screening and HIV/ART programmes at the Ministry of Health in developing operational strategies.
- Collaborating between partners working in CaCx and HIV/ART.

Opt-Out strategy for increasing 'Test and Treat' will have a high public health impact in addressing the growing incidence of cervical cancer in Zambia!

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THE SWEET SOLUTION: MANDATORY FOLIC ACID FORTIFICATION OF SUGAR TO PREVENT NEURAL TUBE DEFECTS IN ZAMBIA

PERSPECTIVE

By : A. Bhebhe, C. Leonard, M. Ng'uni, S Hachizovu
National Health Research Authority

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Key Messages

- *A Neural tube defect (NTD) is a birth defect of the brain and spinal cord, which results from the failure of the neural tube closing in the first month of pregnancy1*
- *NTDs result in still births, infant and under-five mortality, and disability for life1*
- *NTDs are preventable2,3*
- *We estimate that 1,418 infants are born with an NTD each year in Zambia*
- *Over half of all NTD cases can be prevented through folic acid fortification of sugar in Zambia*

Problem Statement

Neural tube defects include various birth defects resulting from the failure of the brain and spinal cord to close during the first month of pregnancy. These birth defects range from anencephaly to encephaloceles to spina bifida, which all result in a variety of disabilities1. Globally, it is estimated that approximately 300,000 babies are born each year with a neural tube defect4, resulting in approximately 88,000 deaths and 8.6 million disability-adjusted life-years (DALYs)5. In low income countries, NTDs may account for 29% of neonatal deaths due to observable birth defects1. Sub-Saharan Africa has an overall NTD birth prevalence of 1.5/1,000 live births6. It is estimated that Zambia has an overall NTD birth prevalence of 2/1,000 live births. This means that in 2018, approximately 1,418 infants were born with an NTD in Zambia, or about 4 infants per day. However, there is large underreporting as only 200 new patients were treated for an NTD at the University Teaching Hospital, the largest referring hospital in Zambia, last year7.

There are five countries in the SADC region with mandatory maize and / or wheat flour fortification programs (Malawi, Mozambique, South Africa, Tanzania, and Zimbabwe). Currently, Zambia has a Folic Acid Supplementation Program, which provides folic acid pills to pregnant women who attend antenatal care visits in Zambia. However, this program misses a key population: women who are yet to become pregnant and most pregnant women who are in their first month of pregnancy. Folic acid is needed before pregnancy and during the first month of pregnancy to prevent NTDs10. Therefore, this program is not sufficient to stop all NTDs.

A more comprehensive prevention initiative spearheaded by the Ministry of Health could prevent the death and disability caused by NTDs in Zambia. Folic acid has been proven to prevent NTDs2,3. A 1991 study published in The Lancet found that folic acid had a 72% protective effect against NTDs and recommended that public health measures are taken to ensure that all women of child-bearing age (WCBA) have an adequate amount of folic acid2. Currently, there is no legislation mandating the fortification of any food with folic acid in Zambia.

Policy Options

In order to prevent deaths and lifelong disability from NTDs, we need to prevent NTDs from occurring among infants in the first place. We identified three policy options: maintain the status quo, fortifying sugar with folic acid, and a public health campaign to increase awareness of the importance of folic acid in preventing NTDs.

1.Maintain status quo

Continue the current practice of treating patients with NTDs. There is no NTD prevention strategy or programme, and thus, it is estimated that over 1,400 infants are born with an NTD each year in Zambia. This causes approximately 315 stillbirths and 1,064 under-five deaths each year. However, there is no register to capture the number of infants born with an NTD across the country. Hence, the severity of the problem is likely underestimated. Those who survive are left with disability for life. Most are paralyzed from the waist down and have cognitive disabilities9. There are only two neurosurgeons in Zambia and 12 neurosurgery registrars (all in Lusaka) that perform the necessary life-saving surgeries. Therefore, most of the patients are referred to Lusaka for treatment and consequently, many patients living in the rural areas are unable to receive proper care on time. There is also an added cost to the Ministry of Health (MoH) because patients outside of Lusaka are taken via MoH ambulances to get treatment in Lusaka. In addition, all patients operated at UTH have to come back to attend neurosurgery clinics at UTH.

2.Folic Acid Fortification of Sugar

What: The Zambian government would mandate that all Zambian-produced and imported sugar is fortified with folic acid. This option will also include a public awareness campaign during which MoH will inform the public about the new fortification initiative and the benefits of folic acid for all, especially WCBA. Why: NTDs develop within the first 28 days of pregnancy1 when many women do not even know that they are pregnancy yet. Folic acid taken around the time of conception can prevent 60- 70% of NTDs5. Therefore, it is necessary that women have adequate folic acid levels at all times and before they become pregnant. This option will ensure that all women have adequate levels of folic acid before they become pregnant and during pregnancy. In addition, over 95% of all NTDs are a first occurrence12, meaning we cannot solely target women who have had a child with an NTD before for folic acid supplementation. Not only is folic acid beneficial for women, but it is also beneficial for men and children/adolescents. Folic acid can help treat anemia11. Also, folic acid supplementation is effective for preventing stroke in those with cardiovascular

disease13.
Over 80 countries have implemented a folic acid fortification program with great success14. In 2003, South Africa embarked on folic acid fortification of staple foods. They experienced a significant decline in prevalence of NTDs by 33%15. We predict this policy option will more than half all cases of NTDs, reduce NTD-related still-births and neonatal and under-five morbidity and mortality.
This option will also reduce government spending.
Feasibility: Medium. Mandatory fortification of folic acid has proven to be feasible and economical in the countries that have implemented it, including the United States, Canada, Costa Rica, South Africa, Guatemala, Vietnam and others16. Although the upfront cost of implementing this policy option will be expensive, the cost-savings over the long-term will be high.

	Wheat	Sugar	Maize
Daily Consumption (% of population)	60%*	90%*	100%*
Industrially Processed (%)	100% [1]	100%	35% [1]
Number of Millers/ producers	14	3	Numerous Unk.
Proportion Imported (%)	27%* [2]	1%*	1%*
Additional Cost or fortification	5 USD/ ton	3 USD/ton	6 USD/ ton
Other			Security concerns

*Estimated
1. Global Fortification Data Exchange. Zambia Fortification Dashboard. https://fortificationdata.org/country-fortification-dashboard/#
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3.Public Health Campaign
What: The Zambian government would implement a campaign to encourage women of child-bearing age to take folic acid supplements and increase their intake of folic acid-rich foods. The campaign would consist of an advocacy media campaign and supporting the Ministry of Health's Folic Acid Supplementation program by distributing folic acid pills to health facilities that offer family planning services. The media campaign would include: televised commercials, radio adverts and printed adverts to encourage WCBA to take folic acid pills and encourage everyone to eat local foods with high-levels of folate (legumes, eggs, leafy greens (rape, chibwabwa), citrus fruits, beef liver17. This option would also include community sensitization meetings to explain the benefits of folic acid taken before conception for all WCBA and to encourage planned pregnancy. Furthermore, MoH would hold workshops with healthcare providers, including doctors, nurses, and pharmacists to encourage them to talk to their patients about taking folic acid pills if they are thinking about becoming pregnant or currently pregnant.
Why: As previously mentioned, folic acid is beneficial because when taken around the time of conception, it can prevent 60-70% of NTDs5. Folic acid supplements are generally safe and side effects are rare. Less than 1 in 1,000 patients may experience: nausea, loss of appetite, or an allergic reaction18. A limitation of this option is compliance with folic acid supplementation as seen in various studies around the world, only 20- 30% of women take folic acid supplements before pregnancy even after awareness campaigns19,20.
Feasibility: Medium.
This strategy will require community sensitization and engagement with health workers. It will require funds, the majority of which will be for procuring more folic acid supplements to accommodate the increased demand from the public health campaign. Additional costs will include advertising, transport, and human resources. This option is highly costly and will result in net spending of 154,360,535 kwacha by the government over a five-year period. As well, this option is continuous and will be rolled out over a five-year period.

