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SCIENCE

SAYANSI

Telling the African science story

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**Why women carry
the burden of little-
known pulmonary
embolism disease**

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Manyara is
drying up**

**Undiagnosed cases
derail the fight against
tuberculosis**

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shine in global
fetes**

The Media for Environment, Science, Health and Agriculture (MESHA) was founded in November 2005 in Nairobi, Kenya and is an organisation that provides support to science journalists covering health, development, technology, agriculture and the environment. It does so by offering training workshops, consultancies and encouraging networking through meetings and conferences among journalists, scientists and other stakeholders in Kenya.

The association emphasises on rural journalism and communication.

The idea for the formation of this association sprang up from the fact that there were many organisations and communicators in the fields of agriculture, environment, health and development. However, few organisations in the region bring journalists covering these issues together, for better reporting in the media.

MESHA believes that in a democratic society where science must be answerable to the public, there is need to find new and innovative ways of effective mass communication about the benefits of science, and other areas of concern to the general public.

MESHA aims to ensure continuity, sustainability and consistent coverage of science and development issues as they arise.

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Cover photo: Ms Sarah Natoolo (Uganda) and Pendo Moshia (Tanzania) captured during the Third Kenya Science Journalists Conference, November 2020. Experts say that women suffer most from an obscure disease known as pulmonary embolism.



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Let's implement projects aimed at reducing climate change effects in ASALs

Extrême droughts, floods and climate-related epidemics have become a common phenomenon in Kenya's Arid and Semi-Arid Lands (ASALs) due to climate change. This has had extreme impacts on the ASALs population, including increased poverty, food insecurity and malnutrition.

According to the World Health Organization's (WHO) National Food and Nutrition Security Policy (NFNSP) 2011, drought affects about 10 million people in Kenya, nearly 30 per cent of Kenya's children are classified as undernourished, and micro-nutrients deficiencies are widespread.

Due to global warming, a 2013 World Bank report projects savannas to decrease to approximately one-seventh of total current land area by 2030, thus reducing the availability of forage for grazing animals, which is the mainstay for the residents of ASALs. As a result, and according to a 2017 report by the International Livestock Research Institute (ILRI), the inhabitants Kenya's ASALs are among the poorest and most vulnerable populations on the planet.

This has not gone unnoticed. The Kenyan government, non-governmental organizations (NGOs) and international aid agencies have over the past three decades channelled significant resources towards helping ASAL communities cope with the continuous string of catastrophes they face.

These range from the 1991–96 World Bank funded Emergency Drought Recovery Project (EDRP), which covered drought recovery efforts in Mandera, Marsabit, Tana River, Turkana and Wajir districts, to the creation of a ministry in charge of ASALs by President Mwai Kibaki's government in 2013. Today, ASALs is a department in the Ministry of Devolution and the ASALs. By 2018, the World Bank had invested over US\$ 2 billion (about Ksh219 billion) in the North and North Eastern region of Kenya.

The latest government initiative is the \$34 million Towards Ending Drought Emergencies (TWEENDE) project launched by National Treasury Cabinet Secretary Ukur Yatani on February 10, 2021. The five-year project being funded by the Green Climate Fund (GCF), the National Treasury, International Union for Conservation of Nature (IUCN) and other implementing partners aims to help reduce the cost of climate change induced drought on the national economy.

The TWEENDE project seeks to contribute to Kenya's improved adaptation to climate change by working with the stakeholders of ASALs of Kenya. It aims to address critical constraints and barriers to drought adaptation in two target landscapes encompassing 11 counties of Garissa, Tana River, Isiolo, Marsabit, Samburu, Kajiado, Kitui, Makueni, Tharaka-Nithi, Meru and Taita Taveta.

This is a huge project, given the large amount of money and players involved. If implemented, the project has the potential to significantly reduce the cost of perennial droughts in ASAL regions and indeed save the government revenue that can be diverted to other life changing projects such as funding irrigation agriculture in the arid and semi-arid areas.

Kenya's government, through the National Drought Management Authority (NDMA) and the Ministry of Agriculture, Livestock, Fisheries and Irrigation, must therefore step up and implement this TWEENDE project and come up with even more for future sustainable development. Development partners and the media must also play their part in ensuring this is done to the letter.

How undiagnosed cases are derailing the fight against TB

By **Angeline Anyango**
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Joseph Opondo was running a thriving business in Seme, Kisumu County, when he was diagnosed of tuberculosis (TB) two years ago.

Opondo's village is located nearly 450 km to the west of Nairobi and nearly 50km from the main region's main referral hospital called Jaramogi Oginga Odinga Referral Hospital.

Kisumu county case notification for TB established that there were 2877 cases (2018), 2202 cases (2019) and another 2002 (2020). What also stood out like a sore thumb is the fact that Kisumu central sub-county, led with a whopping 1240 (2018) compared to its neighbours.

According to Stop TB Kenya Chief National Coordinator Ms Evaline Kibuchi, the data from Kisumu is a clear manifestation that a large number of people have not been seeking medical attention in hospitals. She adds that this is a cause for alarm.

She says such programmes should be encouraged and granted financial support by the county government.

In Opondo's case, he did not know that what started as fatigue, shortness of breath and fever would turn out to be tuberculosis following a series of medical tests.



**Ms Evaline Kibuchi,
Stop TB Kenya Chief National
Coordinator.**

"I decided to visit our village chemist to purchase common cold drugs, hoping to get well soon," he says.

One week later the health of the 59-year-old businessman kept deteriorating, forcing him to seek medical attention at Kisumu County Hospital which is about 50km away.

"At the health facility, I was screened for pneumonia, Chronic obstructive pulmonary disease (COPD) and malaria, and when my results came out, I was informed that I had tuberculosis," he says.

Opondo says it took him time to believe the test results as his biggest fear was that he may have also contracted HIV/AIDS as well.

"Our society has always linked tuberculosis to HIV/AIDS and with my limited knowledge about the disease I believed the same," he says.

He however tested negative for HIV and was placed on a six-month anti-TB drugs with close monitoring and frequent checkups.

"The six-months proved to be the most trying period for me and my family," says the father of four.

"Apart from my medication, which required more attention, my family suffered stigma as most people in the village avoided us due to fear of contracting the disease."

After taking the drugs consistently and obediently for four months, he was declared free of tuberculosis.

Mr. Opondo is among hundreds of TB patients who opt for over-the-counter drugs and fail to visit health facilities, despite experiencing the symptoms of the disease.

Deputy Director of Public Health in the Ministry of Health, Dr. Samuel Miso, says according to the latest prevalence report, in every 10,000 people, 426 suffer from TB but they have not been diagnosed.

"We are missing these patients who are out there without diagnosis, thus contributing to unrecorded cases," says Dr. Miso.

As Kenya commemorated the World TB Day on March 24, most health experts are still worried about the growing number of unrecorded cases, with more attention now accorded to the COVID-19 pandemic.

TB experts say the country is still lagging behind in the fight towards eradication of the disease, even as Stop TB Kenya, an affiliate of Stop TB Partnership, aim at recording zero TB deaths by 2030.

Dr. Misoï says the only way the country can account for the missing numbers is through sensitization of the masses..

“Kenya is among the top 30 most burdened TB countries in Africa - a reminder that we are not doing well as a country. A lot needs to be done.”

According to a World Health Organization (WHO) report, 10 million people from around the world fell ill with TB in 2020 but only 7.1 million were reported in health facilities.

The remaining 2.9 million cases were neither diagnosed nor reported while another 1.4 million died of the disease.

The WHO report further says that 40 per cent of TB cases in the world are never diagnosed nor accounted for.

Pharmacies, chemists and herbalists play a major role in derailing the measures put in place to control the disease by contributing to the undiagnosed cases.

In Kenya, going by the Patients Pathways Analysis report of 2017, 42 per-cent of TB patients seek care in pharmacies and informal health professionals, including herbalists.

Ms Kibuchi says a number of patients shy away from visiting health centres, which contributes to the number of unrecorded cases.



**Dr. Samuel Misoï,
Deputy Director of Public Health in
the Ministry of Health.**

She says it is time the country rolled out a programme to support referral of patients to health facilities whenever they are identified at non-conventional health providers to account for the missing cases.

“Medical facilities should engage the non-conventional health providers in order to account for the 40 per-cent tuberculosis cases which end up unreported by the National Tuberculosis Leprosy and Lung Disease Program (NTLDP),” says Kibuchi.

She says most patients opt for the non-conventional health providers because of high diagnosis cost and poor client relations, especially in public hospitals.

“We need to have adequate health workers, including those in charge of cancelling the patients, to help curb the issue of stigma,” she says.

Ms Kibuchi adds that the cost of TB diagnosis should also be made affordable by raising the suspicion index for the disease.

“By raising the suspicion index for TB, a patient only gets screened for the disease, which makes the diagnosis cheaper,” she says.

In most cases, whenever patients visit a hospital for diagnosis, they end up being tested for pneumonia and X- rays conducted, which makes the diagnosis more expensive.

In pharmacies and chemists, all a patient does is tell the person in charge what they are feeling and get a prescription.

Ms Kibuchi says it is high time the country rolled out a sensitisation programme for pharmacists so that they make referrals to hospitals whenever a TB patient visits to buy drugs.

“We had a programme in Garissa County dubbed Private Public Meets (PPM) where pharmacists were sensitised to make referrals whenever a patient who had symptoms similar to those of TB visited to buy drugs,” she says.

Through the programme, the county was able to refer a large number TB patients, which would not have been recorded.

