

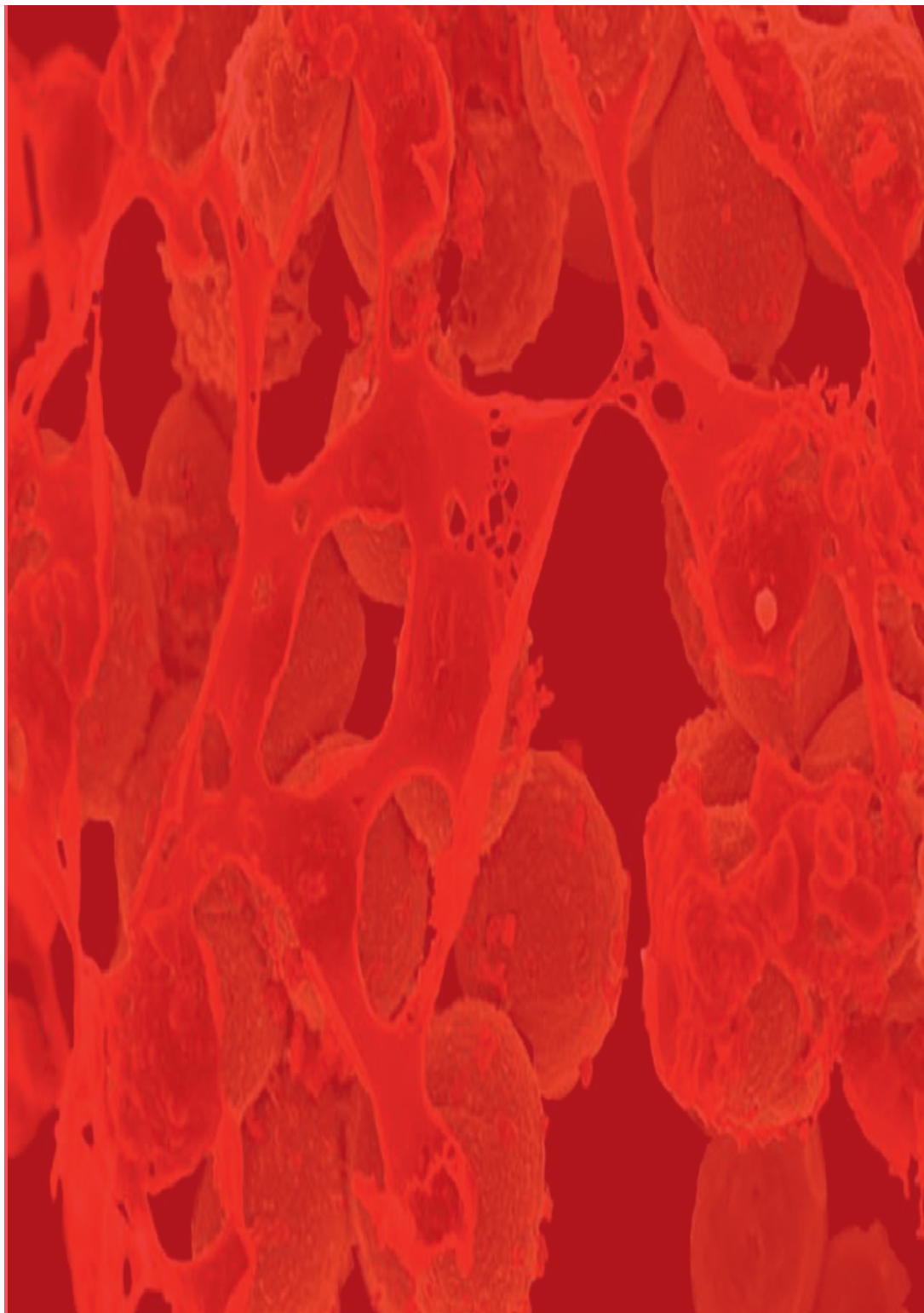
# NEWSLETTER

GET AFRICA NEWSLETTER ON ONE HEALTH AND BIOSECURITY

VOLUME 9 | JUNE 2022



**“THE NEED FOR ACTION AGAINST  
ANTIMICROBIAL RESISTANCE IN AFRICA”**



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## WELCOME ADDRESS

Welcome to the 9th edition of the Global Emerging Pathogens Treatment Consortium's (GET) newsletter. This edition of our newsletter focuses more on action plans against Antimicrobial Resistance (AMR). AMR is one of the most serious global public health threats in this century. This is particularly disturbing in Africa, which is already burdened with a fragile healthcare system. Different write-ups in this volume highlighted some action plans and strategies against this medical challenge. This edition also includes bonus packages on GET activities such as Night with GET and World Forest Day Celebration organized by GET.

Antimicrobial resistance is not just a major health worry, which can lead to millions more people dying every year, but it has also posed a huge economic impact on the world. Studies by two reputable international organizations, RAND Europe and KPMG, on the potential impact of AMR, reported that about 300 million people are expected to die prematurely because of drug resistance over the next 35 years, and the world's GDP will be 2 to 3.5% lower than it would ordinarily be in 2050. Hence, between now and 2050, the world can expect to lose between 60 and 100 trillion USD worth of economic output if antimicrobial drug resistance is not tackled.



Despite the staggering threat of AMR, a global report on surveillance study of AMR data collected from national and international surveillance networks shows the extent of this health challenge in many parts of the world and the presence of large gaps in the surveillance data. In view of this, we agitate for extensive studies on Antimicrobial Resistance amongst African researchers, scientists and healthcare personnel. It is my hope and aspiration that rapid and timely efforts by concerned stakeholders to tackle this medical challenge could be the magic bullet to rescue the world from the projected medical catastrophe.

**Dr. Bobadoye Ayodotun,**  
Chief Operating Officer,  
Global Emerging Pathogens Treatment Consortium (GET).

# TACKLING ANTIMICROBIAL RESISTANCE BEYOND THE HOSPITAL

## ANTIMICROBIAL STEWARDSHIP PROGRAMME IN AFRICA: A TIME FOR ACTION

By Istifanus Anekoson Joshua (Consultant Public Health Physician) - MBBS, MIAD, MPH, FWACP, PhD

Corresponding email: dristifanus@yahoo.com

### Introduction

Infectious diseases caused by microbes (bacteria, viruses, fungi, or parasites) affect human and animal health and have various transmission modes. Africa, with the fastest-growing population in the world, is now catching up with Asia as an infectious diseases' hotspot.<sup>1</sup> The burden in Africa has topped the list of diseases that frequently require consultation and hospitalization and remains a major cause of morbidity and mortality.

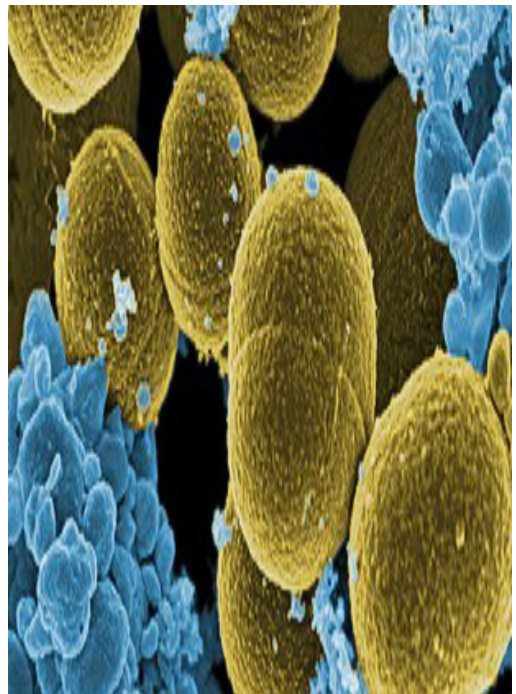
Antimicrobials are a global public good that has improved healthcare, saved millions of lives, and enhanced economic gains, and they are the cornerstones on which the health system is standing.<sup>2,3</sup> However, antimicrobial-resistant organisms are increasing globally, threatening to render existing treatments ineffective. Antimicrobial resistance (AMR) is the development of resistance in a microorganism to an antimicrobial to which it was previously sensitive.<sup>4</sup> It increases treatment costs and case fatality, and several drivers have been documented in its development.