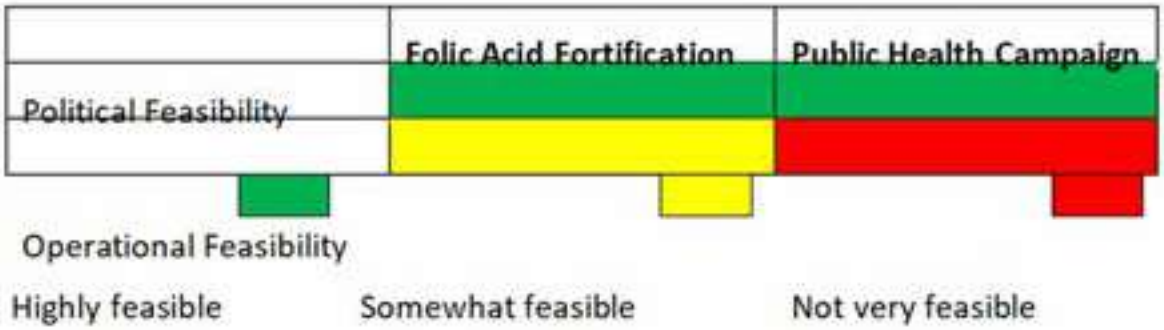
Recommendations and next steps
There is need to urgently prevent NTDs. The fortification of sugar with folic acid is the only viable choice if we want to substantially prevent NTDs in Zambia. This policy option has the highest public health impact and is politically feasible. Actions have already been taken engaging external stakeholders who have experience supporting folic acid supplementation initiatives in other countries, including the Global Alliance for Improved Nutrition (GAIN), Food Fortification Initiative (FFI), Nutrition International, Smarter Futures, and the International Federation Spina Bifida and Hydrocephalus (IFSBH). In addition, the 5-year cost savings is around 6.6 Million USD, while on the other hand, the public health campaign has an added cost of 11.8 Million USD.

A statutory instrument should be adopted to make folic acid fortification of sugar mandatory in Zambia. In addition, all sugar manufacture and/or imported into Zambia should be fortified with folic acid. The Zambian government must mandate the Zambian Bureau of Standards (ZABS) to adopt fortified sugar as a standard and monitor the process of fortification.
In addition to the legal framework, this policy option will require:
•Baseline/ endline and ongoing evaluations of folic acid levels and uptake of sugar to inform needed improvements and effects of the initiative

•The sugar manufacturing companies to implement fortification of sugar additionally with folic acid and rebrand their products to display that the sugar is fortified with folic acid
•Laboratory capacity to enable the testing of sugar to monitor the fortification program locally or outsourced
•ZABS to monitor the fortification of all sugar (locally produced and imported) with folic acid
•ZRA to waiver tax on importation of premix fortificant and fortification equipment
Ministry of Health to engage the public to make them aware of the new fortification initiative

	Status Quo	Folic Acid Fortification	Public Health Campaign*
Estimated number of cases prevented annually	0	695	177
Estimated number of lives saved annually	0	521	133
Estimated cost to the government (5-year)	177,882,330 ZMK ($13.6 M)	90,854,470 ZMK ($6.9 M)	332,242,866 ZMK ($25.3 M)
Cost of the intervention alone	---	157,060 ZMK ($12,000)	176,564,465 ZMK ($13.5 M)
Cost compared to status-Quo (5-year)	**0**	**(-)87,027,860 ZMK ($6.6 M)**	**(+)154,360,535 ZMK ($11.8 M)**

*This assumes a 25% increase in the number of new mothers with adequate levels of folate, which is a high estimate according to the literature (21)



	Folic Acid Fortification	Public Health Campaign
Public Health Impact	High	Low
Budgetary Impact	Low	High
Economic Impact	High	Medium

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AN UPDATE ON MALARIA TRENDS IN ZAMBIA (2019 TO 2020); A DESCRIPTIVE STUDY

RESEARCH ARTICLE

By : M Chasaya, ML Phiri, MA Ngomah
Zambia National Public Health Institute

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Abstract

"Malaria continues to be a major global health concern, killing hundreds of thousands annually, especially in sub-Saharan Africa such as Zambia. Using data from Zambia's Integrated Disease Surveillance and Response reports analyzed using Microsoft excel, this study aimed at studying and reporting on the malaria trends in a 10 month period (August, 2019 to June, 2020). It is also aimed at checking for possible associations between tested cases and confirmed cases. The study showed that malaria cases diagnosed as positive in Zambia are high, about 3700892 in a space of 10 months with a mean score of 370089.2 confirmed cases. The findings also identified an increase in testing rates especially from March, 2020 onwards. Similarly, an increase was also noticed in the number of confirmed Malaria cases within the same period. A strong positive and significant relationship through regression analysis confirmed the association between tested cases and confirmed cases. The study also suspects the possible effect of COVID-19 pandemic on Zambia's healthcare system including the efforts in curbing malaria. The study further recommends continued disease surveillance at national level and the need to prioritize malarial preventive and treatment interventions to avoid potential malarial outbreaks and morbidity.

Keywords: Malaria; Zambia; Cases; IDSR

Introduction

It is easy to assume that the severity and incidence of Malaria is under-control in Zambia as well as other African nations. Unfortunately, research has consistently demonstrated that Malaria is one of the greatest killer diseases in Sub-Sahara African countries [1, 2, 3]. This also means that Malaria and its effects have negatively impacted the public health sector not only in Zambia but Africa wide as well. Considering the persistence of Malaria in Zambia, it is important for national health organizations and ministries to consistently do retrospective reviews of trends and patterns in order to enhance response strategies and models of intervention development which may in turn, improve the effectiveness and responsiveness of health systems [3].

Different intervention measures have been implemented by several Sub-Saharan African nations to fight malaria among other diseases. Among them is the International Disease Surveillance and Response system (IDSR). The goal of IDSR is to strengthen the overall national system for public health surveillance and response. Many countries embarked on the strategy of keeping national disease surveillance and response systems about a decade ago because researchers had recommended and observed that disease investigation and surveillance systems were effective measures for monitoring and controlling and responding to prevalence of diseases such as malaria [4].

Some malaria interventions have focused on methods such as the epidemiological triangle model and the web of causation and social determinants of health. These interventions have tried to fight Malaria by concentrating on the relationship between the agent (mosquito), the host (human being and environment [2, 3].

Others have concentrated on measures such as treatment, insecticide spraying and distribution of mosquito nets to communities.

Most recent research evidence has predicted potential influence of COVID-19 on Malaria intervention. This prediction has been in line with the amount of stress COVID-19 has placed on African health care systems and its workers [5, 6]. The researchers have used COVID-19 and malaria transmission models to estimate the impact of disruption of malaria prevention activities and other core health services under four different COVID-19 epidemic scenarios. Their findings conclude that if activities are halted, the malaria burden in 2020 could be more than double that of 2019. They establish that in Nigeria alone, reducing case management for 6 months and delaying prevention measures such as long lasting insecticidal nets (LLINs) campaigns could result in 81,000 (44,000–119,000) additional deaths. Therefore, researchers have suggested that some of the ways of mitigating impacts of COVID-19 is by scaling up preventive interventions such as long lasting Insecticide nets and increased access to antimalarial treatments to prevent substantial malaria epidemics [5, 6, 7].

Zambia is among the countries that have been committed to the fight of Malaria for some time now. In 2010, 2012 and 2015, Zambia reported odds ratio of malaria for various malaria interventions measures. Those who slept under an insecticide-treated net (ITN) had odds at 0.90, indoor residual spraying (IRS) at 0.66, urban residence at 0.23 and standard house at 0.40. The country also reported that IRS reduced malaria prevalence by 0.3% and ITNs by 0.2% [1].The national malaria incidence reduced from 386 per 1000 persons in 2013 to 409 per 1000 persons in 2014, and 335 per 1000 persons in 2015, with North-western Province recording the highest overall incidences and Luapula Province recording the highest incidence rates in pregnant individuals [8].