In Kisumu County, a similar programme, Maliza TB Project, was rolled out by a non-governmental organisation, OGRA Foundation, in March 2020 and aimed at finding missing TB patients with the help of private providers and community volunteers.

Through the project, the organisation traced a relatively high number of patients who would have gone unreported.

Photo Credit | Angeline Anyango



A medic helps a resident onto a platform of the digital x-ray machine during a Tuberculosis (TB) screening drive at Magadi Catholic church in Manyatta slums in Kisumu on March 17, 2021. The program dubbed 'Komesha TB' run by the Kenya Conference of Catholic Bishops (KCCB) in collaboration with National TB Program targets 2000 residents in five informal settlements in Kisumu County ahead of world TB day.

"Our aim was to screen 60,000 patients and in turn get nearly 488 cases by the end of our survey. This has not been possible due to the COVID-19 pandemic as most people ceased from visiting the facilities," she says.

Within nine months, the organisation screened 45,003 patients who visited various pharmacies, chemists and herbalists, diagnosing 250 patients with TB.

The NGO linked 244 patients for treatment, while the remaining six did not make it during treatment.

Of the patients, 162 were male while 88 were female.

Ms Odongo says they were surprised after finding nine TB patients through referrals from herbalists.

"This confirms just how much we need to conduct public education and sensitisation on the disease in rural setups to help in the disease control," she says.

"We work closely with Jaramogi Oginga Odinga Teaching and Referral Hospital (JOOTRH), Kisumu County Hospital and Muhoroni Sub-county Hospital," she says.

According to Ms Kibuchi, statistics from Kisumu only justified that more people have not been seeking medical attention in hospitals and this should be a cause for alarm.

She says such programmes should be encouraged and granted financial support by the county government.

The NGO carried out a survey in three sub-counties; Muhoroni, Kisumu Central and Kisumu East within one year between March 2020 and March 2021.

The organization aims at improving health by combating HIV/AIDs, Tuberculosis and Malaria through pursuing socio-economic and cultural development approaches.

Currently Ogra is working on a project aimed at increasing TB detection in Kisumu County by 32 per-cent through the engagement of formal and informal private health care providers including pharmacies, clinics, herbalists and traditional birth attendants for TB screening.

According to Maliza TB Project Manager Millicent Odongo, the organisation was able to realise the numbers through partnerships with private facilities in the informal settlements.

"Most people prefer visiting pharmacies or chemists in search of antibiotics whenever they feel unwell, thus making such places favourable spots," says Ms Odongo.

She says they stationed their staff in 100 stations, including pharmacies, chemists and herbalists, who were in charge of identifying patients likely to be suffering from TB.

Groundbreaking monthly HIV treatment shots out of reach for African countries

By Joyce Chimbi | j.chimbi@gmail.com

The United States' Food and Drug Administration (FDA) has made a groundbreaking approval of two monthly shots for the treatment of HIV/Aids among adults, instead of a pill taken daily.

This complete injectable formulation for the treatment of HIV/Aids is the first FDA-approved injectable for HIV-infected adults to be administered only once a month.

The regimen's safety and efficacy, were ascertained and approved through two randomized, open-label, controlled clinical trials. Overall, the clinical trials involved 1,182 HIV infected participants.

As per the FDA, an agency within the U.S Department of Health and Human Services, patients in the two randomized open-label "continued to show virologic suppression at the conclusion of each study, and no clinically relevant change from baseline in CD4+cell counts was observed."

An open-label trial also known as open trial is one type of clinical trial where information is not withheld from those participating in the trial. This therefore means that both the researchers and trial participants have complete information on treatment or intervention is being administered.

This scientific breakthrough is in the form of a treatment regime called Cabenuva, a combination of two drugs, cabotegravir and rilpivirine.

Photo Credit | businesswire



Cabenuva Vials and Packaging Closed.

All a patient needs do to is to present themselves to their doctor on a monthly basis, where each of the two drugs are injected into the patient's body at the very same appointment.

Cabotegravir and rilpivirine are packaged together and given to a HIV infected adults separate shots, once a month. Even more importantly, testing is underway to determine whether the injections could be administered every two months.

In the same breadth, trials are underway to test cabotegravir for its safety and efficacy in keeping HIV uninfected people from contracting HIV from infected sex partner.

Two recent studies have found that a cabotegravir shot every two months were much more effective than the current daily Truvada pills taken by HIV uninfected person in sexual contact with those who are infected.

In more than three decades of ARV therapy, more than 25 drugs have been developed, each with its own challenges and breakthroughs. Within the same period, the HIV virus has also learnt to change or to mutate and some of these drugs stopped working, especially those that are a single drug treatment regime.

Cabenuva is a two drug treatment. Of all the 25 drugs developed over the years, none has been as easy to administer as Cabenuva.

The once-a-month HIV therapy replaces a daily oral HIV treatment regimen. The highly acclaimed monthly injection comes with requirements.

Cabenuva targets patients who are not only on a stable antiretroviral (ARV) regime but whose viral load is suppressed. A viral load is the amount of HIV in a person's body.

A significantly reduced amount of the virus in the body further reduces the progression of the virus keeping the HIV infected person healthy for many years.

Targeted patients must also have no history of HIV treatment failure and have no known or suspected resistance to the two drugs, cabotegravir and rilpivirine.

Cabevuna's clinical trials showed that the monthly injections are as effective as the current daily oral pill regimen.

This far, the most common side effects among those who participated in the trials include fever, fatigue, headache, musculoskeletal pain, nausea, sleep disorder, dizziness and rash.

Overall, nine of 10 clinical trial participants found the monthly injections most preferable and satisfactory compared to a daily oral HIV treatment regime. The transformative power of Cabevuna lies in a reduced dosing days, from 365 days to just 12 days.

This way, HIV patients can remain on track with their medication through a treatment mode that allows for a higher level of privacy and confidentiality that is often not possible to maintain through a daily oral treatment regimen.

Cabevuna comes with a long list of benefits, not only does it significantly reduce the stigma attached to the daily treatment regime, it similarly lightens the burden of keeping up with a daily treatment regime. HIV infected adults with mental health issues will significantly benefit from a monthly treatment.

But even for the more developed countries, this silver bullet does not come cheap, according to ViiV healthcare—a global leader focused on the advancement in research and development of new medicines for people living with HIV, “the shot combo would cost \$5,940 for an initial, higher dose and \$3,960 per month afterward.”

According to ViiV, the figures are well within the standard range of what a one-a-day pill combination costs at the moment.

As per Avert “the vast majority of people living with HIV are located in low-and middle-income countries, with an estimated 68 percent living in sub-Saharan Africa. Among this group 20.6 million are living in East and Southern Africa which saw 800,000 new HIV infections in 2018.”

Based on the heavy burden of the pandemic on the region, it remains to be seen whether considerations will be made to make the monthly injections available, accessible and affordable in African countries.

Cabevuna's clinical trials showed that the monthly injections are as effective as the current daily oral pill regimen.

ANNOUNCEMENT



Calling on new individual and corporate members

Do you want to join the Media for Environment, Science, Health and Agriculture (MESHA) as a member, corporate or individual?

Please visit our website www.meshascience.org and fill in the application form and submit it online as per the instructions therein.

We also invite members and non-members seeking internship and mentorship to send their applications to info@meshascience.org

Plastic teeth a fallacy, says doctor

By **Angeline Anyango** | sciencewriter2021@gmail.com

The palpable excitement when Elizabeth Atieno found out she was pregnant with her first child was immense, but mixed with confusion of not knowing what to expect as a first-time mother.

With a stable income stream together with her husband, the 28-year-old felt she was ready for her parenting duties that can sometimes be financially daunting.

She dutifully attended all her antenatal care clinic sessions, stayed on a healthy diet while avoiding particular foods that could be detrimental to the pregnancy.

In November 2019, Atieno welcomed her bundle of joy much to the delight of everyone. A couple of tests later, they were discharged from the maternity.

During the first month, it was all well and the baby spent time sleeping, offering the first-time mother a moment to adapt and rest as well.

Trouble however began in the second month. The baby started crying a lot, his temperatures were high and she could not breastfeed normally.

"During the day he would spend much of his time crying. The cries however were too much at night, we could hardly sleep," Atieno says.

She was advised to buy drugs for stomach upset, thinking that maybe her baby was experiencing problems due to the change of environment and therefore needed medication.

The cries did not stop. At this point, she decided to take her child to the nearest hospital in her home area in Awasi, Kisumu County, in western Kenya.



Dr. Immaculate Opondo

However, she did not reach the hospital. On her way, she met a friend who after 'inspecting' the newborn, referred Atieno to a herbalist in the area, saying the baby had grown 'plastic' teeth.

She was scared, this was the first time she was hearing about a two-month-old baby growing teeth. How was it possible and why did this have to happen to her daughter?

Not even her friends had told her this during pregnancy. From her primary school knowledge, she knew a baby's milk teeth only start developing when he or she is six months old and those should be front milk teeth.

Her daughter however had teeth growing on the sides of his gums, which was abnormal.

"She also advised me that the teeth had to be removed or I would lose the baby. At this point, I was more confused. How was a two-week old going to survive the pain of teeth removal?" she posed.

Another matter of concern was that the teeth were to be removed by a traditional herbalist, reason being going to the hospital would slow the healing process.

She had also heard of cases where a child ended up bleeding to death following the removal of the teeth.

Atieno however made up her mind to have the plastic teeth removed by a traditional doctor she had been referred to the next morning.

On arrival, she met several other mothers lined up for the services, which were offered between 6am and 8am.