In view of the importance of AMR, the World Health Organization (WHO) theme for 2011 was tagged "antimicrobial resistance: no action taken, no cure tomorrow".

### The Magnitude of the Problem

United Nations General Assembly, World Leaders of G7, G20, and WHO have declared

AMR a global health security challenge and one of the top ten global public health threats today.<sup>5</sup> AMR is a transboundary and ecosystem problem threatening the interdependent human-animal-environment health of every country, which risks reversing a century of progress in health.<sup>5,6,7</sup> AMR is estimated to account for more than 700000 deaths per year globally, will cost approximately 10 million lives and about US\$100 trillion per year by 2050 and 4.1 million people across Africa could be dead by 2050 if actions are not taken.<sup>8</sup> WHO Africa region has one of the largest data gaps on AMR prevalence.<sup>9</sup>



# Drivers of Antimicrobial Resistance

AMR is a complex and multi-sectoral challenge being driven by several factors. These include poverty, lack of access to clean water, sanitation and hygiene for both humans and animals; poor infections, prevention and control in hospitals and farms; population dynamics; globalization, medical tourism, poor management of pharmaceutical and hospital wastes; antibiotic abuse; poor access to quality and affordable medicines, vaccines and diagnostics; poor public knowledge of AMR; poor surveillance; poor food safety measures, poor documentation of AMR in animals, poor evidence-based data on the magnitude/economic burden of AMR in humans; poor regulations to control counterfeit drugs, the poor practice of one health concept, and cost of development of new antibiotics.<sup>10</sup>

## Overview of Hospital Antimicrobial Stewardship

Antimicrobial stewardship is the effort to measure and improve how antimicrobials are prescribed by clinicians and used by patients. Improving antimicrobial prescribing and use is critical to effectively treat infections and protect patients from harm caused by unnecessary antimicrobial use to combat AMR.

The core elements of hospital antibiotic Stewardship Programmes<sup>11</sup> include hospital leadership commitment; accountability, pharmacy expertise; an action that implements interventions, tracking which monitors antibiotic prescribing, the impact of interventions and other important outcomes, and regularly reporting information on antibiotics use and education of prescribers.

Because the drivers of AMR lie in humans, animals, plants, food, and the environment

(i.e., beyond the hospital), a sustained response within and outside the hospital is crucial. Human resources for health (HRH) are key in the hospital AMR containment. However, inadequate and maldistribution of HRH is a huge problem, especially in Africa and Nigeria.<sup>10</sup>

Although the battle against AMR is a global one, Africa is currently at a disadvantage because of weak healthcare systems and other factors that are slowing the continent's efforts in the fight. This will have serious negative human, social, economic, and developmental consequences in the region.<sup>7</sup> Africa is a continent bedeviled with challenges such as poverty, man-made disasters, corruption, illiteracy, incessant strikes, inter and intra-professional rivalry, weak medical and veterinary health institutions, that have all made the continent poorly prepared to effectively fight this public health threat.<sup>10</sup>

## Conclusion

The importance of AMR cannot be neglected in view of its consequences globally, regionally, nationally, and locally. It is a time for action by all stakeholders to walk the talk beyond the hospital antimicrobial stewardship programme.

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Dr. Istifanus Anekoson Joshua is a Consultant Public Health Physician, Department of Community Medicine, College of Medicine, Kaduna State University, Kaduna State, Nigeria.

Research Interest: Environmental Health, Disaster Management, Antimicrobial Resistance, Molecular Epidemiology and One Health.

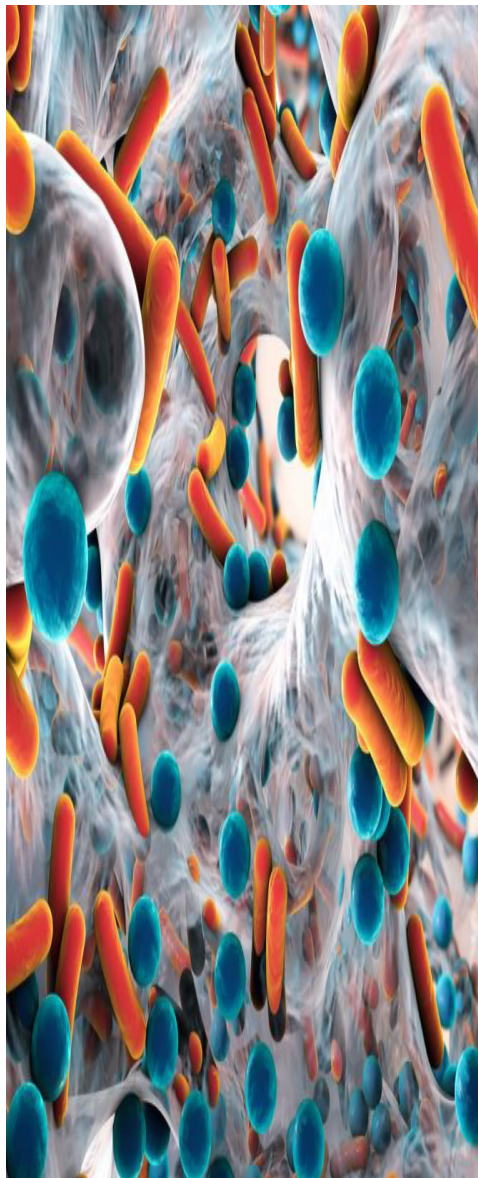
# ANTIMICROBIAL RESISTANCE: A PUBLIC HEALTH CONCERN

*By Dr Chinonso Gift Ebirim (One Health and Antibiotic Residues/Resistance Advocate)*

Corresponding email: [chinomsogift@yahoo.com](mailto:chinomsogift@yahoo.com)

Antimicrobial resistance (AMR) refers to microorganisms' ability to survive or proliferate in the presence of medications intended to inhibit or kill them. Antimicrobial resistance is an increasing problem worldwide, particularly in Sub-Saharan Africa, due to its undefined status due to a lack of real-time data collection, surveillance, and regulation. Antimicrobial resistance is related to higher mortality, healthcare costs, and increased loss of production in food animal production. Antimicrobial use that is suboptimal, non-prescribed, or excessive for human and animal Health has long been recorded to be associated with the global rise of antimicrobial resistance. Antibiotic usage in the community, hospitals, veterinary medicine, agriculture, aquaculture, and the environment is thought to have contributed to the establishment of antibiotic resistance; furthermore, pharmaceutical companies have significantly created few new antibiotics, thus worsening the problem.

Antibiotics are used therapeutically to treat infectious diseases and prophylactically as growth promoters in the production of food for animals. Food animals are widely recognized as important reservoirs of antibiotic-resistant bacteria, and these favors the emergence, selection, and spread of resistance among humans and animals majorly through the food chain. Also, the increasing human population has led to rapid urbanization, livestock production increase, globalization, and intensive exploitation of the ecosystem, leading to environmental changes such as



climate change, deforestation, pollution, and habitat encroachment, therefore extensively leading to the rapid proliferation of antimicrobial-resistant pathogens. Additionally, antibiotics administered to humans and animals, including aquaculture, inevitably end up in the environment, which can simultaneously impact ecosystem health and potentially become a reservoir for resistant organisms. A large proportion of aquatic and environmental antibiotic contamination is from human antibiotic usage like hospital effluents. The genes that cause antibiotic resistance to transfer amongst different types of bacteria complicates the epidemiology of antibiotic resistance. People, animals, animal products, and environmental contamination have all been implicated in the transmission of antibiotic resistance. A susceptible bacterium can become resistant through a unique genetic mutation in its DNA or, more typically, by acquiring mobile genetic components from another resistant bacterium. More so, resistance to one type of antibiotic can develop not just to that antibiotic but also to others in the same or different classes.