The 2018 Malaria Indicator Survey (MIS) reported that 79% of households owned at least one ITN with 45% of these households having all members sleeping under an ITN and a 9% drop in the national malaria parasite prevalence among children under age five [9]. Luangwa and Nyimba

district reported an increase in the use of ITNs in households where 398 mosquitoes were captured from light-trap collections, including 49 anophelines and 349 culicines [10]. Additionally, adherence to Mass Drug Administration (MDA) of antimalarial treatment Dihydroartemisinin–piperaquine (DHAp) in Zambia was recorded at 84.4% of households completing the full course of DHAp [11].

As the nation matches towards Malaria eradication, it is very essential to monitor diagnosis and complexity of the disease. Between January 2015 and July 2017, Choma-Southern Province reported parasite prevalence identification of 0.7% by RDT and 1.8% by quantitative Polymerase Chain Reaction (qPCR) with 8.5% of households having at least one resident with parasitaemia detected by qPCR or RDT [12]. Zambia has also recently recorded a reduction in the average complexity of infection and consequential increase in the proportion of infections that harbored a single parasite genome [13]. 69.5% of patients have been reported as febrile of which 37.0% have had a malaria test conducted with a number of patients receiving diagnosis without parasitological confirmation and many continuing onto antimalarial treatment [14]. The current study is aimed at studying the trends in incidence of malaria cases in the period between August 2019 and June, 2020. Secondly the study aims at investigating the relationship that exists between the tested cases and the confirmed cases in Zambia during the same period.

It is expected that this close study of the IDSR data may contribute to providing useful information for intervention direction and case management as far as fighting against malaria is concerned.

Methods

The current retrospective study extracted data from the Zambian Integrated Disease Surveillance and Response (IDSR) system for the period August 2019 to June, 2020. The study population included the Zambian population of those cases that were reported at the health facilities such as those suspected, those tested and those confirmed. The data was analyzed using Microsoft Excel. Malaria cases were presented using graphs and tables generated from Microsoft Excel as well as descriptive statistical data. The study also used linear regression to check the relationship between tested cases and confirmed cases using Microsoft excel.

Results

The goal of IDSR is to strengthen the overall national system for public health surveillance and response. Based on data from the IDSR a total of 6480715 suspected Malaria cases between August 2019 and June 2020 (Table 1) with August 2019 recording the lowest number of suspected cases at 92668 and June 2020 recording the highest at 1105759 (Figure 1). Table 1 further illustrates that cumulatively 6335010 tests were conducted within the review period with a mean of 633501 tests across the months.

The month of June 2020 recorded the highest number of tests conducted at 1088917 (Figure 2). Moreover, a total of 3700892 confirmed malaria cases occurred between August 2019 and June 2020 in Zambia (Table 1). The highest number of cases occurred during the month of May 2020 which recorded 866502 cases countrywide (Figure 3).

A linear regression analysis of the relationship between number of tests conducted and the number of confirmed cases showed a strong relationship between the two variables. Firstly, an R Square of 0.83, f(38.0), p> 0.000269 indicated that 83% of the variation in confirmed cases can be explained by the number of tests conducted. Furthermore, tests conducted (= 1.26) was a predictor of confirmed cases with a strong correlation of 0.9 (Table 2).

Table 1: Descriptive statistics for Malaria cases in Zambia from August 2019 to June 2020 by case type.

	Suspected	Tested	Confirmed
Mean	648071.5	633501	370089.2
Standard Deviation	357779.5365	407234.916	294466.4943
Minimum	92668	89360	27057
Maximum	11057559	1088917	866502
Sum	6480715	6335010	3700892

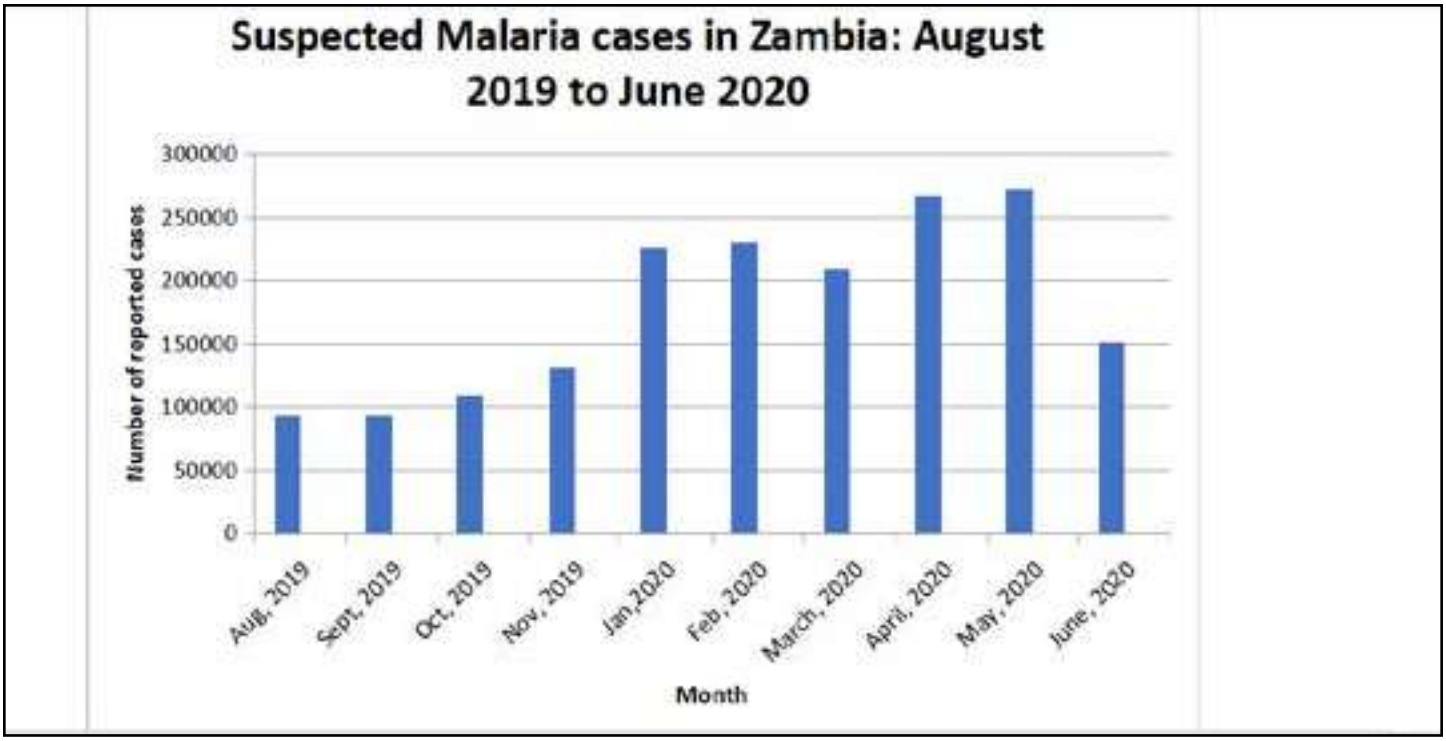

Figure 1: IDSR reported Suspected Malaria cases in Zambia from August 2019 to June 2020.