The process was painful and at some point, she had to step out, the screams got louder as the 70-year-old traditional medicine man removed three teeth from the jaws of the baby using crude instruments.

"He inserted the tool into my daughter's mouth to remove the teeth. He then gave me the teeth, which I carried with me back home," Atieno says.

To stop the bleeding, the herbalist applied some herbs on the baby's injured jaws before handing her over to her mother.

The bleeding, however, did not stop. In fact, it got worse and the one-month-old baby had to be rushed to Jaramogi Oginga Odinga Teaching and Referral Hospital (JOOTRH) in Kisumu for emergency care.

"By the time the baby arrived at the hospital, she had lost too much blood and had also contracted an infection," says Dr. Immaculate Opondo, a Paediatric Dentist at the hospital.

Sadly, the first-time mother lost her child.

According to Dr. Opondo, plastic teeth are a fallacy. She explains that what people think of as plastic teeth are in fact normal gum pads with protrusions taking the shape of underlying developing teeth.

"Normally there is no cause for alarm. However, in some instances milk teeth do erupt precociously. Often, they are soft, because of inadequate mineralisation, hence the description, plastic teeth," says Dr. Opondo.

The doctor says that 99 per cent of children brought to the hospital for growing 'plastic' teeth have no problem at all; instead, the child maybe ailing from a different infection.

"People tend to think that the so-called plastic teeth give the child fever, the child does not gain weight, eats poorly, cries a lot and if the teeth are not removed, the child might die," she says.

Some people also believe that these developing teeth are maggots, which if not removed cause fever.

Others think that children born with the 'plastic' teeth may bring a bad omen, hence they are always looking out for such teeth to remove them.

In most cases, the children are taken to traditional herbalists or experts who remove the teeth with crude instruments such as sharpened nails or bicycle spokes that may be rusted and dirty. And without anaesthesia, they dig into the jaws of the infant to remove the teeth.

The process, also known as infant oral mutilation, can result in excessive bleeding that can lead to death. The use of unsterilised objects could also cause infections such as septicaemia, a bloodstream infection that results from bacterial infection in the body.

Mutilation of the jaws can also interfere with the growth of the jaws and lead to its collapse, causing crowding of the permanent.

Plastic teeth is a fallacy as they are normal gum pads with protrusions taking the shape of the teeth

"If a baby survives the mutilation, they end up with complications such as missing canines and other primary and permanent teeth," says Dr. Opondo.

There are parents who visit hospitals to make inquiries about the plastic teeth. Most parents are however advised to visit herbalists.

"We do not know how many are dying out there, we can only tell those who die after they are brought to the hospital. There could be a lot more children who are dying without our knowledge," she said.

The doctor said in December last year, a child died in JOOTRH after losing a lot of blood after her jaws were mutilated on both sides.

The 'plastic teeth' are never a serious matter, sometimes the child may develop symptoms such as diarrhoea, fever and high temperatures, which maybe as a result of the baby eating or playing with objects contaminated with bacteria, and not the jaws.

Dr. Opondo however clarifies that there are rare cases of children born with teeth, also referred to as natal teeth, or prenatal teeth that grow a few days or months after a baby is born.

"In this case, a baby may be born with or grow real front tooth that can be clearly seen on his or her gums unlike the plastic teeth, which is always a reflection," she says.

In such cases, a dentist, working in a hospital environment, should be called to examine the teeth in case of any danger.

The teeth may result in difficulties during feeding or end up hurting the mother. They are also usually loose and may accidentally fall and be swallowed by the infant, which may be dangerous. In addition, they may cause bruises to the baby's tongue, leading to ulcers or the rigour disease.

Dr. Opondo advises that in case of such scenarios, it is okay to have the tooth removed in a hospital, professionally and with a sterile instrument.

MESHA members shine at global competitions



Elizabeth Merab



Geoffrey Kamadi

MESHA senior member and Nation Media Group's Elizabeth Merab has won this year's prestigious Global Universal Health Coverage (UHC) for excellence in health journalism.

Merab was awarded at the closing ceremony of the Africa Health Agenda International Conference (AHAIC) alongside World Health Organisation (WHO) director-general, Dr. Tedros Adhanom Ghebreyesus who received a Global Health Leadership award and Dr. Matshidiso Moeti, Regional Director of the WHO-Africa, and Dr. John Nkengasong, Director of Africa-CDC, who were jointly awarded the Africa Health Leadership on COVID-19 Award.

"Your investigative undertakings on reporting major health issues have led to significant changes in health policies in Kenya and that is a true example of journalism with an impact, your tireless effort to ensure access to the right information, and your consistent call to governments to prioritize health issues is a stellar example of journalism with a positive impact," AHAIC 2021 coordinating committee and Amref told the senior journalist.

To the multimedia health and science reporter, this moment means that the efforts African journalists put in communicating health is being recognized for the first time in a big way.

"I am extremely honored to be receiving such an important global award. I am earnestly grateful for the recognition I have received for my work because I am very sure that every other nominee considered for this award was as capable if not more of winning," the senior health journalist said while accepting the award given by Amref Health Africa.

She has been covering science stories with a keen interest to highlight stories that touch on medical science and health research for the last seven years.

At the height of coronavirus (COVID-19), Merab has been breaking down scientific jargon about the virus and communicating it in a manner that has influenced and even changed behaviours and attitudes of people.

Photo Credit: WHO



Dr. Matshidiso Moeti.

"Indeed, the pandemic has shown us how crucial it is to equip journalists with adequate training and contextual knowledge of reporting pandemics," she said.

Last year, Leopold Obi, another MESHSA member who specializes on agriculture and environment and who also works at the Nation Media Group in Kenya, emerged the winner under print and online category and the overall winner of the 2020 Open Forum on Agricultural biotechnology in Africa (OFAB) Africa Media Awards, at an event held virtually in Nairobi, Kenya.

Obi was one of the 14 finalists from across the seven OFAB countries in Africa namely Kenya, Tanzania, Ethiopia, Ghana, Uganda, Nigeria, and Burkina Faso. He was distinguished for his story titled: "Kenya closer to giving long awaited GMO Cotton a green light", published on the Business Daily. The story aimed at creating awareness to the public on the progress Kenya has made towards adopting Bt Cotton, taking a critical look on what the crop is all about and its benefits to farmers and Kenya's textile industry.

Source: www.wikipedia.org



Dr. John Nkengasong.

To show the mettle MESHSA members are made of, a freelancer, Geoffrey Kamadi won the coveted and internationally recognized AAAS Science Journalism Awards which was launched in 1945.

The Awards honour distinguished and excellent reporting on science by professional journalists.

In the opening of his piece, Kamadi described in some detail the flora and fauna of Kenya's Tana River Basin, a biodiversity hotspot with a dozen protected areas.

"But looks might be deceiving," he noted.

"As a matter of fact, all indications suggest that this almost fantastic, even story-book portrayal of nature in its largely intact and unperturbed splendor, belies an ecological tragedy that is gradually unfolding."

Kamadi went on to explain that five dams on the Tana River have reduced the outflow of fresh water to the Indian Ocean, allowing salty sea water to flow increasingly farther up the river channel during high tide.



Dr. Tedros Adhanom Ghebreyesus.

For local farmers, the impacts include yellowing banana plants, reduced rice production, cattle unable to graze on fields overgrown with salt-loving elephant grass. Native wildlife also is affected. Birds accustomed to eating freshwater fish have developed a taste for salted fish left by locals to dry in the sun.

A planned High Grand Falls dam and other infrastructure projects will only make matters worse, Kamadi reports. Meanwhile scientists are trying to improve data collection on the river basin as a crucial step toward better understanding of the fragile ecosystem. Freelance science journalist Alexandra Witze called Kamadi's story "a deeply reported, sprawling and evocative look at a threatened river ecosystem." Kamadi said the award "means a great deal to me, as it will only encourage me to continue writing about science."

Future of journalism in Africa is digital, says media guru



Dr. Charles Wendo

By Tebby Otieno |
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The mass media must take a leap of faith in digital media if they want to retain and grow their audiences, a veteran science journalist has advised.

Dr. Charles Wendo said despite the fact that news media still create content, the digital space gives audiences access to more diverse sources of information.

"Journalism and the mass media are slowly losing the battle for attention and trust as many people are no longer interested in damning news," he said.

Addressing members of the Media for Environment, Science, Health and Agriculture (MESH@) during the association's 15th anniversary celebration, Dr. Wendo said unlike the present situation where people still relied on the mass media for information, audiences would soon have access to more diverse sources of information than are currently available.

"People turn off the news because it feels irrelevant and depressing and does not help them live their lives. They often turn to entertainment or social media instead," added Dr. Wendo.

Dr. Wendo acknowledged the tough business environment media is facing, which has led to cost-cutting. Media houses in Africa have had to lay off some of their staff or reduce their salaries due to the effects of COVID-19 reported in the continent early last year.

"Amid all challenges, the media are becoming more innovative to try and remain competitive and relevant," he said.

A senior science journalist, Esther Nakkazi, based in Uganda, noted that associations such as MESH@ had contributed hugely towards the growth of science journalism in Africa.

She vouched for senior journalists to mentor their young colleagues to ensure the sector grows by leaps and bounds.

"There is a growing pool of young journalists who are eager to report science, they are very enthusiastic and energetic. There are a lot of training opportunities, which also didn't happen before a certain era, and many other players in the field," said Nakkazi, adding that the increase in the number of science journalists and stories in Africa is an indication that many young people are joining the industry.

"These young journalists are very versatile and can help in digital content creation," she added.

MESH@ Secretary, Daniel Aghan appealed to senior science journalists to volunteer to mentor their younger colleagues.