To lessen the impact and spread of resistance, actions need to be taken at all levels of society, bringing the animal, human, and environmental factors into recognition. Particularly, the problem of antimicrobial resistance cannot be solved by addressing antimicrobial use in only one sector. One Health Approach or Concept brings together human, animal, and environmental views to curb the spread of antimicrobial resistance. One Health is said to be "a collaborative, multi-sectoral, and trans-disciplinary approach - working at local, regional, national, and global levels to achieve optimal health and well-being outcomes recognizing the interconnections between people, animals, plants and their shared environment". Therefore, Increasing the interdisciplinary coordination to curb

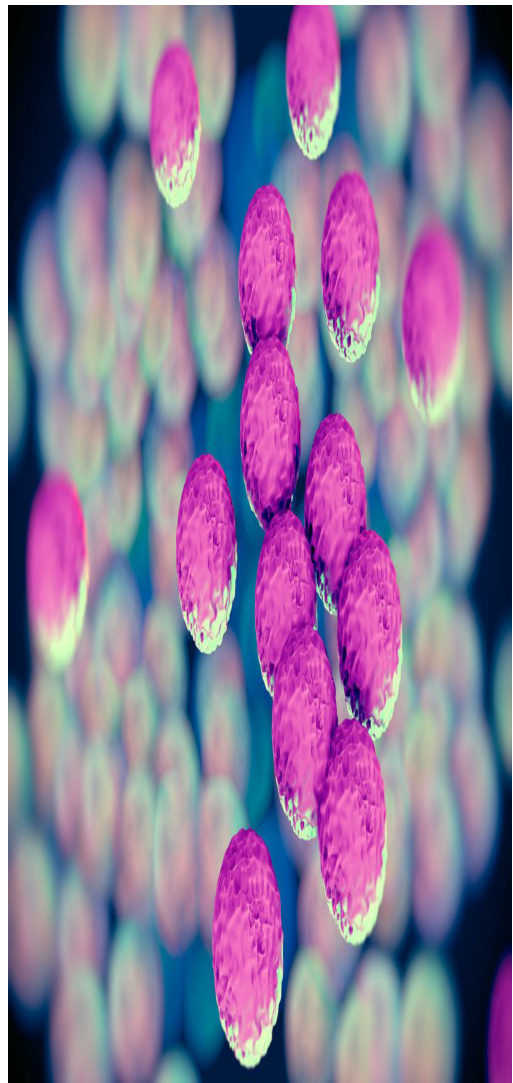
antimicrobial resistance can assist in promoting science-based decision making, reducing unnecessary duplication amongst the sectors responsible for the health of humans, animals, and the environment, and effectively addressing factors influencing antimicrobial resistance. The most significant aim of the one health approach is to address global public health issues that are interconnected and interdependent on the growing human population and their actions on the environment and their interaction with animals. It is important to apply cross-collaboration among public health professionals and veterinarians, including bio scientists and environmentalists working holistically for optimal health outcomes. The following approaches have and are still being advocated for in preventing and controlling antimicrobial resistance.

1. Improving awareness and understanding of Antimicrobial Resistance via training, education and effective communication.
2. Strengthening the Knowledge and Evidence Base through Research and Surveillance.
3. Reducing the Incidence of Infection through Hygiene, Effective Sanitation, and Infection Prevention Measures.
4. Optimizing the Use of Antimicrobial Medicines in Human and Animal Health.
5. Developing the Economic Case for Sustainable Investments that take Account of the needs of All Countries and Increase Investments in Diagnostic Tools, New Medicines, Vaccines, and Other Interventions.

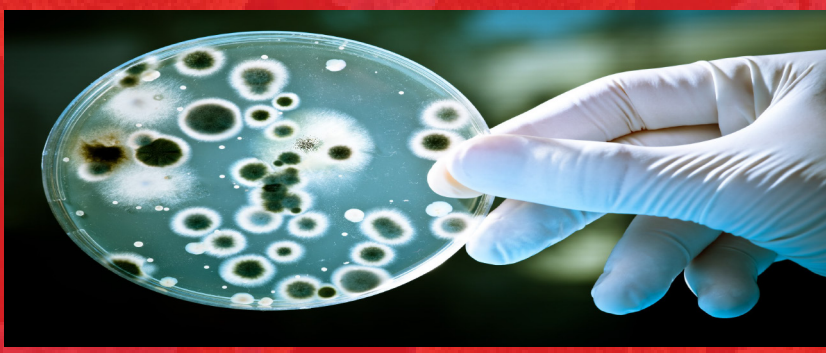
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**Dr Chinomso Gift Ebirim graduated from the University of Nigeria where she obtained a Doctor of Veterinary Medicine. She also obtained her master's in Veterinary Public Health and Master of Veterinary Science (Avian Medicine) from the University of Ibadan and the Pan African University Life and Earth Sciences including Health and Agriculture, Ibadan. She is a One Health and Antibiotic Residues/Resistance Advocate.**



# CLARION CALLS FOR UPSCALED EFFORTS TO STEM THE SPREAD OF ANTIMICROBIAL RESISTANCE IN NIGERIA

By David Arome (Public Health Professional and Health Reporter)

Corresponding email: [davearome@gmail.com](mailto:davearome@gmail.com)

Antimicrobial resistance has recently gained a new global dimension, with Nigeria taking its turn in the emerging public health threat. It is a widespread problem that affects people from all walks of life. Recent trends in antimicrobial resistance require a concerted effort to combat the threat as soon as possible. Over the years, microbes have developed varying degrees of resistance to new antimicrobial drugs introduced into the market. [1].

Antimicrobial resistance (AMR) is a natural process that occurs when microorganisms develop resistance to drugs used to fight them, making infections more difficult to treat and increasing the risk of disease spread, severe illness, and death. [2]. Antimicrobial resistance is enhanced by abuse and overuse, as well as inadequate infection prevention and control. The common antimicrobial-resistant pathogens causing infection as reported in different parts of Nigeria are *Staphylococcus aureus* [3], fluoroquinolone-resistant *Escherichia coli* [4] and resistance among common gram negative and positive isolate [5].

It is estimated globally that drug resistance accounts for 700,000 deaths each year. Research projections have shown that if the current trend persists by 2050, AMR could likely account for over 10million deaths per year and over 100 trillion in lost output globally [6].

Antimicrobial resistance in humans can be attributed to a variety of factors, including easy access and availability of antimicrobial drugs that can be bought without a doctor's prescription, antimicrobial drug abuse [7], and prolonged use of antimicrobial drugs for self-medication [8], over-prescription with clear indications, and diagnostic uncertainty.

Other factors that contribute to the emergence of antimicrobial resistance include incorrect antimicrobial knowledge among the general population [9], failure to complete the recommended doses or treatment and significant antimicrobial resistance occurring outside of human medicine, which involves the use of the antimicrobial in food-producing animals and aquaculture.

Also, environmental factors, especially water contaminated by different compartments. Research has shown that there is a high proportion of tetracycline and sulphona-mide-resistant bacteria and sulphona-mide-resistant genes in wastewater treatment plants [10, 11]. All these factors, among others, are contributory to the poor regulatory system in the healthcare system, patients' negligence on the part of adhering to prescribed regimens, and a lack of awareness of the pending dangers of antimicrobial misuse.

Though the economic impact of antimicrobial resistance is a bit difficult to quantify in real time, several consequences are linked to it. One such implication is that resistance can result in higher costs for more expensive antimicrobial drugs, particularly second- and third-line drugs, as well as productivity loss and patient death.

The rise in AMR in recent times calls for a concerted effort to holistically address this trending public health emergency. Combating the spread of AMR requires a multifaceted approach that includes both global and targeted responses.

First, strengthen the health regulatory system with guidelines on the sale of antimicrobials in pharmacy stores and medicine stores.

Second, harmonization of the AMR surveillance system through the development of agreed-upon epidemiological and microbiological methods; adoption of common definitions to improve the ability to share and compare resistance data; and improved coordination of surveillance networks

Thirdly, a community-based approach that is centred on sensitization, awareness creation, and behavioural lifestyle changes to curb the spread of AMR is an instrumental element.

Antibiotic misuse and inappropriate antibiotic prescriptions should be reduced through consumer education campaigns, information and training for healthcare professionals, improved diagnostics for treatment decisions, treatment guidelines, and prescription audits [11].

Fourthly, preventing infections through vaccinations is paramount to reducing the need for antibiotics. In addition, innovative approaches are needed for the development of new antibiotics and other products to limit AMR. The introduction of new vaccines may reduce the prevalence of infectious diseases and thereby reduce the need for antibiotics.

Fifthly, monitoring of the use of antibiotics in food processing animals should also be looked at, as well as strengthening the surveillance system [12].