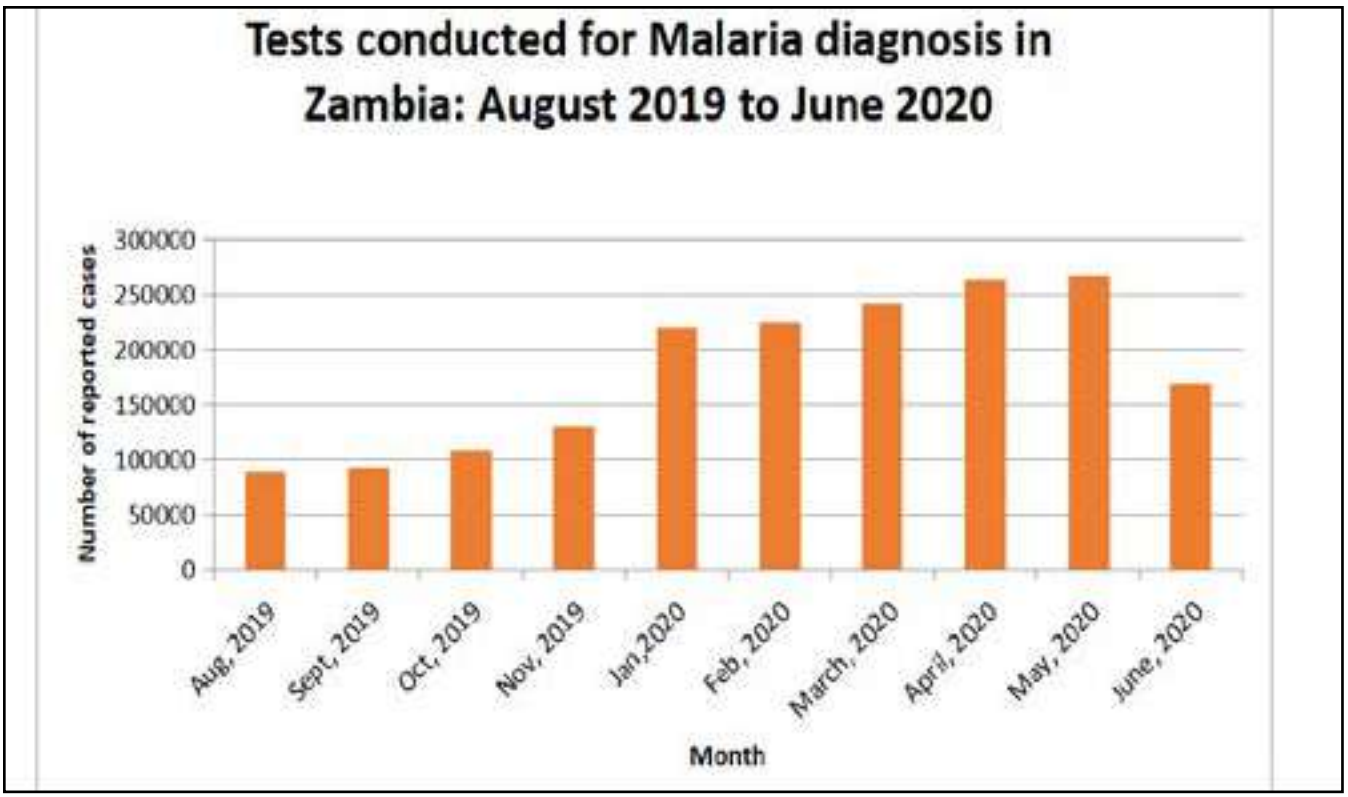

Figure 2: Tests conducted for Malaria diagnosis in Zambia between August 2019 and June 2020.

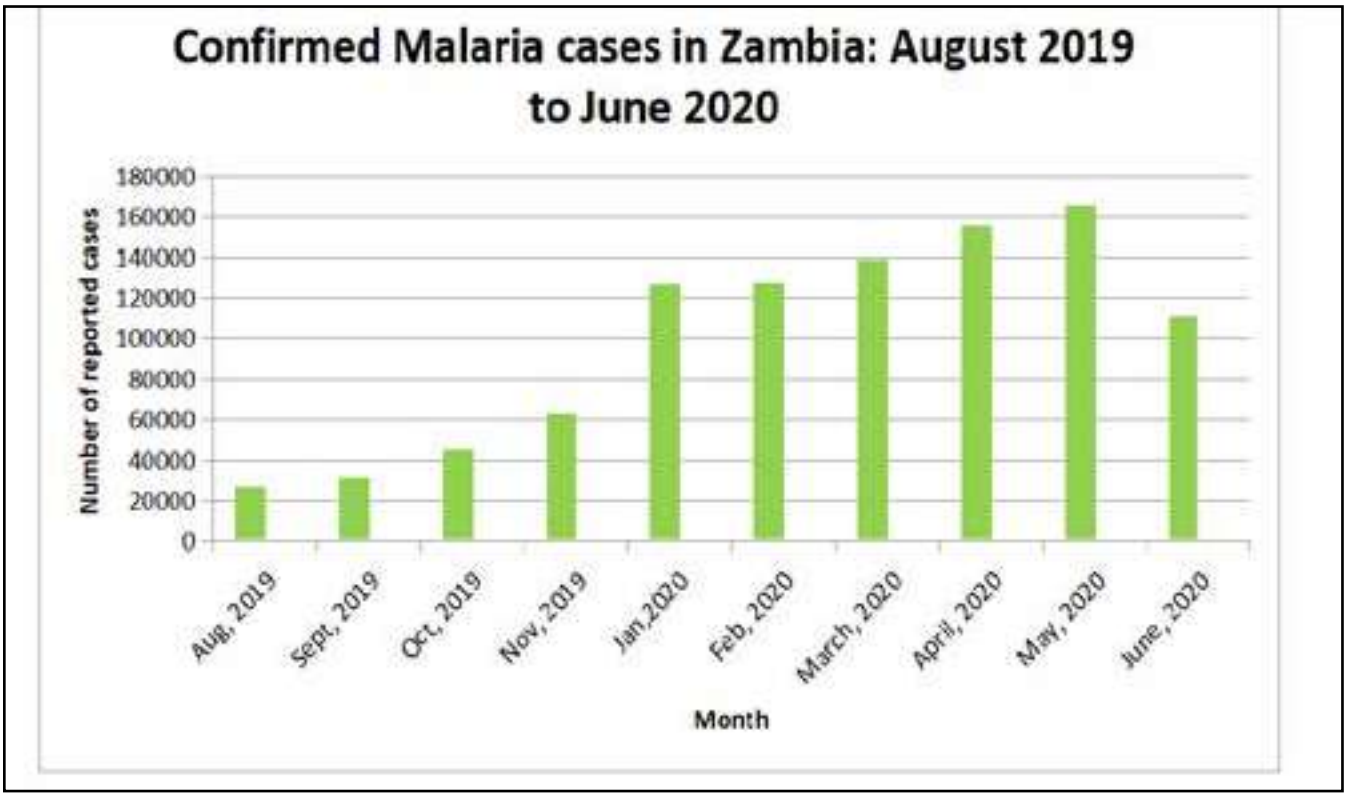

Figure 3: IDSR reported Confirmed Malaria cases in Zambia from August 2019 to June 2020.

Table 2: Linear regression analysis between tested and confirmed cases

	Model 1			
Variables	*B*	*SE*	β	t
Tested cases	168277.9	0.2	1.26*	0.90

Discussion

The study revealed that Zambia is committed to malaria testing with a steady increase from March, 2020 to June, 2020. Within the review period, the Zambian ministry of health in the 10 months has conducted a total of 6335010 tests with the lowest number of tests being 89360 tests and the highest being 1088917 tests.

The increase in Malaria testing is a good sign on the part of the healthcare system. However, it is not certain as to whether the increase in testing is as a result of the strength in the capacity of the healthcare system or it is because of the increase in malaria related cases that prompt the testing. Interestingly, the increase in malaria testing seems to coincide with the outbreak of COVID-19 pandemic in Zambia. However this is another research area that may need attention.

Interestingly, the findings also revealed an alarming rise in confirmed malaria cases between August, 2019 and June, 2020.

The number of cases seemed to rise sharply from March 2020 to June 2020. Very recent literature has demonstrated concern on the potential of Covid-19 in halting the progress interventions fighting and preventing malaria [5, 6, 7]. Therefore the rise in cases may be facilitated by a COVID-19 strained healthcare system. This may imply that the current rise in cases may be facilitated by the COVID-19 pandemic of which the increased number of confirmed cases may also be due to the increase in malaria testing.

Furthermore, linear regression as well revealed a statistically significant and strong positive relationship between the number of tested cases and the number of confirmed cases. This shows that the number of cases tested strongly predictive influence on the number of confirmed cases.

Therefore, this means that increasing the testing of malaria is most likely to reveal the increased incidence of malaria in the Zambian community.

Increasing the testing could be useful in treatment focussed interventions.

Lastly, the results showed that the number of confirmed Malaria positive cases have been on the rise within the 10 months captured in the study. The number of confirmed cases in August 2019 was 27057 and the highest was 866502 cases. This rise in cases calls for concern from stakeholders because this means that Malaria as a pandemic may need more attention and re-evaluation of current preventive measures by stakeholders. The findings of increased confirmed cases may be owing to and highlight a potential reduction in the good adherence rates to available Malaria intervention measures alluded by previous studies [1, 8, 9, 10, 11]. The complexity of diseases as well as mode of diagnosis, as explained by previous research, would be very helpful considerations for shaping future targeted intervention measures [12, 13, 14].