He told young journalists to align themselves with these enthusiastic and experienced journalists in the continent for better career growth in reporting science.

"I think journalists of today also need to think of growing at their own levels. That is when we can think of their growth at international or national levels," said Aghan, citing examples of some experienced science journalists from Kenya, Uganda, Senegal and Nigeria.

Aghan moderated the online session on February 15, 2021 dubbed "Preparing for the future of science journalism in Africa".

He lauded the efforts of science journalists who came before his lot and mentored them for free.

MESH@ has a mentorship programme where young journalists are paired with senior science writers within the continent. A senior science journalist, Veronica Mwaba, based in Zambia thanked MESH@ for the programme.

"Thank you MESH@ because I am one of the products of your mentorship programme for African science journalists and communicators. I was mentored for free," she said with a lot of excitement.

MESH@ is a Kenya-based and registered association of science journalists and communicators with a large footprint in Africa. Her membership includes journalists, scientists and communicators from all over Africa. Formed in February 2006, MESH@'s vision is to create a society that is dependent on science and technology, where challenges are met with available solutions aided by science.

COVID-19 impact 'vastly underestimated' in African countries

Zambian data challenges the assumption that African populations may have been spared from COVID-19.

By Linda Geddes

The impact of COVID-19 in Africa may have been vastly underestimated, new data suggests. When Zambian researchers collected nose and throat swabs from corpses in the capital city of Lusaka's morgue, they discovered that COVID-related deaths were surprisingly common – accounting for the majority of non-hospital deaths between June and September 2020.

"If our data are generalizable, COVID-19's impact across Africa has been substantially underestimated," writes Lawrence Mwananyanda of Boston University School of Public Health and Right to Care, Zambia, who led the research with Christopher Gill, also at Boston University.

Limited Testing

Limited availability of tests has made it difficult to assess the impact of COVID-19 in African countries. There is no obvious reason why the disease wouldn't spread as efficiently in densely populated African cities as it has in New York or Mumbai, and yet data had suggested the continent may account for only a small proportion of cases worldwide. For instance, in September, more than 1.2 million symptomatic cases and 30,000 deaths had been reported,



A volunteer receives an injection during the first COVID-19 clinical trial at a hospital in Soweto, South Africa.

representing just 5% of global infections. Possible explanations include existing immunity conferred by exposure to related coronaviruses, or younger populations, which might translate into fewer cases of severe illness or deaths. Alternatively, cases may be missed because there's less testing.

Morgue data

To investigate the situation in Zambia, Mwananyanda and colleagues turned to the morgue at University Teaching Hospital in Lusaka, which registers at least 80% of deaths in the city, including deaths in the community.

Between June and September, they collected nose and throat swabs from 364 corpses, and detected SARS-CoV-2 in 70 (19%) of them.

Seventy percent of COVID-positive corpses were male, and most deaths were among individuals aged 20-59 years (the median age at death was 48 years), which is younger than in the US, the EU and China. Most of the deceased had symptoms consistent with COVID-19 before they died, and in nearly all cases they had one or more potential underlying risk factor – the most common being tuberculosis, followed by high blood pressure, HIV/AIDS, alcohol use and diabetes.

Photo Credit: Siphwe Sibeko / Reuters



Students from Government Senior College in Lagos, Nigeria attend lectures inside a classroom while wearing facemasks to protect them against coronavirus.

Have you read?

Could coronavirus persist in 'safe havens' of the body?

Lasting immunity: Why COVID-19 vaccines may succeed where natural infections fail.

When it comes to COVID-19 vaccines how can governments back a winner? Also, although less common, Mwananyanda and colleagues identified seven children who died with COVID-19, accounting for 10% of the total COVID-related deaths – far higher than in other countries.

For instance, the American Academy of Pediatrics estimates that children account for less than 0.23% of all COVID-19 deaths in the US. This could suggest that children in Africa are more vulnerable, although the study has not yet been peer-reviewed, and further data are needed to confirm this.

Community deaths

Most of the deaths occurred in the community, and none of these people had been tested for COVID-19 while they were still alive. "This is undoubtedly a significant factor in underestimating the impact of CV19 [COVID-19] in Lusaka," Mwananyanda and colleagues write. Testing was also rare among those admitted to hospital, even though many had presented with COVID-like symptoms.

"If the data are generalizable to other settings in Africa, the answer to the question, 'Why did CV19 skip Africa?' is that it didn't," say Mwananyanda and colleagues. Understanding the true extent of the disease is critical, because if African's view themselves as less susceptible,

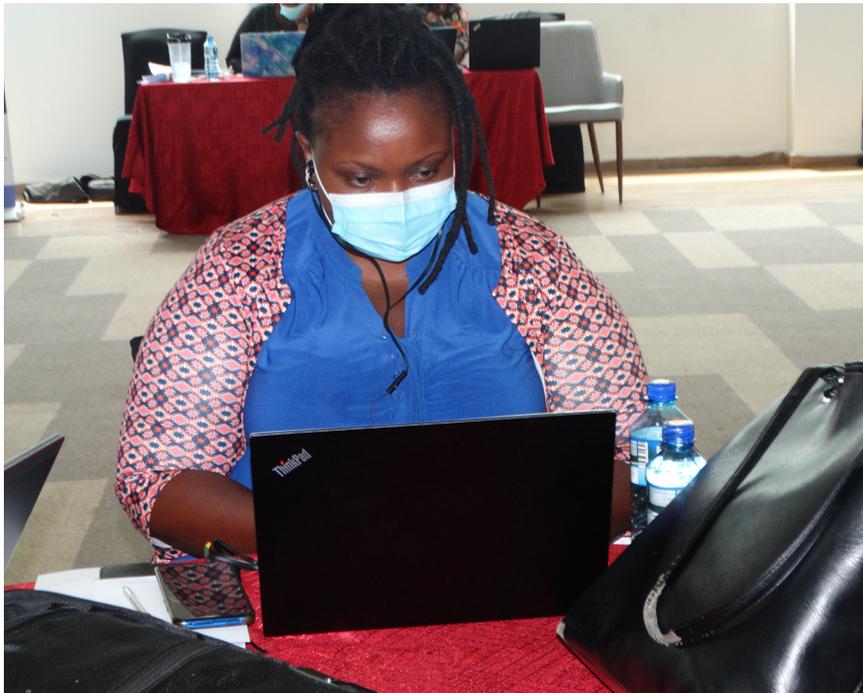
they may be less vigilant about measures like physical distancing or mask-wearing that would reduce their risk. It could also encourage Western governments to view African populations as lower priority for access to COVID-19 vaccines. In both cases, the consequences could be deadly.

The views expressed in this article are those of the author alone and not Gavi, the Vaccine Alliance.

<https://www.gavi.org/vaccineswork/covid-19-impact-vastly-underestimated-african-countries?fbclid=IwAR3btfXydG-tp-7xaKZnm1bKYRaycRsSj52mHudZuEhtDnjDNdbRPaXy1U>

Free vaccines address equity gaps in Kenya

Photo Credit | Tebby Otieno



Health System Strengthening Manager at KANCO supporting GAVI grant, Elizabeth Wamaitha.

Halima is one among many households in Kenya that are on the list of vaccination defaulter tracing, a programme run by Kenya AIDS NGOs Consortium (KANCO).

In the programme, trained community health volunteers undertake home visits within their areas. They also coordinate with local health facilities to identify families that do not regularly take their children for vaccination.

Aisha Hamisi is one of the community health volunteers based in Eastleigh, where Halima lives with six of her children. She does household visits twice a week, moving from one door to another to check on the health of the families.

Aisha, like her colleagues, does disease surveillance and refers the sick to the nearest health facility.

She says a large number of defaulters on her list are those faced with high poverty levels, who delay immunisations by several months.

“There is a one-year-one-month-old baby who was immunised Penta 2, which was supposed to be administered at 10 weeks. We have another one who was supposed to be immunised at one year six months, but the immunisation is coming at two years three months.

For this case, even the measles immunisation delayed,” says Aisha. In 2018, the Kenya government, KANCO and other partners began to implement a grant from Global Alliance for Vaccines Initiative (GAVI) in Kenya, after President Uhuru Kenyatta launched it.

By Tebby Otieno | tebbyotieno62@gmail.com

Halima Abubakar, a mother of nine, had stopped taking her children for vaccination, contrary to recommendations by the Ministry of Health.

With her meagre income from her business of selling clothes, she can barely afford enough food for her and the children every day. Hospital visits are therefore out of the question even when the children suffer frequent coughs and diarrhoea.

“I have never gone to school. I am the one to pay my house rent and get food for my children. Besides, I do not have someone to take care of all the children so three of them live with my mother in my home county of Mandera, in North Eastern region of Kenya,” she says, tears rolling down her cheeks.

However, a knock on her door one bright morning in 2018 would be the beginning of better healthcare for Halima’s children. It was a community health volunteer (CHV) who wanted to find out if the 32-year-old took her children for routine immunisation.

The 17 counties benefiting from the programme have the most challenges in regard to equity and immunisation. The counties are challenged geographically, in terms of poverty and education, hence low immunisation turn up.

Head of immunisation programme, Ministry of Health, Kenya, Dr. Collins Tabu, says through the interventions within the community control, KANCO is bridging a significant equity gap.

“By reaching communities that are otherwise missed with vaccination, through the integration of the missed opportunities at community, health facility levels and the engagement and linkages we have been able to improve immunisation coverage,” says Dr. Tabu.

“In terms of the full budget portfolio, we want to get all the support for immunization and all of the planning within one sort of entity. Not a situation where the left hand does not know what the right hand is doing.”