The quest to stem the spread of antimicrobial resistance in Nigeria is a collective effort of both the government, private sectors and individuals working in synergy to address this public health threat.

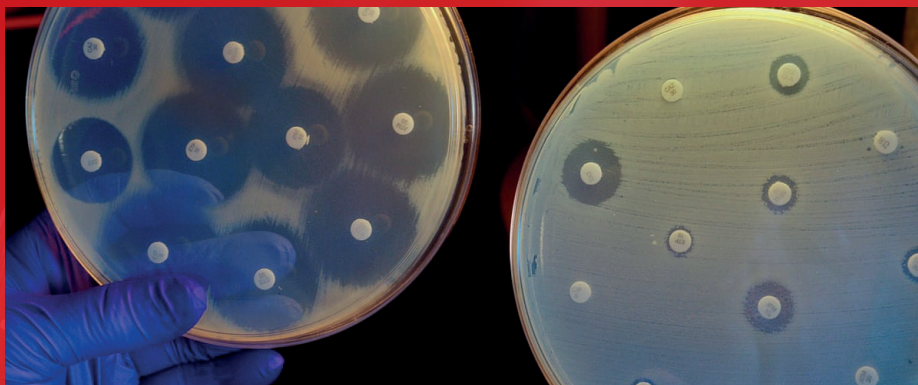
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David Arome is a public health professional and health reporter with over five years' experience working in the non-profit sector. David holds a bachelor's degree in science laboratory technology and a master's degree in public health. David has received training in health reporting, journalism, leadership, research, and research article publication. David Arome conducts interviews, writes reports, transcribes interviews, facilitates training, and publishes research articles in both local and international publishing outfits. David is actively involved in health advocacy, women & and girls' rights, and community engagement.



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## ANTIMICROBIAL RESISTANCE IN AFRICA: IT IS TIME TO TAKE DECISIVE ACTION

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By Nawal Abdelmoniem (Quality Control Chemist at Lesaffre, Egypt)  
Corresponding email: [nawalmohamed0@gmail.com](mailto:nawalmohamed0@gmail.com)

Drug resistance is a critical public health issue that requires a range of interventions. Antimicrobial resistance (AMR) is the microbe's capability to repel an action of a drug which makes the infection harder to cure and increases the mortality rate. Antimicrobial resistance (AMR) differs from antibiotic resistance (ABR) in that ABR refers to the action of bacteria only, while AMR describes any microbe that could oppose any drug that was made to kill it, it includes bacteria, viruses, parasites, and fungi.

Microbes can become resistant to drugs in two ways: through changes in microbial behaviour such as (mutation, selective pressure, gene transfer, and phenotypic change) or changes in people's behaviour such as (inexact diagnosis, inappropriate use, agriculture use, and excessive hospital use for

critically ill patients) [1]. The spread of drug-resistant pathogens that acquire one or multiple resistance mechanisms (superbug) could threaten our ability to cure diseases and common infections.

AMR is a global issue that is not fully understood in different regions of the world. A recent study in Africa found that; firstly, more than 40% of the countries do not have available data for AMR; secondly, there has been a considerable increase in the level of resistance against routinely prescribed drugs and thirdly, there is a gap in addressing and diagnosing AMR in order to prescribe the appropriate medication [2].

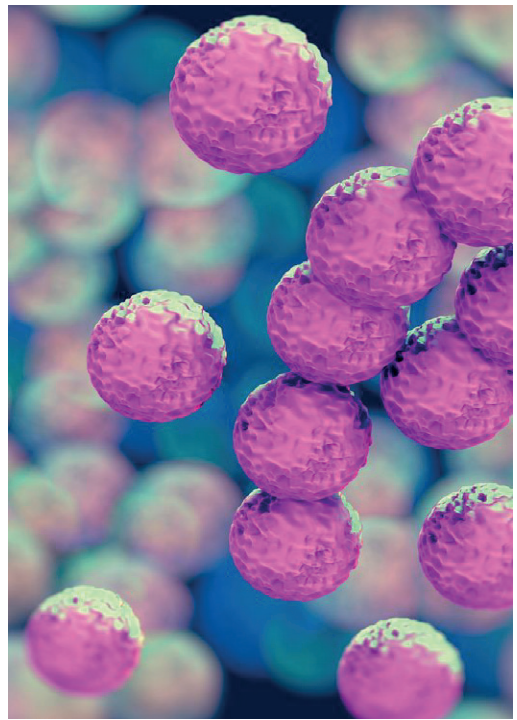
Africa and southeast Asia were identified by World Health Organization (WHO) in 2014 as regions with significant gaps in data sharing

and coordination, surveillance, and a lack of standards for methodology. One of the problems contributing to the gaps in surveillance is the limited laboratory capacity to monitor ABR. Available data indicate that the African Region shares the worldwide trend of increasing drug resistance. Significant resistance has been reported for several bacteria that are [3].

As stated in a study conducted by the University of Washington's Institute of Health Metrics and Evaluation (IHME), AMR killed more people than HIV/AIDS or malaria, which killed 860,000 and 640,000 people respectively in the same period. Since the germs that cause such infections have developed resistance to previously life-saving treatments, more people are dying from previously treatable infections than ever before [4].

The highest rates of AMR mortality were found in Sub-Saharan Africa and South Asia, with 24 and 22 deaths per 100,000 individuals, respectively. Antibiotic-resistant pneumonia strains claimed the lives of many children. In high-income countries, however, the fatality rate from AMR was around 13 per 100,000[5]. Previous predictions forecast 10 million yearly deaths from antimicrobial resistance by 2050. If we want to stay ahead in the race against antimicrobial resistance, we need to use this data to course-correct action and promote innovation.

Here is a scenario for Zimbabwe. Following the 68th World Health Assembly's adoption of the Global Action Plan (GAP) on Antimicrobial Resistance in May 2015, Zimbabwe immediately put in place a framework for developing an AMR National Action Plan, beginning with a situational analysis to better understand the situation surrounding AMR and any existing efforts to contain it. The Global Action Plan encourages countries to "put in place national antimicrobial resistance action plans and



standards and guidelines created by appropriate intergovernmental agencies." The results of the AMR scenario study revealed that if AMR is not addressed holistically, it will spread in Zimbabwe. This national action plan adheres to the Global Action Plan and outlines the following five strategic objectives [6]:

- To improve the awareness and understanding of AMR through solid communication, training, and education.
- To strengthen the knowledge and evidence base through research and surveillance.
- To decrease the incidence of infection through adequate sanitation, hygiene, and infection prevention measures.
- To optimize the use of antimicrobial medicines in animal health and human.
- To advance the economic case for sustainable investment that considers the needs of all countries

and to increase investment in diagnostic tools, new medicines, vaccines, and other interventions.

Finally, comprehensive national AMR policies, strategies, and plans should be developed and implemented in collaboration with policymakers, partners, and public health stakeholders to prevent and combat AMR. AMR surveillance, laboratory services, quality control of test reagents and protocols, effective medicines regulation, and rational use of medications are all in desperate need of targeted capacity-building activities. Furthermore, the formation of national and/or regional policy platforms for antibiotic resistance control could be critical. As a method, finding another treatment for AMR includes vaccinations against viral diseases such as influenza, respiratory syncytial virus, and rotavirus, which minimize the likelihood of secondary bacterial infections and subsequent treatment, resulting in less reliance on inappropriate antibiotic use. Simultaneously, Antibiotics must be used less frequently as a first-line treatment for viral infections, especially when antibiotics are ineffective.

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Nawal Abdelmoniem was born in Alexandria, Egypt. She obtained a BSc degree in Industrial Microbiology & Applied Chemistry from the school of Science, Alexandria University. Nawal is interested in medical microbiology especially infectious diseases and Anti-microbial resistance. She currently works as a quality control chemist at Lesaffre in Egypt.

# ANTIMICROBIAL RESISTANCE IN AFRICA: POTENTIAL SOLUTIONS AND A FUTURISTIC OUTLOOK

By *Eniola Onabowale - Molecular Research Scientist*  
Corresponding email: [eonabowale@gmail.com](mailto:eonabowale@gmail.com)

AMR poses a global health and economic burden that requires a global concerted strategy to mitigate its spread. The World Health Organization has revealed it is among the top 10 global health threats humanity is currently facing. Anti-microbial resistance occurs when microbes including viruses, fungi, bacteria, and parasites become unresponsive to drugs that are known and proven to be effective against them. The development and growth of drug resistant pathogens armed with novel mechanisms of resistance impedes treatment of common and severe diseases/infections.