Conclusion

In conclusion, it is certain from these findings that cases of malaria are raising. In the period of 10 months as covered in the study, the period beginning March onwards shows a sharp rise in tested and confirmed cases. This is indicative that despite the possibly Covid-19 induced strain on Zambia's healthcare system, the ministry of health and other stake holders should prioritize prevention measures targeting Malaria aside covid-19 intervention to reduce the possibility of any malarial epidemic.

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INTEGRATED DISEASE SURVEILLANCE AND RESPONSE (IDSR) WEEK 04 (20-26 JANUARY 2020)

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; 4(01); pp 10-19.

Weekly Summary

Current outbreaks and public health threats

- **cVDPV Outbreak:** No new confirmed cases were reported.
- **Measles Outbreak:** 22 cases were reported in Kasama district, Northern province with 2 testing positive for Measles IgM.
- **Poliomyelitis:** One sample tested positive for PV2 in Zambezi district of N/Western province and was sent for sequencing.
- **Suspected Cholera Outbreak:** 3 cases were reported from Mambwe district, Eastern Province during the week.
- **Coronavirus: Covid-19** surveillance is ongoing, especially at points of entry.

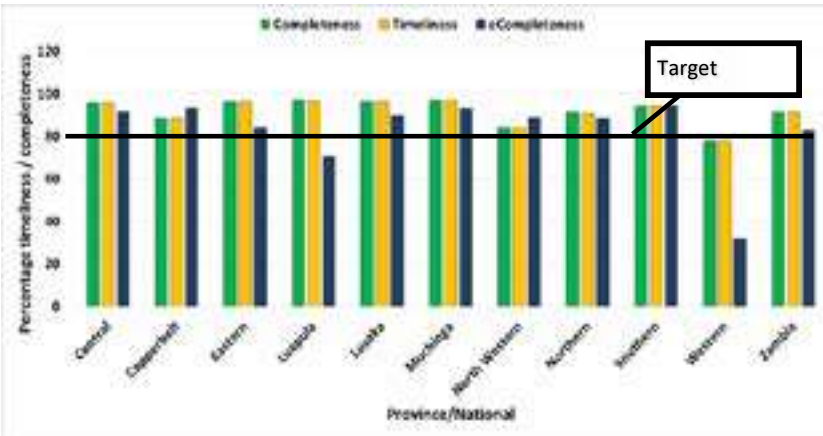
Immediately notifiable diseases

- **Acute Flaccid Paralysis (AFP)**: 6 cases were reported this week in Luapula (3), Northern (1), Southern (1) and Copperbelt (1) provinces.
- **Maternal Deaths:** 15 maternal deaths were recorded in Lusaka (3), Southern (3), Eastern (2), North-western (2) Copperbelt (2), Central (1), Northern (1) and Western (1) provinces.
- **Measles:** 8 cases of suspected measles were reported in Northern (4), Luapula (2) and Southern (2) provinces and two samples were sent for laboratory investigation.

Other diseases/events

- **Typhoid:** Eleven suspected cases were reported from North-western (8), Lusaka (2) and Eastern (1) provinces. One case sent for laboratory investigation tested positive.
- **Anthrax:** Four suspected cases were reported from Western Province in Kalabo (1), Sikongo (1) and

Paper and Electronic Timeliness and Completeness, Health Facility Level



Paper Timeliness: 91% Paper Completeness: 92% Electronic Completeness: 83%

Provincial Report Timeliness

Province	WEEK 1	WEEK 2	WEEK 3	WEEK 4
Central	T	T	T	L
Copperbelt	T	L	T	L
Eastern	T	T	T	T
Luapula	T	T	T	T
Lusaka	T	T	T	T
Muchinga	T	T	NR	L
North Western	T	NR	T	T
Northern	T	T	T	T
Southern	T	T	T	T
Western	L	T	T	L

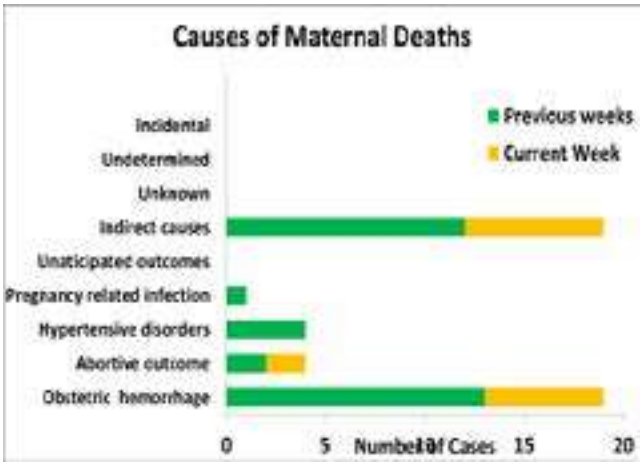
T=Timely L=Late NR=No Report

Summary Report Priority Diseases, Conditions and Events (Week 4)

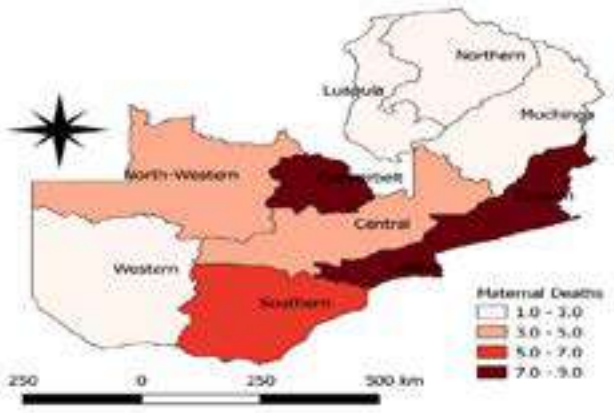
	Week 4			Week 1-4 Cumulative		
Disease/ Event / Condition	**Suspected cases**	**Tested**	**Confirmed**	**Suspected cases**	**Tested**	**Confirmed**
AFP	6	0	0	9	0	0
Cholera	3	3	0	3	3	0
Meningitis (Neisseria)	0	0	0	1	0	0
Measles	8	5	0	20	7	0
Neonatal Tetanus	0	0	0	0	0	0
Plague	0	0	0	0	0	0
Rabies	2	0	0	3	0	0
Dog bites	355			1,341		
Dysentery	952	11	10	3,157	38	29
Typhoid fever	11	1	1	28	7	2
Yellow fever	0	0	0	0	0	0
VHF	0	0	0	0	0	0
Anthrax	4	0	0	10	0	0
Influenza	0	0	0	0	0	0
Non Bloody Diarrhoea	14,006	0	0	59,957	0	0
Schistosomiasis (Bilharzia)	386	30	11	1,471	247	65
Malaria	226,052	220,693	127,438	777,652	581,968	328,849
HIV	38,044	36,138	2,125	116,352	94,560	5,446
Tuberculosis	2,971	2,745	2364	9,621	7,098	774
Maternal Death	15			47		
Total	**282,815**	**259,623**	**129,949**	**964,672**	**683,928**	**335,165**

Maternal Deaths

Week 4



Cumulative Number of Maternal Deaths by Province



- Fifteen maternal deaths were registered this week.
- Obstetric hemorrhages and Indirect causes are the leading causes of maternal deaths.
- Lusaka & Southern provinces have cumulatively recorded the highest number of deaths since week 1.
- In total 47 maternal deaths have been recorded since week1.

Vaccine Preventable Diseases

Week 4

AFP Surveillance

Districts with reported AFP Cases Week 1-4 2020

- 6 AFP cases were recorded in 6 districts: Mansa, Chembe & Mwansabombwe districts in Luapula; Kitwe in Copperbelt; Mungwi in Northern & Choma in Southern provinces.
- Cumulatively, 9 AFP cases have been reported since week 1.
- All results for AFP cases are pending.
- As a result of the outbreak, non-AFP target rates is 4/100, 000 of the population below 15 years.