Implementation of the grant has increased immunisation coverage in the 17 counties. For example, Mandera County has recorded 7,480 defaulter tracing while Nairobi has recorded 5,680, an increase in both counties.

Nairobi County’s immunisation coverage increased from 78 percent in 2018 to 88 percent in 2020., while Mandera County recorded a 34 percent leap within the same period from 44 percent in 2018 to 78 percent in 2020.

According to Dr. Tabu, the programme is a success largely because the counties’ leadership has taken charge.

“For the first time we have a deliberate link between immunisation and our leadership in terms of getting them to take charge.



**Head of Immunization Programme,
Ministry of Health, Kenya, Dr. Collins Tabu.**

We have legislation going on in the counties and people are discussing immunisation as a service to humanity so that no child is left behind. Basically, the desire to protect the future generations has been heightened through the engagement with KANCO,” he says.

According to World Data Atlas, in 2020, fertility rate for Kenya was 3.37 children per woman.

The rate fell gradually from 8.05 children per woman in 1971. Health System Strengthening Manager at KANCO, Elizabeth Wamaiitha, says the cost for immunising this population is very high. She estimates that immunising one child fully up to one year costs KSh3,000 (USD30), according to statistics done in 2017.

“In Kenya currently, we do not have a stand-alone budget for immunisation even at the county level, which means immunisation is in child health and yet we heavily depend on donors to acquire and procure our vaccines.

GAVI has been procuring almost 90 percent of our vaccines, thus buffering our budget to the tune of more than KSh30 billion (USD30 million) per year,” says Ms Wamaiitha.

As the GAVI supported vaccination projects mark three years, Executive Director at KANCO, Allan Ragi, is satisfied by the fact that the project has created demand for vaccination services.

“I think the high-level achievement has got almost everybody talking about importance of child immunisation. For me that is what is important. Every single child must be immunised whether you are at the lowest level in slums or in high end environments like Nairobi’s Muthaiga Estate,” said Ragi.

Stakeholders hope each of the 17 counties enacts Community Health Service Bill (CHS) and Facility Improvement Fund (FIF) Bill. They propose the Bills to include CHVs stipends, improve access in hard-to-reach areas and county commitment for immunisation activities for the future as a sustainability plan.

Source: [www. eandt.theiet.org](http://www.eandt.theiet.org)



A rural African woman takes the self-injectable contraceptive.

Over the years, according to estimates, the number has increased. In 2019 the country recorded 5,829,000 users while last year the number shot up to 5,970,000. The growing use of contraceptive methods has resulted in not only improvements in health-related outcomes such as reduced maternal and infant mortality, but also improvements in schooling and economic outcomes for women and girls – who are crucial for social and economic progress.

According to the report, although the number of unintended contraceptives had increased to 926,000 in 2020 from 917,000 in 2019, the number of unintended pregnancies averted due to use of modern methods of contraception also went up from 2,230,000 in 2019 to 2,284,000 in 2020.

Further, the report shows that the use of contraceptives had last year averted 503,000 abortions as compared to 2019's 491,000, adding that the number of maternal deaths averted increased to 5,700 last year as compared to 5,600 in 2019.

Beth Schlachter, Executive Director of FP2020, said: "The FP2020 partnership has bent the curve of progress sharply upward and responded with strength to COVID-19.

As a result of coordinated partnership over the past eight years, millions of women and girls can now plan their own futures through access to life-changing, and lifesaving, contraceptives. This momentum must be accelerated as the family planning community plans for the future."

More women, girls on contraceptives in Kenya

By **Clifford Akumu** | akumu.clifford@gmail.com

About 142,000 more women and girls in Kenya are now using modern contraceptives, after an eight-year global effort to expand family planning services.

Family Planning 2020 final progress report published recently says the number of additional users of modern methods of contraception increased from 1.75 million in 2019 to 1.89 last year.

"Kenya has made great progress toward increased uptake of family planning. A FP2020 commitment maker in 2012, it has recently exceeded its 2020 target of 58 percent modern contraceptive use by married women," reads the report.

The report however shows that contraceptive prevalence rate among all women had decreased to 42.5 per cent in 2020 from 42.7 per cent in 2019, while the percentage of women whose demand is satisfied with a modern method of contraception and are married had gone down to 75.6 per cent in 2020 from 75.8 per cent in 2019.

According to the FP2020's final progress report, in 2012 when the global partnership was launched in London, Kenya had 4,071,000 contraceptive users.

COVID-19 vaccine is here but we are not out of the woods yet, warns WHO

By **Christine Ochogo**
christawine@gmail.com

Kenyans should not stop the COVID-19 health protocols because of the arrival of the AstraZeneca/Oxford vaccine in the country, the World Health Organization (WHO) has warned.

Dr. Rudi Eggers, WHO Representative in Kenya, said not everyone will be vaccinated at a go, therefore it will take time to build a herd immunity that will protect all Kenyans from the virus.

"With the arrival of these vaccines in Kenya, we have turned a corner, and we can say that we are on the road to ultimately recover from this pandemic," Dr. Eggers said in a statement dated March 5.

"As the vaccine roll-out will take some time in Kenya and the vaccinations targeted to priority groups, due to limited supply, it is essential for all to understand that we still cannot let down our guard. We all need to continue to wear our masks in all settings, avoid congested public areas or large gatherings, including large political and social gatherings, as these can potentially cause the virus to again spread more rapidly."

He said where possible all gatherings should be in the open, or in places with good ventilation, practice handwashing and increased sanitation and abide by other public health measures outlined by the government. The COVID-19 vaccine from India arrived in the country in two batches.

The first batch of 1.02 million doses arrived at Jomo Kenyatta International Airport, Nairobi, on Wednesday March 3, 2021 while the second batch of 100,000 doses, which is a donation from the Indian government, was received on March 11.

Photo Credit | WHO.



Dr. Patrick Amoth, Acting Director General in the Ministry of Health, receives COVID-19 vaccination.

The vaccine doses stored in nine depots across the country are being administered through selected county facilities.

As of March 13, 2021, a total of 9,144 frontline workers in 40 counties had got the voluntary jab.

Health Cabinet Secretary Mutahi Kagwe and Health Chief Administrative Secretary Mercy Mwangangi had announced that once the vaccine arrived in the country it would be rolled out in three phases.

The ongoing phase 1 targets 1.2 million individuals, prioritising frontline healthcare workers, all staff working in

health facilities (both public and private), teachers and workers undertaking essential services in priority sectors like security and immigration.

Phase 2 of the vaccination programme to be undertaken between July 2021 and June 2022, will target 9.7 million Kenyans, including persons above 50 years of age and those aged above 18 years with underlying health conditions.

Phase 3 could run concurrently with phase 2, depending on availability of adequate vaccines. In this phase, the government targets 4.9 million people who will include all other vulnerable populations like those in congregate settings such as prisoners, refugees and those in homes for the elderly.

Dr. Eggers said the country hopes to get more vaccines in the coming months, enough to vaccinate everyone so that normalcy can return.

Amidst misinformation and uncertainties being circulated about AstraZeneca, WHO and the government have assured that the vaccine produced by the Serum Institute of India has been reviewed and found safe, not only by the WHO's rigorous process but also by several stringent regulatory authorities, including the United States FDA and the European Regulatory Authority.

Kagwe said the government has set up a safety monitoring system and any adverse effects reported will be investigated and corrective measures taken immediately in consultation with the Pharmacy and Poisons Board.

The novel coronavirus was first reported in Wuhan City, China, in December 2019 and in Kenya, the first case was confirmed on March 13, 2020.



Dr. Mercy Mwangangi, Health Chief Administrative Secretary, receives COVID-19 jab in Nairobi.

Multiple variants of the virus that causes COVID-19 have been documented globally during the pandemic.

The United Kingdom (UK) identified a variant called B.1.1.7, in South Africa another variant called B.1.351 emerged and P.1 variant in Brazil.

Scientists are working on more studies to understand and learn more about these variants that keep mutating over time.

According to the Centers for Disease Control and Prevention (CDC), COVID-19 vaccines teach our immune system how to recognise and fight the virus.

It typically takes a few weeks after vaccination for the body to build protection (immunity) against the virus.

According to WHO, vaccines save millions of lives each year and the COVID-19 jabs are an additional critical tool of protection in our hands.



East African Conference of Science Journalists

23 - 26 Nov, 2021, Kisumu, Kenya

info@meshascience.org

MESHA calls for pitches on COVID-19 articles



Ms. Violet Otindo, MESHA Chairperson.

Successful applicants will be supported in reporting strong stories from April to May 2021. The stories should be ones that can easily be understood by the local communities in Kiswahili and in vernacular. However, stories can be told in any format.

“We believe these stories are the ones that will have lasting importance as they will save many lives. Audiences will need to understand what’s working to contain COVID-19’s spread, and how. Communities should know when and why others like their own have gotten better results.

Policymakers must be armed with intelligence about systemic responses that can inform their preparation for the next crisis,” she adds.

Primary beneficiaries of this grant will be MESHA members or journalists who have worked with MESHA before. Priority will be given to journalists whose outlet serves communities at greatest risk from the pandemic. Applicants have up to 6th April 2021 to submit their proposals to info@meshascience.org.

By Njeri Murigi | n.milliam@yahoo.com

Are you a health journalist who is into COVID-19 coverage but limited resources hinder you from delivering your best copy? Well, Media for Environment, Science, Health and Agriculture (MESHA) is looking for you.

The organization has launched a journalism grant and is inviting journalists to submit in-depth story proposals on interventions that have impacted the community positively in the fight against the pandemic.