Although the inappropriate use of antimicrobial treatments accelerates the emergence of resistant pathogens, evolution and natural selection enable AMR to occur naturally over time. The emergence of these drug resistant pathogens can occur as a result of genetic variations that occur intrinsically or are acquired. Pathogens that possess intrinsic resistance have a naturally occurring "trait" that confers them with protection against one or more drugs. A known example is *Escherichia coli*'s resistance to vancomycin. In acquired resistance a pathogen that was sensitive to a particular drug develops resistance to it. This could occur by spontaneous mutation events or by the acquisition of genetic material from another organism. This phenomenon drives antibiotic resistance. Bacteria that possess these mutations are at an advantageous position because they

would thrive and proliferate when exposed to certain antibiotics while the others are killed. Resistance genes can be transferred by plasmids from one bacterium to the other. Plasmids are small circular DNA that can incorporate themselves into the genome of bacteria and replicate. Bacteriophages also have the ability to transfer resistance genes to bacteria.

Antibiotics and antibiotic resistant genes have been in a race from the time the first antibiotic was discovered to present day. Unfortunately, Antibiotics are falling far behind, and we are at a pivotal point where innovative strategies, research and development, effective policies and global awareness are imperative to curb the threat of AMR. The rate at which new antibiotics are discovered has taken a downturn while the emergence, transmission, and persistence of new strains of drug resistant pathogens is on the rise. Novel antibiotics/antimicrobials are urgently required to contain this global health threat. Nevertheless, if there are no changes made to the way in which we use antibiotics, any novel antibiotics discovered will eventually become as ineffective and the current ones.

Although antimicrobial resistance has been recognized as a global health threat, certain parts of the world have not acknowledged the magnitude and importance of implementing sustainable and feasible plans to limit its effect. The current state of AMR in

Africa is difficult to accurately assess because of the lack of sufficient and reliable data sets and infrastructure that illustrate the reality of the entire landscape of the continent. In spite of the inadequate surveillance capacity, the sparse data available suggests that Africa is leaning in the same direction as the rest of the world in the widespread persistence and transmission of AMR. On the African continent, considerable resistance has been noticed in diseases like malaria, cholera, meningitis, TB, gonorrhoea, typhoid, and AIDS. The advent of multidrug resistant *V.cholerae* and Extensive drug resistant *V.cholerae* shows how rapidly the bacteria is evolving mainly due to the misuse of antibiotics sensitive to it. These bacterial genomes are enhanced with mobile genetic elements containing resistance genes that could be passed on to other bacterial pathogens. They have developed a clever way to ensure survival and perpetuity.

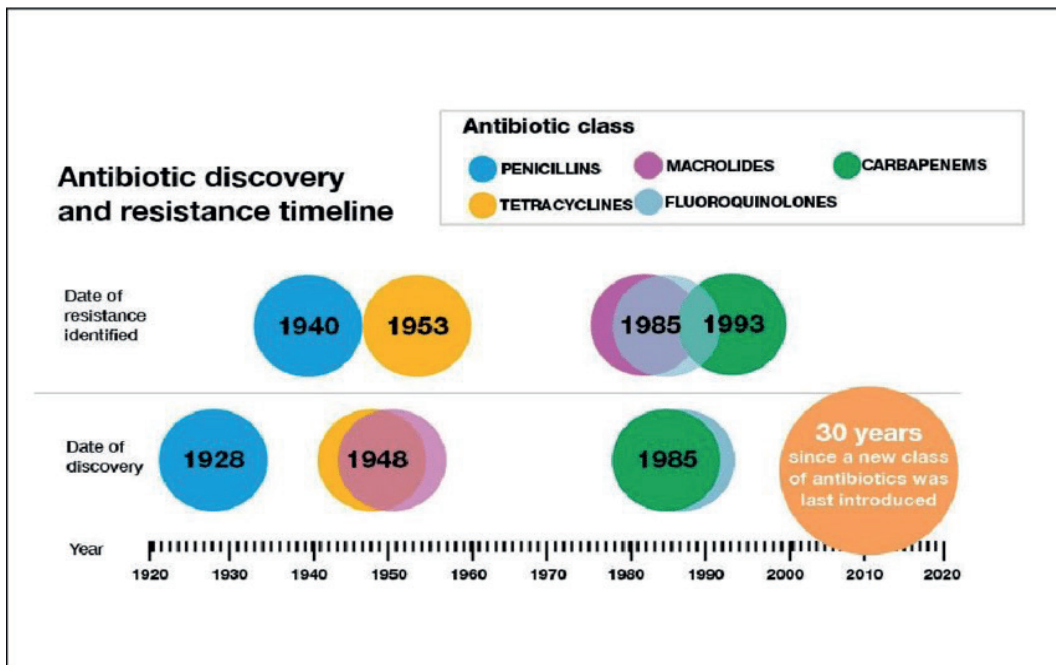


Fig 1: Image showing the timeline of antibiotic discovery and resistance from 1920-2020 (3).

In recent years, Africa has experienced an increase in the emergence of Extensive drug-resistant TB and Multidrug resistant TB. However, most of the countries where this is prevalent lack the capacity to make accurate drug resistant TB diagnosis and provide effective treatment. In instances where treatment programs are available, their effort is limited by the availability and access to quality antibiotics. Malaria which is widespread on the continent developed resistance to chloroquine in the early nineties. Partial resistance to Artemisinin has been reported but artemisinin based combination therapy has proven to be an effective therapy. Appropriate use of this therapy reduces transmission of the malaria parasite and inadvertently mitigates the emergence and spread of drug resistant strains of the parasite. However, malaria drugs are taken as often as pain killers without any confirmed clinical diagnosis in most parts of Nigeria.

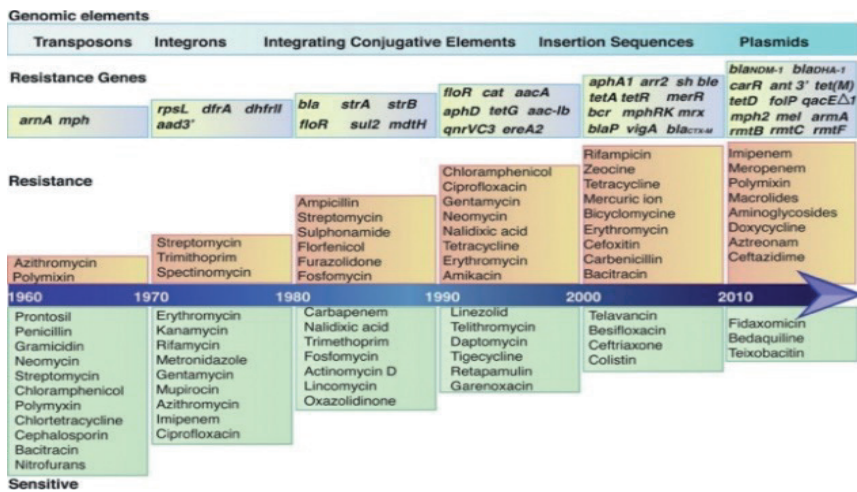


Fig 2: Image showing the genes coding for resistance in bacteria and the resistance vs sensitivity of bacteria to antibiotics from 1960 to 2010 onward (6).

Some of the major factors driving AMR include inappropriate use of antimicrobial therapies, counterfeit drugs, lack of access to quality low-cost drugs and vaccines, ineffective infection and disease prevention and control in health-care settings, lack of awareness, inadequate human and infrastructural capacity for surveillance and diagnosis of drug resistant pathogens and non-implementation of comprehensive policies. It is imperative to develop strategies to combat the spread and emergence of novel drug resistant pathogens.