- One sample from Zambezi district (North-western province) tested positive for PV2 and has been sent for sequencing .
- The total number of districts that have isolated type two poliovirus during this outbreak now stand at four: Lusaka, Chiengi, Senga Hill and Chavuma districts.
- **The risk of cVDPV2 transmission in Zambia is high, especially in districts that are: 1) Silent, 2) Not attaining Non-Polio AFP Rates of 4/100,000 or 80% stool adequacy, 3) Neighboring to countries with active outbreaks and 4) Having low IPV vaccination coverages.**

Poliovirus Environmental Surveillance (ES)

- Results for two ES samples collected in Week 48, 2019 tested positive for Polio Virus type 3 Sabin Like (PV3 SL).
- The two samples were from Ngwerere and Chelstone treatment plants in Lusaka district.
- Scheduled collections from sites on the Copperbelt province were conducted.

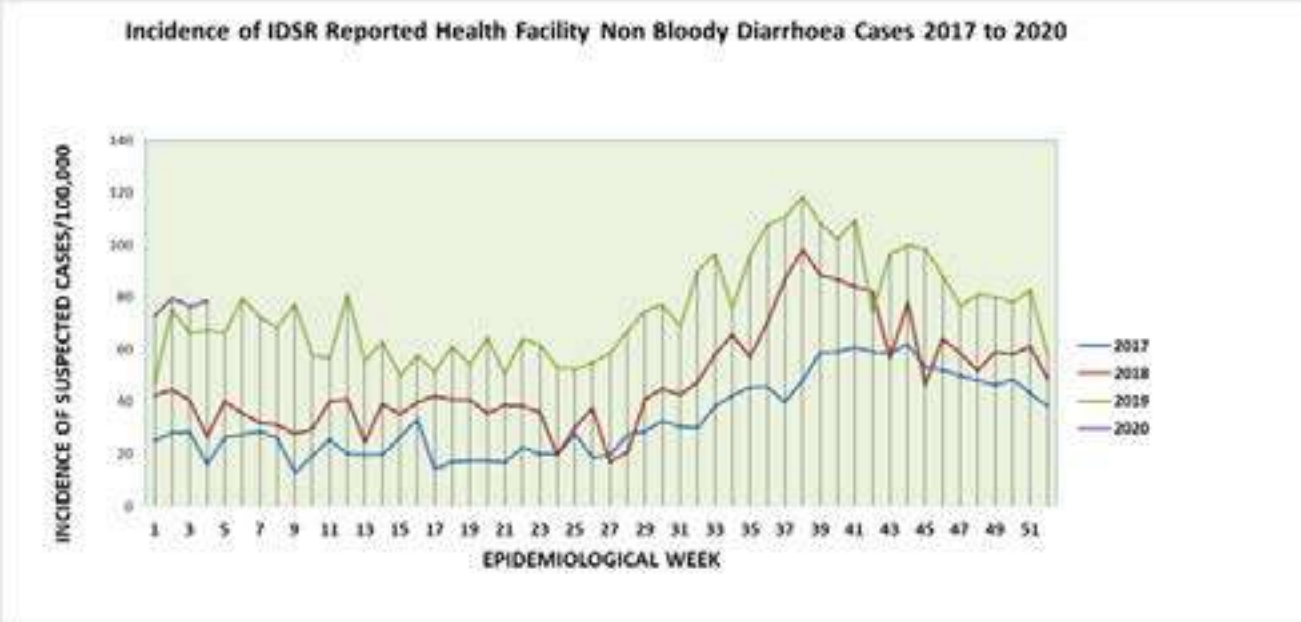
Measles Outbreak

- Kasama District has reported cases of a suspected measles outbreak.
- Cumulatively, twenty two cases have been reported from 3 health facilities.
- Six cases tested positive for Measles IgM

Measles & Rubella surveillance

- Eight suspected measles cases were reported this week.
- Two cases were laboratory investigated and results are pending.

Non-Bloody Diarrhoea



- Cumulatively, 54,957 cases of non-bloody diarrhea were reported from week 1 to week 4 2020.
- The highest number of cases were reported in Lusaka province, representing 17% (9490) of the total cases. Muchinga province recorded the lowest with a cumulative total of 594 (1%).

Regional Public Health Events (Cases/Case Fatality Rate)

Ebola	Measles	Cholera	Poliovirus (c VDPD)	Plague
DRC : 3,416 CFR 66.0%	**DRC:** 311,471 CFR	**DRC:** 29,087 CFR 1.70%	**Angola:** 71 CFR 0.0% **DRC:** 84 CFR 0.0%	**DRC: 51 CFR 5.70%**

Early Warning Diseases

Ebola Virus, DRC 2018-2020

- Five new confirmed EVD cases and three deaths were recorded from DRC outbreak in the week under review.
- Cumulatively, 3,416 suspected cases, 3,298 confirmed cases and 2,239 deaths (CFR is 66.4%) have occurred since the outbreak in the 29 health zones of DRC.
- A total of 172 health workers have been affected with EVD representing 5%.
- ***Though number of new cases seem to be reducing, the regional risk of spread remains high.***

Measles, DRC 2019-2020

- In week 1 (week ending 5 January 2020), 4,983 measles cases including 57 deaths (CFR 1.1%) were reported.
- There was an increased number of new cases reported in week 1 of 2020 compared to week 52 of 2019.
- Cumulative number of cases and deaths stands at 316,550 and 6,101, respectively.
- The number of measles laboratory confirmed cases stands at 2,717.

*****For more information look up the WHO Weekly Bulletin on Outbreaks and Other Emergencies*****

Public Health Actions

Circulating Vaccine Derived Poliovirus Outbreak

- The national annualized Non Polio AFP detection rate has increased to 4 cases /100,000 of children detected under 15 years for provinces.
- Note all AFP cases are immediately notifiable and require immediate investigation with new case investigation forms.
- All districts are expected to conduct health facilities integrated supervisory active searches at priority sites as per recommended schedule.
- Provinces to ensure silent districts not reporting AFP/measles cases are supported for active surveillance of AFP cases.
- Provinces are to ensure health workers are sensitized for improved detection, reporting and investigation of suspected measles and AFP cases.

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

- With the increased rainfall patterns and imminent flooding that raises risks for diarrheal diseases, cholera hotspots are encouraged to continue and intensify surveillance and review of epidemiological trends to quickly detect and respond to changes.
- All provinces and districts are further advised to have sufficient stock piles of chlorine (granular & soluble).
- Continue to provide 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 committees to engage all relevant government stakeholders and multisector partners required to prevent cholera outbreaks.

Global Alert of the Coronavirus & Preparedness

- Orientation of staff at points of entry on coronavirus in all provinces is advised
- Screening at all points of entry to be strengthened especially at international points of entry.
- Circulation of awareness materials to the public and health personnel to be done as soon as possible
- Report all suspected patients to the central level immediately .
- Strengthen surveillance for all Influenza Like Illness (ILI) and Severe Acute Respiratory Illness (SARI)
- Case definitions to be made available and other IEC materials in health facilities and public places.
- A call centre has been established at ZNPHI and all queries should be channeled to the following numbers: **+260 96 4638726/+260 974493553/+260 95 3898941.**

Reported by Surveillance and Disease Intelligence Unit: Muzala Kapin'a, Nkomba Kayeyi, Moses Banda, Mazyanga M Liwewe, Victor Mukonka and Zambia National Public Health Institute (ZNPHI)

INTEGRATED DISEASE SURVEILLANCE AND RESPONSE (IDSR) WEEK 05 (27JANUARY TO 02 FEBRUARY 2020)

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; 4(01); pp 10-19.

Weekly Summary

Current outbreaks and public health threats

- **cVDPV Outbreak:** No new confirmed cases have been reported.
- **Measles Outbreak:** Cumulatively, 24 cases were reported in Kasama district, Northern province with 6 testing positive for Measles IgM.
- **Poliomyelitis:** PV2 detected from three contacts in Kalabo district, Western province.
- **Coronavirus: Covid-19** surveillance ongoing, especially at points of entry.