These stories are part of a series of articles meant to highlight the impact of little heard about or known interventions, local innovations, and profiles of community leaders/workers and medical personnel that have worked.

“The stories should be about what’s working to respond to this pandemic, efforts to contain the virus, cope with its social and economic impacts, and help communities recover as well as the important coverage of the tragedy itself,” says Violet Otindo, MESHA Chairperson.



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Report



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Circular economy best bet to tackle solid waste menace in the country

Photo Credit | AP



A man walks on a mountain of plastic bottles at Dandora dumpsite in Nairobi, Kenya.

“We want waste to be segregated at source, so that we don’t have all the mix. We have done a lot of work to strengthen on policy, institutional and legal framework focusing on environmental management,” Dr. Kiptoo told journalists.

“It will be a game-changer in the way solid waste is handled.”

He made the remarks during a media briefing ahead of the fifth session of the UN Environment Assembly (UNEA-5), which took place on February 22-23, 2021.

Dr. Kiptoo noted that the Solid Waste Management Policy, which is currently before Parliament for debate, will address the country’s critical environmental challenges arising from waste.

In June 2020, the Cabinet approved a new policy to transform how solid waste is handled, to recycle, produce manure and reduce waste by 95 per cent.

The National Sustainable Waste Management Bill 2018, is also awaiting approval by the National Assembly.

According to the Bill, those found polluting the environment will be ordered to pay a fine of as much as Sh4 million or spend a maximum of four years in jail.

Dr. Kiptoo said the rising lakes as a result of climate change, land degradation and the Indian dipole were a clear sign of human activities, noting that “environment is deteriorating faster than ever thought”.

By Clifford Akumu | akumu.clifford@gmail.com

When driving or walking in major towns in Kenya, there are places where pollution levels are extreme.

In Nairobi’s large slums of Kibera, Mathare and Dandora, for example, residents dump their waste on the roadside, and it is the solid waste that cannot go unnoticed.

Huge piles of rubbish being burnt or dumped indiscriminately accumulate over a period of time, posing not only environmental but health risk for millions of lives through air pollution.

It is estimated that the country generates 22,000 metric tonnes of waste per day, with around 60 per cent of it being organic waste that can be recycled to something usable.

About 30-35 per cent of the waste is recyclable while 5 per cent goes to the landfill.

However, says Dr. Chris Kiptoo, Environment and Forestry Principal Secretary, the government has embarked on what he calls, “a paradigm shift from a linear to a circular approach of solid waste management to derive value from waste.”

He explained that due to climate change, water levels have been rising, with Lake Baringo rising by 108 per cent, Lake Nakuru by 84 per cent, Lake Naivasha went up by 42 per cent, Lake Bogoria 26 per cent, Lake Turkana by 11 per cent and Lake Victoria by almost one per cent, which are huge volumes of water.

“We have seen nature issuing red alerts with many catastrophes that we are beginning to experience, rising lakes is a good example. We need to urgently address these issues,” Dr. Kiptoo said.

Solid waste management in Kenya is still a major challenge and a health risk to residents living close to dumping sites. Its management is an expensive venture gobbling up huge amounts of revenues.

Nairobi County, for example, has an action plan in place on waste management that is soon being implemented, Dr. Kiptoo added.

The Dandora dumpsite in Nairobi is more than three times full, holding over 1.8 million tonnes of solid waste against a capacity of 500,000 tonnes. In addition, in excess of 2,500 tonnes of garbage continues to find its way into the site daily.

In Nairobi, the particulate matter remains high, with current readings showing it is 70 per cent above the World Health Organization (WHO) recommended maximum level.

A review on air pollution termed, The Global Review on Safer End of Engineered Life warned that open burning of solid waste is a global threat to human health and safety, which requires urgent action.

Although Kenya is responsible for less than one per cent of global gas emissions, the impact is huge, said Dr. Kiptoo.

He noted that mitigating the effects of climate change in the country is costly. Between 2020 and 2030, the government is in talks with other development partners to raise Ksh6.7 trillion to achieve that funding gap.

The measures shall require \$18 billion just for mitigation and to adapt to climate change the country requires \$44 billion, which totals to \$62 billion.

“We are going to be very strict with people who have gone back to the use of plastics,” he warned.

He called on other stakeholders to join hands in creating awareness on the dangers of solid and plastic waste to the environment.

“Kenyans need to be educated so that they help us address the menace,” Dr. Kiptoo said.



A heap of plastic waste collected for recycling.

“Under the mitigation measures, Kenya can only finance 21 per cent while 79 per cent will be sourced internationally. On adaptation we will be able to only address 10 per cent locally,” Dr. Kiptoo said.

On issues on plastic waste management, Kiptoo said the government is now encouraging extended producer responsibility to encourage sustainable use. He also warned those who are still sneakily using single use plastics to desist or face the wrath of the law.

Joyce Msuya, United Nations Environment Program deputy executive director, said UNEA-5 was the first big UN international meeting taking place in 2021 and was expected to set a precedent to other meetings and Conference of the Parties (COPs) that are coming up.

Msuya lauded Kenya for her stand on environment matters noting, “Kenya was one of the early countries to ratify the Paris climate change agreement and we are working with the Ministry of Interior to actually plant more forests to combat climate change.”

Tanzania's Manyara Lake is drying up. Here's why



Diverted tributaries of Lake Manyara to farms.



Dried up shores of Lake Manyara, Tanzania.

By Sylvester Domasa in Dodoma

After walking for 10 minutes from the vibrant Mto wa Mbu tourist town, towards the shore of Lake Manyara, the once Tanzania's second-most prominent saltwater lake, a local religious leader stepped off the road, pushed his hands deep into his pockets, and silently wandered the fortress floods submerging houses and farms in the neighborhoods.

Just an hour earlier, during high seasons, the leader, Naseeb Idd Naseeb, had recalled how as recently as a decade ago, groups of tourists trekked the villages to the Lake Manyara to explore tree-climbing lions, wildebeests, flocks of migrating flamingos among other natural wonders.

Now, the vast expanse of the one-time holiday haven has been transformed into stretches of debris so solid that during dry season trucks can drive over. When it rains, the water overflows into villages located a mile away from the protected lake.

Official data from the Ministry of Natural Resource and Tourism and the National Assembly details that the lake at some point around the 1950s was 20 meters deep. Over the last two decades, it shrunk by over 90 percent, despite the UN heralding it a biosphere reserve in 1981. The ministry says the lake has been drying up at an annual average of 5 percent and its depth currently stands at around 20 centimeters.

Naseeb, like many local people and government, blames the imbalance between wildlife conservation and human activities, which is leading to an abrupt shrink in water levels for the key tourist attraction. Lake Manyara was famously known for its essential part as the UN agency's BRAAF (Biosphere Reserves for Biodiversity Conservation and Sustainable Development in Anglophone Africa) project. The project was designed to promote income-generating activities such as bee-keeping to ensure the long-term conservation of biodiversity.

Today none of such activities is being embraced, says the area's outgoing Member of Parliament, Jitu Soni. "The only income-generating activities are agriculture, fishing, livestock keeping, and a collapsing tourism," he said.

Narrating, "... it is collapsing since the main arm of the industry—the lake is diminishing at an alarming rate."

Studies show the alkalinity water had been home to hippopotamus, an encrust of pink flamingos, and more than 400 species of birds, mainly waterfowl. Locals and tourism industry observers say April and May used to be the best time for birdwatching in the woodland and around the lake.

These months now experience high floods that not only affect migratory colonies of pink flamingos, pelicans and cormorants to assemble at the food-rich lake but cut across the entire tourism value chain.

African Mecca Safaris and Mto wa Mbu Cultural Tourism Programme say the lake has been crucial to flocks of hundreds of thousands of tiny red-billed quelea.

It provides significant food-chain biomass for herons, hornbills, and other colorful rollers and kingfishers.

“What we all must understand is that this is a corridor for migrating wildlife animals and birds from Lake Manyara National Park to Tarangire National Park. They assemble here for food and breeding. However, any disturbance in the lake due to human activities affect the livelihoods of these creatures,” said George Daniel, a conservationist at the Mto wa Mbu Cultural Tourism Programme.

Anastasia Mustapha, Macro-biologist, explains that the threatened lesser flamingos, for instance, feed on cyanobacteria that can only increase with an increase in water salinity. It is estimated that more than 2.5 million lesser flamingos preferred to breed at Lake Manyara and nest at the nearby Lake Natron. The unconfirmed figure suggests that less than 500,000 birds now reach the lake.

“This species usually feeds on spirulina, some blue-green algae with red pigments... it’s found along saline lakes, but floods in lakes such as Manyara disturb the breeding area, not to mention their nests,” she said.

No scientific data points to Lake Manyara’s salinity level, but experts say it had dropped significantly. According to a study “Soda Lakes of East Africa” published by Springer International in 2016, said the establishment of authorities such as national parks had not guaranteed protection of the lake.

Tanzania Wildlife Research Institute (TAWIRI) acknowledges that wildlife species in the area are “generally under threat” following the blockage of corridors due to increased anthropogenic activities and conflicting land uses such as agriculture, livestock keeping, settlement, mining, and fishing.

Over 70 percent of maize, rice, and plantain farmers from the surrounding villages have set tributaries on main rivers that divert its flows into their farms. Extension officers and conservationists agree that the branches have also been a source of transporting debris into the rivers and, subsequently, the lake.

Facing the Lake crisis

Lake Manyara has no outflows and is fed by underground springs and several permanent rivers.