## WHOLE GENOME SEQUENCING FOR ACCURATE DETECTION AND SURVEILLANCE OF AMR

Conventional clinical diagnostic methods are not comprehensive enough to detect drug resistant pathogens. Cell cultures that determine sensitivity of bacteria to antibiotics are unable to provide a detailed profile on drug resistant pathogens. Countries like the UK have adopted the use of Whole Genome Sequencing for the detection of TB in clinical settings. WGS provides a high-resolution picture of the pathogen's entire genome. This enables detection, mapping and surveillance of genomic variants driving drug resistance. The utilization of WGS for detection and surveillance of AMR is the most comprehensive approach because it enables detection of emerging novel resistant patterns, tracking of the pathogen's evolution and spread across different geographic locations. In a perfect world WGS would be utilized in routine clinical testing for AMR, however the cost and the expertise required to build a sustainable pipeline in Africa is not operationally feasible at the moment. Nonetheless, we can adopt this sequencing-based approach for surveillance and detection using the available resources and implement strategies to scale up for widespread adoption across the continent. For this to be implemented successfully, it would require capacity building across various domains. Several organizations like WHO, Africa CDC already use sequencing-based approaches for surveillance, but we need to build local capacities across several domains for this to be implemented routinely.

## MORE R&D INTO NOVEL AND EFFECTIVE THERAPIES

It is critical that Africa plays a substantial role in shifting the scale towards the discovery of novel antimicrobials through targeted research and development strategies. Research is the bedrock of drug discovery, and it requires dedicated investment of time and resources. The private and public sector need to work in unison to promote the development of innovation and research. By providing funding, creating platforms that enable African scientists to thrive and produce quality research that would provide insights into novel discoveries. There is a wealth of academic excellence and innovative thinking that has not been fostered and developed to its full potential on the continent. African scientists are excelling in their respective fields outside of the continent. Establishing systems, policies, and funding to support the talent that is present in Africa would translate drive translational research.

## THE FUTURE- A PERSONALIZED APPROACH

The conventional method of treatment for pathogens usually involves the use of broad-spectrum antimicrobials for treatment. In the future, a personalized approach which would involve the use of antimicrobials targeted to specific strains of pathogens as opposed to the conventional approach would be utilized. Broad range antimicrobials are used to cover a wide range of pathogens in a timely manner that is essential in clinical care. However, it is the misuse of these broad-spectrum antimicrobials that drives AMR. The development of precise, comprehensive, and rapid detection techniques would accelerate the adoption of this precision antimicrobial solution

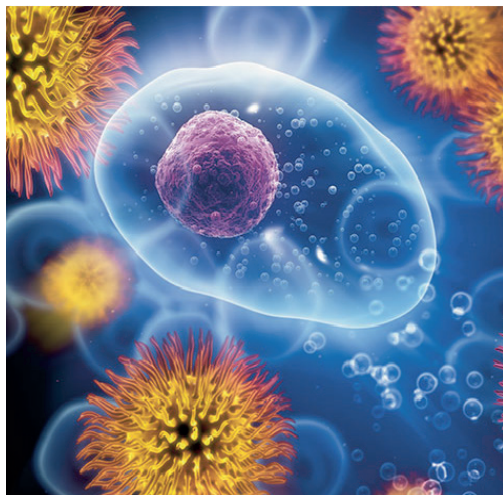
## CONCLUSION

Antimicrobial resistance is a global health threat that needs to be addressed by everyone at every level. Its effect is spread across different populations on a global and national level. Raising awareness combined with implementing sustainable and innovative strategies is crucial to mitigate the emergence, spread and detection of drug resistant pathogens.



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Eniola Onabowale is a molecular research scientist with a Bsc in Molecular Biology and Genetics and an Msc in Medical Biotechnology. She is passionate about the utilization of genomic analysis to gain insights that can be translated into healthcare solutions for underrepresented populations.

# FIRST PUBLICATION OF GET JOURNAL OF BIOSECURITY AND ONE HEALTH

We are pleased to announce that GET published the First Edition (Volume 1, Issue 1) of its Journal of Biosecurity and One Health on May 13, 2022. This edition featured seven (7) articles spanning diverse areas, including core Biosafety and Biosecurity Discourse, Emerging Infectious Diseases, Antimicrobial Resistance and Ethics and legal Concerns of biosecurity.

The first edition of GET journal of Biosecurity and One Health was virtually launched to the global audience in the field of Biosecurity and One Health on June 16, 2022, while the hard copy of the journal was physically launched by Prof. Akin Abayomi, the Editor in Chief of the journal at 'Night with GET' on June 22, 2022. The hard copy of the journal is currently available on preorder.

GET Journal of Biosecurity and One Health is devoted exclusively to the publication of high-quality research papers that covers multidisciplinary fields of Biosecurity and One Health. The journal aims to publish high quality varied article types such as Research, Reviews, Short Communications, Case Reports, Perspectives (Editorials), Clinical Images.

The second edition of the journal will be published in October 2022. GET is still accepting manuscripts from researchers, scholars, scientists etc. Publication and processing fee for the journal is free

To access the published articles and to submit a manuscript for the next volume, please visit:  
<https://getjournal.org/>.



*Prof. Akin Abayomi- the Editor in Chief of the Journal, launching the Journal of Biosecurity and One Health at 'Night with GET'*

# SAVE THE DATE FOR THE 8TH AFRICAN CONFERENCE (2ND-4TH NOVEMBER, 2022)

 **GET** Global  
Emerging Pathogens  
Treatment Consortium

*Save The  
Date*



## 8th African Conference on One Health and Biosecurity

Theme: **Strengthening Health Security  
and Mitigating Biological Threats in Africa**

 **2nd-4th November 2022**

 **The Civic Centre, Victoria Island Lagos Nigeria.**

🌐 Conference 2022: <https://www.getafrica.org/events/conference2022/>  
✉ [bobadoyed@getafrica.org](mailto:bobadoyed@getafrica.org), [ifeoluwa@getafrica.org](mailto:ifeoluwa@getafrica.org) ☎ +234 806 769 9338



## 8th African Conference on One Health and Biosecurity

**Theme:** "Strengthening Health  
Security and Mitigating Biological  
threats in Africa."

**2nd-4th November 2022**

**The Civic Centre, Victoria  
Island Lagos Nigeria.**

### Conference Highlights

- ✳ Internationally Known Speakers
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*Dear Sir or Ma,*

## **Sponsorship Request for the 8th African Conference on One Health and Biosecurity**

I am pleased to invite you to the 8th African Conference on One Health and Biosecurity which will hold from the 2nd-4th November 2022. The conference is organized by the Global Emerging Pathogens Treatment Consortium (GET), and the host is the Lagos State Ministry of Health, Nigeria.

The theme for the conference is: “**Strengthening Health Security and Mitigating Biological threats in Africa**”.

The Annual Conference on One Health and Biosecurity is one of the biggest biosecurity conferences in Africa, and it usually attracts over 400 global experts in various fields from all the continents of the world. This conference will be both virtual and physical. The conference is a platform to raise National, Regional, and Continental awareness on emerging biosecurity threats and create opportunities to strengthen health security in Africa.

We kindly request that your organization partner with GET in organizing this conference either by organizing or supporting a section of the conference; placing an advert on the conference program or supporting this conference as one of our sponsors. The total projected cost for the conference is about \$225,500.00, which amounts to about N124,025,000.00 (One-Hundred and Twenty-Four Million, Twenty-Five Thousand Naira only). The fund will be spent on renting the conference venue, conference publicities, travel logistics, hotel accommodations, feeding, and other major conference logistics.

Sponsoring this year's conference would be a wonderful opportunity for your organization to have great visibility before our high profiled participants who would benefit, partner, and contribute to the products and services of your organization. You and representatives from your organization are most welcome to attend the conference.

**Best Regards,**

**Dr. Ayodotun Bobadoye,**  
Chief Operating Officer,  
GET Consortium

# SPONSORSHIP LEVELS

Below are options designed to assist you in finding the right level for your budget.