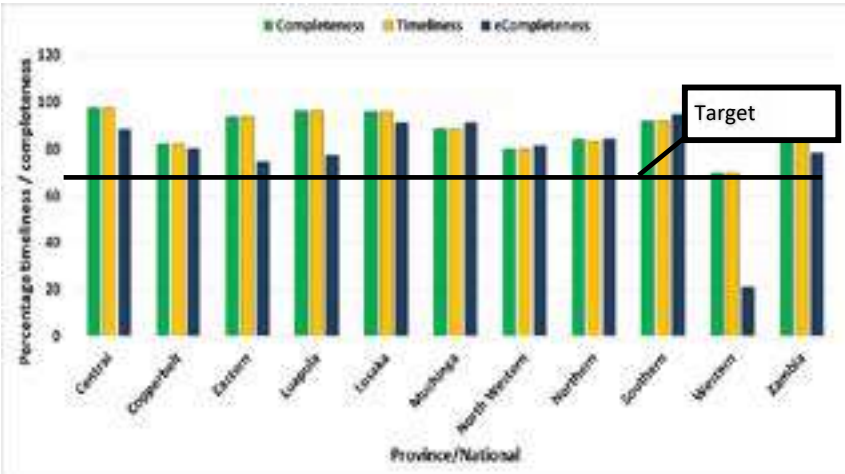
Immediately notifiable diseases

- **Acute Flaccid Paralysis (AFP)**: One case was reported this week from Mumbwa district, Central Province.
- **Maternal Deaths:** 14 maternal deaths were recorded in Lusaka (8), Southern (2), North-western (1) and Northern (3) provinces.
- **Measles:** 6 suspected measles cases were reported in Northern (4) and Central (2) provinces and two samples were sent for laboratory investigation.

Other diseases/events

- **Typhoid:** 9 suspected cases were reported from North-western (4), Lusaka (3), Northern (1) and Eastern (1) provinces. One sample sent for laboratory investigation tested positive for Typhoid.
- **Event Based Surveillance:** Reports of random incidents of gassing households in several districts have been reported countrywide. Investigations are underway.

Paper and Electronic Timeliness and Completeness, Health Facility Level



Paper Timeliness: 88% Paper Completeness: 88% Electronic Completeness: 78%

Provincial Report Timeliness

Province	WEEK 2	WEEK 3	WEEK 4	WEEK 5
Central	T	T	L	T
Copperbelt	L	T	L	L
Eastern	T	T	T	T
Luapula	T	T	T	T
Lusaka	T	T	T	L
Muchinga	T	NR	L	T
North Western	NR	T	T	L
Northern	T	T	T	T
Southern	T	T	T	T
Western	T	T	L	T

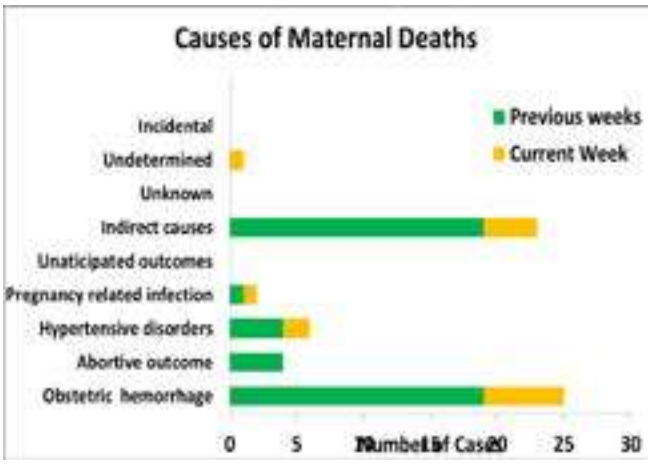
T=Timely L=Late NR=No Report

Summary Report Priority Diseases, Conditions and Events (Week 5)

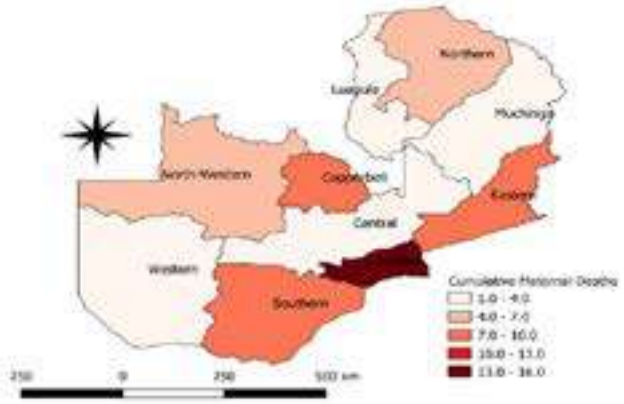
	Week 5			Week 1-5 Cumulative		
Disease/ Event / Condition	**Suspected cases**	**Tested**	**Confirmed**	**Suspected cases**	**Tested**	**Confirmed**
AFP	1	1	0	10	1	0
Cholera	0	0	0	3	3	0
Meningitis (Neisseria)	4	1	0	5	1	0
Measles	6	2	0	26	9	0
Neonatal Tetanus	1	0	0	1	0	0
Plague	0	0	0	0	0	0
Rabies	0	0	0	3	0	0
Dog bites	317			1,658		
Dysentery	888	11	8	4,045	49	37
Typhoid fever	9	1	0	37	8	2
Yellow fever	0	0	0	0	0	0
VHF	0	0	0	0	0	0
Anthrax	0	0	0	10	0	0
Influenza	0	0	0	0	0	0
Non Bloody Diarrhoea	14,213	0	0	60,170	0	0
Schistosomiasis (Bilharzia)	383	51	19	1,854	298	84
Malaria	230,079	225,184	128,010	1,007,731	807,152	456,859
HIV	38,985	34,471	1,875	151,337	129,031	7,321
Tuberculosis	2,740	2,722	212	12,427	9,820	986
Maternal Death	14			61		
Total	**283,640**	**262,444**	**130,124**	**1,248,378**	**946,372**	**465,289**

Maternal Deaths

Week 5



Cumulative Number of Maternal Deaths by Province



- 14 maternal deaths were registered this week.
- Obstetric hemorrhages and indirect causes continue to be the leading cause of maternal deaths.
- Lusaka province has been cumulatively recorded the highest number of deaths since week 1.
- In total 61 maternal deaths have been recorded since week 1.

Vaccine Preventable Diseases

Week 5

AFP Surveillance

Districts with reported AFP Cases Week 1-5 2020

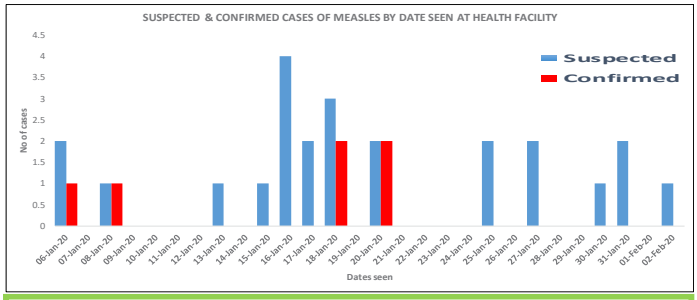
- One case of AFP was reported from Mumbwa district, Central province and samples were collected for investigation.
- Cumulatively, 10 AFP cases have been reported from ten districts in the last 5 weeks of this year.
- Results for all AFP cases are pending.
- As a result of the outbreak, non-AFP target rates is 4/100, 000 of the population below 15.
- Three samples from contacts of an AFP case in Kalabo district, Western province, have tested positive for PV2 and have been sent for sequencing.
- The total number of districts that have isolated type two poliovirus during this outbreak that started in October of 2019 now stands at four: Lusaka, Chiengi, Senga Hill and Chavuma districts.
- **The risk of cVDPV2 transmission in Zambia is high in districts that are: 1) Silent, 2) Not attaining Non-Polio AFP Rates of 4/100,000 or 80% stool adequacy, 3) Neighboring to countries with active outbreaks and 4) Having low IPV vaccination coverages.**

Poliovirus Environmental Surveillance (ES)

- The scheduled collections from the sites on the Copperbelt province were conducted.
- Results for two ES samples collected in Week 48 2019 tested positive for Polio Virus type 3 Sabin Like (PV3 SL).
- The samples were from Ngwerere and Chelstone districts treatment plants.