It was formed as a result of depression in the rift valley system. Residents suggest the lake was a hotspot for sport hunting around the 1920s before becoming part of the national park in 1974.

Anna Matayo is a beneficiary of the lake. She says the effect of human activities on the lake is now vivid. Ms Matayo, whose house was among tens of structures at Jangwani Ziwani that were submerged by the recent torrential storm, blames farmers for the crisis.

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Media for Environment, Science, Health and Agriculture

**Sustainable
Mobility in Africa**

November 25, 2020

SPECIAL NEWS BULLETIN

UNEP’s roadmap for clean and sustainable mobility in Africa

Joyce Chimbi | j.chimbi@gmail.com

The United Nations Environment Programme (UNEP) has remained at the forefront of developing a roadmap for clean and sustainable mobility in Africa.

A virtual forum attended by science and environment journalists and experts shone a spotlight on specific mobility challenges facing the continent, the consequences of leaving these challenges unresolved as well as how sustainable mobility would look like.

Research by UNEP has shown that the transport sector alone is responsible for approximately one quarter of all global greenhouse gas emissions and a primary contributor of urban air pollution.

At stake is the environment, economic growth and sustainable development. As such, discussions during the forum were centred on case studies in various countries, including a spotlight on public transport in Tanzania, walking and cycling in Ethiopia, electric mobility in Seychelles as well as the issue of dirty vehicles into Africa from developed countries.

Proper management of mobility in the continent in a manner that is not only environmentally friendly but also clean and sustainable, through efficient transport systems, cannot be overemphasised.



Peak hour traffic on Tom Mboya Street, Nairobi, uncovered dramatic pollution spikes on the road. Photo Credit | Alamy.com

This is especially in light of data by institutions such as UNEP and the World Bank indicating that by 2030, passenger traffic will be in excess of 80 trillion passenger-kilometres, a projected 50 per cent increase from the current traffic projections.

Freight volume is projected to grow by a significant 70 per cent worldwide. More still, worldwide, the number of vehicles on the road is projected to double by 2050.

Experts are adamant that such astounding levels of traffic, freight volumes and vehicle use will have significant negative effects if current trends are not reversed due to over-reliance and intensive use of fossil fuel and subsequent lack of policies to promote sustainable modes of transport.

The transport sector is also calling for promotion of policies, programmes and models that could help reverse the negative impact of existing mobility systems on the continent.

Part of the solution, according to UNEP, is the embracing of electric mobility- development of electric-powered vehicles that are not dependent on fossil fuels. Not only could electric mobility help clean the air, but it would move the continent away from a fossil fuelled existence and go a long way in delivering green jobs. As it is now, up to 80 per cent of Africa’s electricity is generated from renewable energy.

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Lake Manyara in 2009.



Lake Manyara in 2021.

“The depth of the lake can no longer hold rainwater, and as a result, it pushes back to the point of floating houses in the neighboring villages,” said Naseeb.

Dr. Noelia Myinga, Senior Assistant Conservation Commissioner at the Lake Manyara National Park, acknowledges that siltation and frequent dry outs of the Lake Manyara is from deviation of water for agricultural and human uses. This is in addition to unsustainable farming practices in the catchment areas.

“The other factors include an influx of population around the park, deforestation in the highland forest, and global warming,” he said. Deviation of water is a criminal offense according to the Water Management Act of 2009 and its regulations. It is punishable up to 500,000/- or six-month imprisonment.

Karatu District Executive Director Waziri Moses said local authorities in the area have been working with other stakeholders; unfortunately, the measures haven’t helped solve the problem.

The director said the authority has been working to create awareness to livestock keepers and farmers of the impact of deviating river waters and blocking wildlife corridors. “I would say we haven’t been successful, but work is going on, and we hope we can save the lake,” he said.

The form of irrigation has not only affected Lake Manyara. Similar effects have been reported on Lake Rukwa in Sumbawanga.

Grace Shio of the Kaegesa Environment Conservation Society suggests effective fishing and farming methods that seek to support sustainable development as the best approach in preserving the dying lake.

Experts say drip irrigation technology is the only solution for Karatu, Mbulu, Babati, and Monduli districts where there is a high water deviation level.

Dr. Mnyinga and other conservationists propose a motivation package for the surrounding communities to adopt reasonable land-use practices, including cut-off drains, contour farming, strip cropping, and terracing.

According to the Ministry of Agriculture, there are only 39 irrigation schemes on 16,710 hectares that have adopted drip irrigation systems in Tanzania.

The National Assembly enacted a national irrigation law last year to protect farmers from the whims of extreme weather and climate change and improve food security and reduce poverty.

The law also paves the way for the formation of an Irrigation Development Fund to help irrigation schemes, many of whom are stalled in financial woes.

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Kenya becomes the first country to launch bio-herbicide against striga weed

By Faith Atieno | info@meshascience.org

Photos Credit | Japheth Makau

Farmers in Kenya can now heave a sigh of relief after the launch of a bio-herbicide expected to halt the spread of a lethal maize weed, striga.

According to the Director General, Kenya Agricultural and Livestock Research Organization (KALRO), Dr. Eliud Kireger, the country's Pest Control Products Board (PCPB) has registered the bio-herbicide called Kichawi Kill, paving the way for its unhindered use in the country.

This move makes Kenya the first in the world to commercialise the weed bio-herbicide technology, which is meant to combat striga hermonthica, one of the greatest threats to food security in sub-Saharan Africa.

Striga hermonthica is commonly known as striga, kayongo or witchweed and can cause up to 100 per cent yield losses by attacking the roots of staple crops such as maize, sorghum, millet, cowpea and upland rice.

Most communities in western Kenya have been using weeding or pulling methods to control the striga weed, which has always failed since it attacks the roots of the plant.

This normally results in food insecurity and lack of income.

Dr. Kireger said the bio control product will be applied in three seasons during planting. He added that farmers will need only 2.5kg of the product to treat a one-acre maize, millet or sorghum farm.



Kenya Agricultural and Livestock Research Organization (KALRO) Director General, Dr. Eliud Kireger.

Striga affects about 50 million hectares of African croplands, causing US\$9 billion in crop losses annually. In addition, approximately 40 million farms and 300 million people across sub-Saharan Africa are affected.

In Kenya, in western region alone, Kireger noted that striga has infested over 217,000ha of crop land, resulting in maize yield losses of up to 182,227 tonnes per year valued at US\$53 million.

"Although there are striga management technologies that exist, they have not been widely adapted by farmers due to mismatches between technologies, socio-economic conditions, effectiveness and availability," said Dr. Kireger.

He however noted that farmers and consumers have two concerns; one, the potential poisoning of food and the environment arising from the chemicals currently used to manage pests. Secondly, weeds are increasingly becoming resistant to herbicides, which is also a global concern.

Photo Credit | Japheth Makau



Dr. Henry Sila Nzioki, Plant Pathologist at KALRO, demonstrates how the bio-herbicide is prepared.

This, Dr. Kireger said, was because striga attacks the roots of the crop within 48 hours of planting, which means by the time weeding is done, whether by hand or by using chemicals herbicides, it is too late to reverse the damage.

Dr. Kireger said the registration and commercialisation of Kichawi Kill follows a decade-long collaborative research between KALRO and Montana State University (MSU – USA) that began in 2008.

The bio-herbicide research focused on striga hermonthica.

KALRO scientist Henry Sila Nzioki, utilised an innovative biocontrol technique developed by MSU's Prof David Sands to isolate a fungal pathogen from a wilted striga plant.

The fungal strains were selected for increased virulence through their overproduction of specific amino acids that harm the weed and not the crop.

The research team also developed a unique distribution system, which involved growing of selected fungal strains on toothpicks.

These were then transported to the village where the researchers worked with a team of Village Inoculum Producers (VIPs) to make a fresh, living Inoculum by cultivating the toothpicks in cooked rice for several days.

During planting, a capful (cap of a bottle) of the inoculated rice was placed (paired up with a maize seed). Paired-plot trial took place on 500 farms in 2014-15 with funding by Gates Foundation.

The trials showed 42-56 per cent increase in crop yields, with similar results showing in the regulatory trails.

While there have been other attempts at biological control of weeds, this is the first bio-herbicide to control striga in the world to be commercialised. Kireger said this was a milestone for agriculture research in the country.

"Now that this bio-control product is fully approved for use after meeting stringent standards of safety and efficiency, we expect that its rapid adaptation will help us to reduce the negative impact of striga and improve food security for the country," he said.

A social enterprise based in Kakamega, Toothpick Company Ltd (TCL) was incorporated in 2018 to undertake a successful commercialisation of Kichawi Kill with guidance from an NGO partner, Welthungerhilfe (whh).

After a long and rigorous regulatory process, TLC hosted demonstration plots on nearly 1,000 farms and trained over 40 Village Inoculum Producers (VIPs) who will set up their own micro-enterprises.

As the county enters the long rainy season, these producers are currently taking Kichawi Kill orders from farmers for the inaugural commercial season.

Bio-herbicide shows efficacy after nearly a decade of on-farm trials



Dr. Murenga Mwimali of KALRO (left) with other partners in a maize farm during a past field visit at Kiboko Centre.

By Faith Atieno | info@meshascience.org

The year is 2015 and Ann Nyangasi, a farmer in Vihiga County, western Kenya, is on her way back home from her maize farm. She has just planted maize as she awaits the rains.

Looking forlorn and weary, she wishes a miracle would happen this year in her two-acre farm to keep at bay striga, a killer weed responsible for her near-total maize yield loss for over 10 years now and still counting, making her hate farming.