Platinum Sponsor	Gold Sponsor	Silver Sponsor	Bronze Sponsor	Conference Advert
\$20,000 (#10 Million)	\$10,000 (#5 Million)	\$5,000 (#2.5 Million)	\$2,000 (#1 Million)	\$1,000 (#500,000)
<b>BENEFITS</b> <ul style="list-style-type: none"><li>● Your organization's name and logo will be prominently displayed on conference materials, including the program and the conference website.</li><li>● Your organization's name will be mentioned throughout the event during key sessions.</li><li>● Your organization's name and logo will also be displayed as a sponsor of a luncheon, outing, or special event.</li><li>● An exhibitor booth or display table will be provided by GET in the main, well-traveled conference lobby and free full-page advert in the conference programme.</li><li>● Three complimentary registrations are available at this level.</li></ul>	<b>BENEFITS</b> <ul style="list-style-type: none"><li>● Your organization's name and logo will be prominently displayed on conference materials, including the program and the conference website.</li><li>● Your organization's name will be mentioned throughout the event during key sessions.</li><li>● An exhibitor booth or display table will be provided by GET in the main, well-traveled conference lobby and free full-page advert in the conference programme.</li><li>● Two complimentary registrations are available at this level.</li></ul>	<b>BENEFITS</b> <ul style="list-style-type: none"><li>● Your organization's name and logo will be prominently displayed on conference materials, including the program and the conference website.</li><li>● Your organization's name will be mentioned throughout the event during key sessions.</li><li>● An exhibitor booth or display table will be provided by GET in the main, well-traveled conference lobby and free full-page advert in the conference programme.</li><li>● One complimentary registration is available at this level.</li></ul>	<b>BENEFITS</b> <ul style="list-style-type: none"><li>● Your organization's name and logo will be prominently displayed on conference materials, including the program and the conference website.</li><li>● Your organization's name will be mentioned throughout the event during key sessions.</li></ul>	<b>BENEFITS</b> <ul style="list-style-type: none"><li>● Your organization will have a full-page advert in the conference proceedings and an exhibition booth at the conference lobby.</li></ul>

## Past Sponsors



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**Enquiry:** [bobadoyed@getafrica.org](mailto:bobadoyed@getafrica.org)

# CALL FOR ABSTRACTS

We are still seeking abstract submissions related to the following conference thematic areas: Mitigating Biological Threats, Infectious Diseases, Genomics in Addressing Biosecurity Threats, Data in Health Security, Biobanking Infrastructure, Vaccine Strategy for Infectious Diseases, Cultural, Anthropological, Social and Economic impact of emerging infectious diseases CASE and other Emerging Issues for the 8th African Conference on One Health and Biosecurity.

To submit your abstract, please attach it in an email and send to: [bobadoyed@getafrica.org](mailto:bobadoyed@getafrica.org)

Deadline date for abstract submission has been extended till: 13th July 2022



**8th African Conference on One Health and Biosecurity**

**Theme:** "Strengthening Health Security and Mitigating Biological threats in Africa."

**2nd-4th November 2022**

**The Civic Centre, Victoria Island Lagos Nigeria.**

## CALL FOR ABSTRACTS

### Thematics Areas

1. Mitigating biological threats in Africa
2. Emerging Infectious Diseases as an accelerating phenomenon
3. The importance of genomics research in addressing biosecurity threats in Africa
4. (4) Importance of Data in enhancing health security
5. Biobanking infrastructure
6. The need for a Vaccine strategy for emerging infectious diseases in Africa
7. The Cultural, Anthropological, Social and Economic Impact of Emerging Infectious Diseases (CASE)
8. Other emerging issues such as - (a). Climate change and biosecurity threats in Africa (b) Harnessing the digital revolution and digital platforms to advance biosecurity in Africa

### Guidelines for Abstract Submission

- A 200-300-word electronic abstract must be submitted latest by **May 30, 2022**.
- Kindly submit your abstract to **[bobadoyed@getafrica.org](mailto:bobadoyed@getafrica.org)**.
- Specify platform or poster presentation preference. You will be notified of the fate of your submission by **June 15, 2022**. Important Dates to note:
  - Abstract submission due: **May 30, 2022**.
  - Abstract acceptance

### Conference Registration Fees

<b>\$50</b> - Students- Normal delegate	<b>\$200</b> - Non-African Delegates - Normal Registration
<b>\$100</b> - African Delegates - Normal Registration	Delegates with accepted abstracts will have a 25% reduction in their registration fee.

Download Full Document Here  
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# GET WEBINAR SERIES

GET organizes a monthly webinar to learn and connect from global experts in the field of One Health and Biosecurity. The aim of organizing these webinars is to serve as a platform to broaden your skills, as well as the understanding of your field of interest relating to One Health & biosecurity.

We organized three (4) other editions of the webinar series in March, April, May, and June 2022, themed “Maximizing the Global mRNA Technology Transfer Hub to Enhance Vaccine Production in Africa”, “Harnessing Genomics Technologies for Improved Healthcare in Africa”, “When Biosecurity is the Mission, Bioeconomy becomes the Strategy” and “Monkeypox: Understanding Epidemiology Preparedness and Strategic Response”.

Over 900 participants attended the webinars from different continents.

To Join our experts for more engaging and enlightening sessions, subscribe to GET webinar series by registering via >> <https://bit.ly/GETWebinarMay>

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## GET WEBINAR SERIES: MARCH EDITION

Topic: Maximizing the Global mRNA Technology Transfer Hub to Enhance Vaccine Production in Africa

Registration Link: <https://bit.ly/GETWebinarMarch>

📅 Wednesday, 23rd March, 2022 📍 ZOOM ⌚ 12:00pm(WAT)

### SPEAKERS

- **Prof. Oyewale Tomori**  
Professor of Virologist & Former Vice Chancellor, Redeemer's University
- **Mr. Patrick Tippoo**  
Executive Director African Vaccine Manufacturing Initiative (AVMI)
- **Ms. Ifeoluwa Alabi**  
Project Officer, GET Consortium (Moderator)



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## GET WEBINAR SERIES: APRIL EDITION

Theme: **Harnessing Genomic Technologies for Improved Healthcare in Africa**

Venue: Zoom

### Speakers:

- **Prof. Yann Joly**  
Research Director, Centre for Genomics and Policy (CGP), McGill University, Canada.
- **Prof. Mayowa Owolabi**  
Director, Centre for Genomic and Precision Medicine, University of Ibadan, Nigeria.

### Moderator:

- **Dr. Babatunde Taiwo**  
Senior Project Officer, GET Consortium.

📅 Wednesday, April 27, 2022 ⌚ 12:00 pm (WAT)

To register, visit: <https://bit.ly/GETWebinarApril>

## GET WEBINAR SERIES: MAY EDITION

Theme: When Biosecurity is the Mission, Bioeconomy Becomes the Strategy

### Speakers:



**Dr. Nicholas Ozor**  
Executive Director, African Technology Policy Studies Network (ATPS), Nairobi, Kenya



**Mr. Paulus Mungeyi**  
Manager, Biotechnology Division, National Commission on Research, Science and Technology (NCRST), Namibia



**Ms. Ifeoluwa Alabi**  
Project Officer, GET Consortium



Wednesday, May 25, 2022.  
12:00 pm (WAT)

To register, visit: <https://bit.ly/GETWebinarMay>

## GET WEBINAR SERIES: JUNE EDITION

**THEME:** Monkeypox: Understanding Epidemiology, Preparedness and Strategic Response

### SPEAKERS



**Prof. Akin Abayomi**  
Honourable Commissioner for Health, Lagos State

Strengthening Public Health preparedness to tackle emerging infectious diseases.



**Prof. Oyewale Tomori**  
Professor of Virology

Monkeypox Disease: Should we expect another Global Epidemic?



**Dr. Syra Madad**  
Senior Director, System-wide Special Pathogens Program NYC Health + Hospital

Understanding the History and Epidemiology of Monkeypox



**Dr. Ifedayo Adetifa**  
Director General, Nigeria Centre for Disease Control (NCDC)

Understanding preparedness and strategic response to Monkey Pox in Nigeria



**Dr. Saka Babatunde**  
Coordinator, GET Lagos Projects

Moderator



Wednesday, 15th June  
2022. 12pm (WAT)

Registration Link: <https://bit.ly/GETWebinarJune>

**VENUE:**  
ZOOM

# WORLD WILDLIFE DAY 2022 CELEBRATION

World Wildlife Day (WWD) 2022 was celebrated under the theme "Recovering key species for ecosystem restoration" on 3rd March 2022. The celebration sought to draw attention to the conservation status of some of the most critically endangered species of wild fauna and flora, and to drive discussions towards implementing solutions to conserve them. All conversations have been inspired by and sought to inform efforts towards the achievement of UN Sustainable Development Goals.