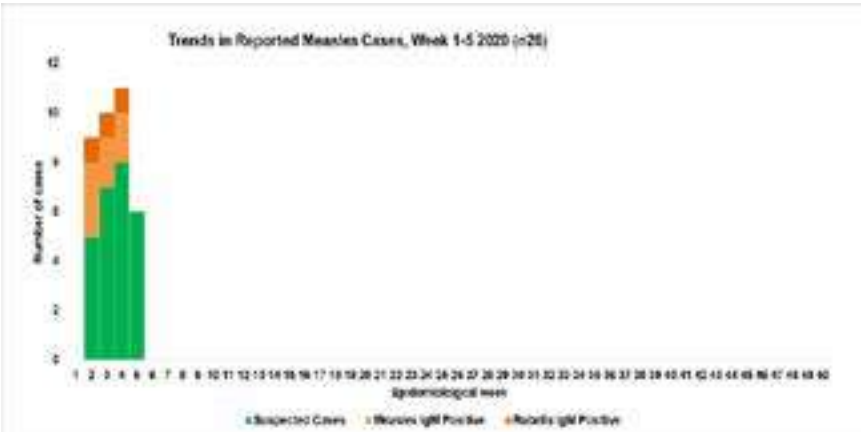
***no new data on ES has been availed**

Measles Outbreak



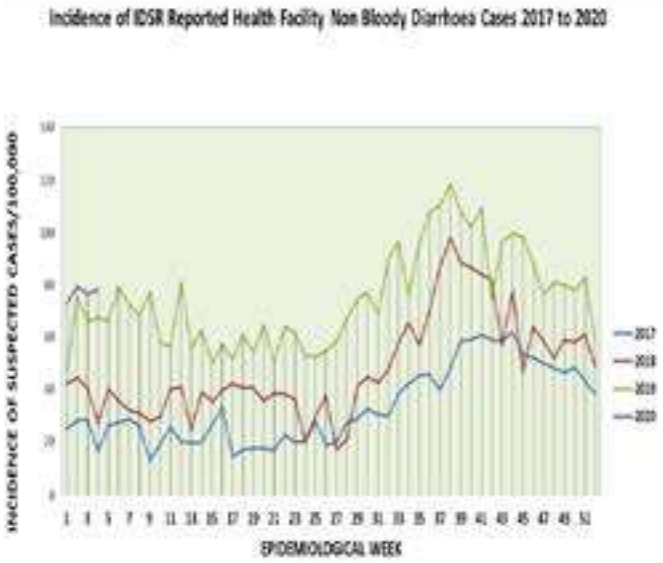
- A measles outbreak has been reported from Kasama district in Northern province .
- 24 cases cumulatively, 6 confirmed measles Igm and 0

Measles & Rubella surveillance



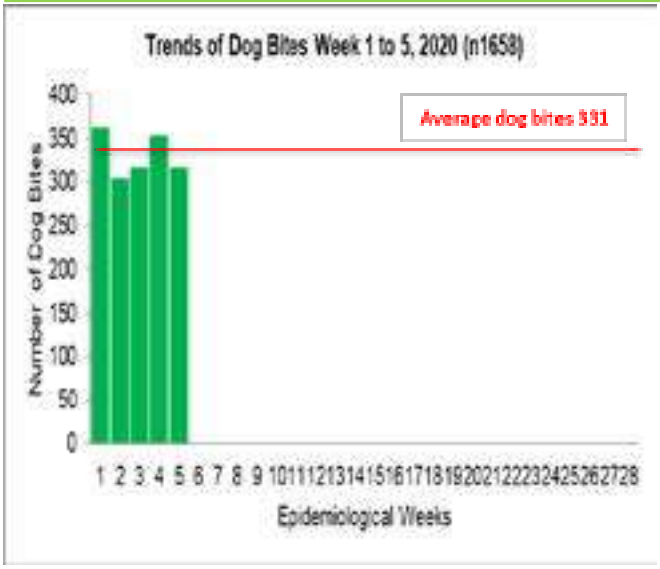
- 6 suspected measles cases were reported this week.
- 2 cases were sent for laboratory investigated and results are pending.
- Positive measles Igm and Rubella from samples collected in the 2nd, 3rd and 4th week of the year were posted.

Non-Bloody Diarrhoea



- Cumulatively, 69,170 cases of non-bloody diarrhea were reported from week 1 to week 5 2020.
- The highest number of cases reported are from Lusaka and Copperbelt province representing 16.3% (11261) and 16% (11078), respectively .

Dog Bites



- Cumulatively, 1658 dog bites have been reported from Week 1 to Week 5.
- Dog bites surveillance serves as a proxy for rabies surveillance both in the human and animal health system

Regional Public Health Events (Cases/Case Fatality Rate)

Ebola	Measles	Cholera	Poliovirus (c VDPD)	Plague
DRC : 3,423 CFR 66.0%	**DRC:** 11,608 CFR 1.30%	**DRC:** 1,460 CFR 1.90%	**Angola:** 71 CFR 0.0% **DRC:** 84 CFR 0.0%	**DRC: 48 CFR 16.70%**

Early Warning Diseases

Ebola Virus, DRC 2018-2020

- 7 new confirmed EVD cases and 6 deaths were recorded from DRC outbreak in the week under review.
- Cumulatively, 3,423 suspected cases, 3,305confirmed cases and 2,250 deaths (CFR is 66%) have occurred since the outbreak.
- Total number of health workers affected with EVD remains at 172 representing 5%.
- ***Though number of new cases seem to be reducing, the regional risk of spread remains high.***

Measles, DRC 2020

- The period covering week 1 to week 3,2020 a total of 11,607 cases have been reported and 151 deaths (CFR 1.30%).
- There was an increased number of new cases reported in week 1 of 2020 compared to week 52 of 2019.
- Cumulative number of cases and deaths from the onset of the outbreak in 2019 now stands at 319,330 and 6,148, respectively .
- The number of measles Igm laboratory confirmed cases stands at 2,717.

*****For more information look up the WHO Weekly Bulletin on Outbreaks and Other Emergencies*****

Public Health Actions

Circulating Vaccine Derived Poliovirus Outbreak

- The national annualized Non Polio AFP detection rate has increased to 4 cases /100,000 of children detected under 15 years for provinces.
- Note all AFP cases are immediately notifiable and require immediate investigation with new case investigation forms.
- All districts are expected to conduct health facilities integrated supervisory active searches at priority sites as per recommended schedule.
- Provinces to ensure silent districts not reporting AFP/measles cases are supported for active surveillance of AFP cases.
- Provinces are to ensure health workers are sensitized for improved detection, reporting and investigation of suspected measles and AFP cases.

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

- With the increased rainfall patterns and imminent flooding that raises risks for diarrheal diseases, cholera hotspots are encouraged to continue and intensify surveillance and review of epidemiological trends to quickly detect and respond to changes.
- All provinces and districts are further advised to have sufficient stock piles of chlorine (granular & soluble).
- Continue to provide 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 committees to engage all relevant government stakeholders and multisector partners required to prevent cholera outbreaks.

Global Alert of the Coronavirus & Preparedness

- Orientation of staff at points of entry on coronavirus in all provinces is advised
- Screening at all points of entry to be strengthened especially at international points of entry.
- Circulation of awareness materials to the public and health personnel to be done as soon as possible
- Report all suspected patients to the central level immediately .
- Strengthen surveillance for all Influenza Like Illness (ILI) and Severe Acute Respiratory Illness (SARI)
- Case definitions to be made available and other IEC materials in health facilities and public places.
- A call centre has been established at ZNPHI and all queries should be channeled to the following numbers: **+260 96 4638726/+260 974493553/+260 95 3898941.**

Reported by Surveillance and Disease Intelligence Unit: Muzala Kapin'a, Nkomba Kayeyi, Moses Banda, Mazyanga M Liwewe, Victor Mukonka and Zambia National Public Health Institute (ZNPHI)