Year after year, her attempt to get rid of the 'flower like' weeds through frequent uprooting and burning them have borne no fruit.

That vicious cycle of losing heavily due to striga had repeated itself year after year.

Later in the year, things changed. Nyangasi contacted the area agriculture extension officer, who visited her farm and identified striga as the marauding weed in her farm. Later, the officer connected her to Toothpick Company Limited, which visited her farm and made her one of the lead farmers. That way she got involved in the trials and demonstrations of a bio-herbicide known as Kichawi Kill.

Nyangasi says during the first year of demonstration of the product, there was little improvement. She harvested 40 per cent. In the second trial, she harvested 60 per cent and from there she was sure it was working.

She said many farmers who had been suffering because of the weed have visited her demo farm on several occasions and have been sensitised on the importance of the product and how to use it.

"This product has helped eradicate the weed," said Nyangasi who was the first farmer in Vihiga County's Chavakali Ward to use the new product and one of the 1,000 who participated in the trials of the product in western Kenya.

She added that more farmers visit her to seek help because of the changes they have seen on her farm.

Jackson Achuti, an extension officer with the Ministry of Agriculture in Siaya County, said they started testing the product nearly eight years ago in demonstration fields where striga was a menace and control fields where they applied the product.

Achuti said in addition to better yields they benefited from improvement in the biomass of maize.

"As extension officers our main work is to promote the Kichawi Kill and use every avenue in barazas to link the farmer affected with the Toothpick company," he said.

He noted that they aim at reaching out to 90 per cent of farmers in his area of jurisdiction by the end of the year in an effort to improve food security.

Why women carry the burden of little-known pulmonary embolism disease



Dr. Josephine Ojoo, a respiratory specialist.

By **Angeline Anyango** | sciencewriter2021@gmail.com

Did you know that being inactive for long hours, either sitting, standing or sleeping can be harmful to your health?

Ever heard of cases where a loved one or friend travelled over a long distance but collapsed on arrival, only to be pronounced dead?

The common scenario with such deaths could be that the deceased developed breathing problems, chest pain and dizziness equated to pulmonary embolism before their demise.

Most people have confirmed that they have no idea about this disease. Some only learn about it after the loss of a loved one, friend or relative.

Naomi Kiprop, an upcoming journalist, says she learnt about the disease a year ago following the death of her neighbour.

“My neighbour lost her baby at six months following a premature birth and in the process sustained injuries in her womb, leading to clotting of blood in her lungs,” says Ms Kiprop, quoting a medical report.

According to Ms Kiprop, the deceased started experiencing dizziness from time to time, fatigue, headache and high blood pressure.

“We never knew what her problem was until she died,” she says, adding, “This is due to the fact that her blood could not be screened in her state.”

The family and friends of the deceased only knew what was ailing her after postmortem results revealed huge blood clots in her lungs.

Daisy Mafunga, an artist, says she learnt about the disease after a close friend succumbed to it a few months ago. The doctor explained that her situation had been worsened by the fact that she had a wound on her leg for the past two years.

“She appeared to be healthy but started complaining of chest problems and difficulties in breathing. A few weeks before her death, she was rushed to a nearby dispensary but lost the battle while undergoing treatment,” says a broken Ms Mafunga.

It is until the demise of her friend that she learnt of pulmonary embolism, which led her to carry out more research on the internet.

Pulmonary embolism refers to blockage of pulmonary artery, preventing blood flow to the lungs.

This hinders oxygen supply to the body and may lead to death if not attended to early enough.

According to Dr. Josephine Ojoo, a respiratory specialist at Kisumu Specialist Hospital, the clots develop in vessels in the lower parts of the body, then break off and travel up through the heart to the lungs. They lodge and block the lungs because the lung vessels get smaller and smaller as you go beyond the heart.

Dr. Ojoo, who is also a lecturer of Medicine at Masinde Muliro University of science and Technology's School of Medicine however says the source of the clots is not the lungs.

"The clots can form in any part of the body especially the abdomen and legs. When one starts moving, the blood clots also keep moving towards the lungs until they finally block it," says Dr. Ojoo.

The signs and symptoms of pulmonary embolism range from chest pains to difficulty in breathing, coughing blood and dizziness, and in serious cases, the patient may collapse.

No one is immune to this disease. However, those vulnerable to it include the elderly, those sitting in cramped positions for long hours, smokers, pregnant women, the overweight, cancer patients and those who have undergone surgery.

Being hospitalised can also lead to pulmonary embolism as stated by Dr. Ojoo. This is because being in bed makes one sedentary. Women using contraceptive pills containing estrogen are more likely to get the disease compared to those who do not. The pills however do not cause embolism.



Women at a malaria rollout meeting. Experts say that they suffer most from an obscure disease known as pulmonary embolism.

The respiratory specialist says whenever a doctor realises a patient has a clot, they try to find out if the patient was exposed to any of the factors leading to clot. Sometimes there is actually no reason, they just got the clot.

Women at risk

More women are likely to get embolism as compared to men. This is because they take contraceptive pills, may have babies at one time in their lifetime and may also record higher cases of overweight. The old are also more likely as they are always more hospitalised than the younger people.

A scan of the chest should be done to locate the vessels with clots once the patient gets to the hospital. If the patient is very unwell, they are given injections and kept in the hospital until their oxygen level can be maintained. At this point they can be discharged and allowed to continue with their medication at home.

Blood thinners are the first medication given to one suffering from pulmonary embolism. Thinning is done to allow the clots to dissolve but if not well monitored the patient can end up bleeding through their nose and mouth.

The medication however vary from the drugs used, that is warfarin and rivaroxaban. Warfarin, which is also considered rat poison, is the cheapest medicine for embolism patients and is administered for six months at a cost of Ksh18,000 (USD180). It however needs continuous monitoring as it can thin ones blood to dangerous levels.

Warfarin, which is presented as pills, requires a doctor to keep checking on the patient daily at the start of their medication, then twice a week, followed by weekly, monthly until the end of six months. Rivaroxaban drugs however are administered once then the patient can appear for checkup after two months.

More money may also be required for monitoring of the patient, which makes warfarin more costly compared to rivaroxaban drugs.

Surgery for clots is not a common thing as there are rare patients with massive clots in their veins. In case of any, a tube is used to suck out the clot from the patients blood.

Pulmonary embolism can kill if one does not get to the hospital early enough. Those who note the symptoms as early as two weeks and visit the hospital are likely to survive the attack.

Most of those who die may have experienced the symptoms as breathlessness but failed to visit a health centre on time, giving the smaller clots a chance to grow to large clots.

“A number of patients dismiss breathlessness for ageing and may never see the need of visiting a medical practitioner, this however gives time for the smaller clots to develop to bigger clots,” Dr. Ojoo says.

According to Dr. Ojoo, there is not yet any campaign to make people aware of pulmonary embolism. The airlines know that those travelling over long distances should be hydrated and have always worked on that, buses also always stop to allow people take breaks, stretch their legs, and have a cup of tea when travelling over long distances.

Most people however don't always get out to do as requested by the travel companies. She advises that those stops are not just obvious stops for comfort, they are for health reasons hence passengers should make use of them.

When travelling over long distances, one is advised to get off the bus after two hours, stretch their legs and take lots of water to remain hydrated.

When opting for family planning pills, a doctor should be in a position to inform their client that they run the risk of getting a clot.

Hospitals are the places where a lot of the clots develop, hence every patient admitted to the hospital should be on a blood thinner.

“Once a patient hits the hospital door, one of the questions that should be asked by the doctor is whether there is a reason one should not be on a blood thinner,” says Dr. Ojoo.

A number of patients dismiss breathlessness for ageing and may never see the need of visiting a medical practitioner, this however gives time for the smaller clots to develop to bigger clots

Those bleeding or patients suffering from stroke should not be on blood thinners, those expecting to be operated should also delay a bit on using blood thinners.

Dr. Ojoo adds that patients should visit hospitals early enough whenever signs of clot are detected, the availability of CT scan machines has also made diagnosis of the disease easier.

She, however is not sure if the hospitals have the dye, which is used with the CT scan to locate clots in a patient's lungs.

The dye should be available and the CT scans should also be in a good condition to facilitate diagnosis of embolism.

In western Kenya, CT scan machines are only available in county referral hospitals such as Jaramogi Oginga Odinga Teaching and Referral Hospital (JOOTRH) and Vihiga County Hospital. This makes it hard for patients from the rural areas to get medical attention early enough.

In the past, most patients were unable to afford CT scan payment or even the monitoring fee. This however is no longer the case, thanks to Universal Health Care (UHC).

Confusion between pneumonia and pulmonary embolism

Dr. Ojoo says patients who do not get to referral hospitals or well developed private hospitals may end up being diagnosed for pneumonia and only getting wrong medication.

The signs and symptoms of pneumonia are almost the same as those of pulmonary embolism. If a proper scan is not done, the patient may end up being treated for pneumonia. The patient may then fail to get well and another clot may develop in the process.

She adds that the government should put up awareness campaigns on pulmonary embolism to help educate the public on the disease. As it stands now, most patients and citizens are not aware of the disease.

Having pulmonary embolism does not equate to death; however, one should seek medical attention before the clot gets bigger, which is likely to cause death.

The Lancet, in their 2020 study called Trends in mortality related to pulmonary embolism in the European Region, 2000–15: analysis of vital registration data from the WHO Mortality Database, said that even though they came across nearly 40,000 cases in 40 countries, pulmonary embolism still imposes a relevant medical and societal burden. Continuing efforts, it said, are warranted to improve awareness and implement effective preventive and therapeutic measures.