GET marked WWD day by interviewing Prof. Abosede Omonona, Head of Department Wildlife and Ecotourism Management, University of Ibadan.

Click on this link to watch the full video of the interview>>> <https://youtu.be/gZglXkkoAG4>

## World Wildlife Day

Recovering Key Species for Ecosystem Restoration



# WORLD FOREST DAY 2022 CELEBRATION

In celebration of World Forest Day 2022, Global Emerging Pathogens Treatment Consortium (GET) collaborated with Abayomi Farm Estate (AFE), also known as Emerald Forests to organize a community programme for the people of Ikoyi community and policymakers on the importance of forests to in ensuring sustainable development and mitigation climate change.

The participants were trained by experts on “Snail & Grasscutter rearing” and “Silvicultural Practices in Sustainable Forest Management”. They were also shown a short documentary on the importance of forests.

The Chief Operating Officer of GET Consortium, Dr. Ayodotun Bobadoye highlighted the importance of the forest to humanity, and that about 1.6billion people depend on forests in the world. He expatiated that the forests could survive without humans, but humans cannot survive without the forest.



**WORLD FOREST DAY 2022**  
MARCH 21ST, 2022

*Dr. Dotun Bobadoye, the Chief Operating Officer for GET giving an opening remark*



*Mr. Segilogbon Johnson during his presentations to the participants on snail and grasscutter rearing*



*Participants seated at the programme*



*GET COO - Dr. Bobadoye Ayodotun, AFE farm officerr- Mr. Friday with one of the farmers during planting of trees in remembrance of world forest day 2022*

# GET INVOLVEMENT IN THE THIRD COHORT PORT HEALTH SERVICES MASTER TRAINING PROGRAM

GET was invited to conduct training on Biosecurity and Bio-risk management for Port Health officers by PRO-Health International Africa on the 25th of April 2022 at Dover Hotel, Lagos State, Nigeria.

The Chief Operating Officer of GET, Dr Dotun Bobadoye, facilitated a session on the topic "Understanding Biosecurity for Effective Border Surveillance at the training programme".



*GET COO, Dr Ayoodotun Bobadoye during his presentation at the Port Health Training programme*



*Dr Ayoodotun Bobadoye with some other participants at the Port Health Training programme*

# GET PARTICIPATION IN THE OPEN CONSULTATIONS BEING CONDUCTED BY THE UN1540 COMMITTEE

GET was invited by the United Nations Committee Established Pursuant to Resolution 1540 (2004) as the only non-governmental organization from Africa to participate in the Open Consultations on the Comprehensive Review of the implementation of the resolution being conducted by the 1540 Committee.

Dr Dotun Bobadoye, GET COO, represented GET and presented physically at the meeting held at the United Nations Headquarters-New York, from May 31 to June 2, 2022.



*GET COO-Dr Bobadoye Ayodotun representing GET at the meeting*

# NIGHT WITH GET

The Global Emerging Pathogens Treatment Consortium (GET) organized a program tagged 'Night with GET' at Abora & Mazonia Suite, Eko Hotels & Suites, Lagos, on June 22, 2022. The theme for the event is 'Partnership for a Bio secured Africa'.

The event was organized by GET to create awareness of biosecurity threats in Africa, acquaint top policymakers, private sector players and philanthropic organizations of the activities of GET in Africa and to physically launch the GET journal of Biosecurity and One Health (The first of its kind in the world).

Prof Akin Abayomi-Honorable commissioner for health in Lagos State, Dr Bobadoye Ayodotun-GET COO, and Dr Olamide Okulaja-Technical Assistant at Lagos State ministry of health gave presentations at the event which attracted about 100 participants from different sectors.



# PHOTOFEASTS FROM THE 'NIGHT WITH GET' EVENT



*Dr Bobadoye Ayodotun(GET Consortium's Chief Operating Officer) giving his presentation at Night with GET*



*Prof. Akin Abayomi(The Honourable Commissioner for Health) during his presentation at Night with GET*



*Dr Olamide Okulaja(The Technical Assistant at Lagos State Ministry of Health) giving a presentation at Night with GET*



*Dr Sina Fagbenro-Bryon (CEO, Mothergold Consulting), the event MC*



*Prof Akin Abayomi-GET Journal Editor-in-Chief launching GET Journal of Biosecurity and One Health*



*Middle: Olivette Smith from the U.S Consulate seated at the event hall with other participants*



*Participants seated at the event hall*



*Participants seated at the event hall*



*Participants seated at the event hall*



*Aerial view of participants*



*GET COO with participants at the event*



*L-R: Dr Bamidele Muti (Director, Lagos State Biobank) with Dr Saka Babatunde (GET-LAGOS project coordinator)*



*L-R: Dr Abasi Ene-Obong(CEO 54GENE) with Dr. Olamide Okulaja*



*Participants taking a photograph at the event photo area*



*Participants walking to the event hall*



*Participants during registration*



*Cutting of Cake by GET Staff*



*Participants at the dinner hall*

# SCHOLARSHIPS AND GRANTS OPPORTUNITIES

Absa GENa Global Markets 2023 Programme for young South African graduates.

<https://www.opportunitiesforafricans.com/absa-gena-global-markets-2023/>

Application Deadline: 31st July 2022

Germany Master Scholarships for Public Policy and Good Governance 2022.

<https://www.advance-africa.com/Master-Scholarships-for-Public-Policy-and-Good-Governance.html>

Application Deadline: 31st July 2022

IEG Fellowships for Doctoral Study in Germany

<https://www.advance-africa.com/ieg-fellowships-for-doctoral-study-in-germany.html>

Application Deadline: 15th August 2022

Mauritius-Africa Scholarships (Fully Funded Government of Mauritius Scholarships for Undergraduate and Postgraduate Students in Africa)

<https://www.advance-africa.com/Mauritius-Africa-Scholarships.html>

Application Deadline: 26th August 2022

Zambia Society Trust Scholarships for Zambians 2022

<https://www.advance-africa.com/Zambia-Society-Trust-Scholarships-in-Zambia.html>

Application Deadline: 30th August 2022

Fully Funded Heinrich Boll Foundation Scholarships 2022/2023 for undergraduate, graduate & PhD study in Germany.

<https://www.advance-africa.com/Heinrich-Boll-Foundation-Scholarships.html>

Application Deadline: 1st September 2022

The France – South Africa Scholarship Programme 2022/2023 for young South Africans to study in France (Fully Funded).

<https://www.opportunitiesforafricans.com/the-francesouth-africa-scholarship-programme-2022-2023/>

Application Deadline: 16th October 2022

The United Nations Academic Impact/MCN Millennium Fellowship 2022 for Emerging Leaders Worldwide

<https://www.opportunitiesforafricans.com/the-united-nations-academic-impact-mcn-millennium-fellowship-2022/>

Application Deadline: Ongoing

The United Nations Academic Impact/MCN Millennium Fellowship 2022 for Emerging Leaders Worldwide

<https://www.opportunitiesforafricans.com/the-united-nations-academic-impact-mcn-millennium-fellowship-2022/>

Application Deadline: Ongoing

Google Kick Start Global Online Coding Competition 2022 for Coders Worldwide

<https://www.opportunitiesforafricans.com/google-kick-start-global-online-coding-competition-2022/>

Application Deadline: Ongoing

IBM Research Internship Program 2022 for Young Africans

<https://www.opportunitiesforafricans.com/ibm-research-internship-program-2022/>

Application Deadline: Unspecified

Fully Funded Humber Scholarships in Canada for International Students 2022/2023

<https://www.advance-africa.com/Humber-Scholarships-in-Canada-for-International-Students.html>

Applications: Accepted throughout the year

## UPCOMING INTERNATIONAL CONFERENCES

5th World Summit on Renewable Energy and Resources, July 13-14, 2022 - Vienna, Austria.

10th World Congress and Expo on Green Energy, July 18-19, 2022 - Amsterdam, Netherlands.

15th International Conference on Plant Genomics, August 22-23, 2022 - Singapore.

10th Global Summit and Expo on Pollution Control, August 23-24 - Paris, France.

11th International Conference on Climate Change and Environmental Science, August 26-27 - Vancouver, Canada.

For more, visit: <https://www.conferenceseries.com/environmental-sciences-meetings>



**GET**

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Treatment Consortium

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