



The African Pharmacist

Le Pharmacien Africain



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HIGHLIGHTS

COVER STORY -

- ◆ ARTIFICIAL INTELLIGENCE AND HEALTHCARE DELIVERY

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- ◆ NIGERIA
- ◆ GHANA
- ◆ BENIN
- ◆ ZIMBABWE
- ◆ BOTSWANA
- ◆ ALGERIA
- ◆ SOUTH AFRICA
- ◆ NAMIBIA
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CONTINUING EDUCATION

- ◆ THE ROLE OF POLYPHENOLS IN MODERN NUTRITION
- ◆ THE USE OF TECHNOLOGICAL INTERVENTIONS IN IMPROVING MEDICATION ADHERENCE
- ◆ GUT MICROBIOTA AND GOOD HEALTH

FIP REPORT 2022

WAPCP 2023 COMMUNIQUE



Photo Panorama

81st FIP World Congress
of Pharmacy and
Pharmaceutical Sciences

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BRISBANE 2023
FIP WORLD CONGRESS
24 - 28 September





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THE AFRICAN PHARMACIST

A Journal of the African Pharmaceutical Forum

AFRICAN PHARMACEUTICAL FORUM (APF)

APF is the FIP Forum of National Pharmaceutical Organizations in Africa in Collaboration with the World Health Organization (WHO) African Regional Office

APF MISSION:

Enabling Pharmacy Profession to have a greater impact on Improving Pharmacy Services; Understanding the Activity in Different World Regions; Focusing on Distinct Local or Regional Needs Strategies; To increase partnership dialogue

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Address: Pharmacy House, 32 Faramobi Ajike Street, Anthony Village, Lagos, P. O. Box. 531, Mushin, Lagos, Nigeria. Tel.: +237675295130; +33611558852; +2348099157854

Email: africanpharmaforum2018@gmail.com Website: <http://www.africanpharmaforum.org>

**EXPERIENCES FROM THE FIELD:
RE-INVENTING THE ROLES OF
PHARMACISTS IN AFRICA POST-COVID-19**

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**FIP
D/GITAL
EVENTS**





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MESSAGE BY THE APF PRESIDENT



Dear Fellow Pharmacists.
I welcome you to the 2023 edition of the official publication of the African Pharmaceutical Forum (APF), The African Pharmacist and to Brisbane for the 81st World Congress of FIP.

First of all I would like to congratulate our APF President, Dr Prosper Hiag, for being elected one of the

Vice Presidents of FIP Bureau at the FIP Congress held in September 2022 in Seville, Spain. Congratulations to Dr. P. Hiag. Following his appointment as Vice President of FIP Bureau, I was then given the opportunity to serve as Interim President until our next Annual General Meeting to be held during the FIP Congress in Brisbane Australia in September 2023. It has been my pleasure to serve in that capacity in the interim.

Secondly, I would like to extend my sincere condolences to the pharmacy fraternity and the family of the late Mr. Dominique Jordan, who passed on in August 2023. He was our President and had a great vision for FIP. He was very passionate about the “One FIP” concept and what it represented. He was a pharmacist *par excellence*. He will be dearly missed by all who interacted with him. May his dear soul rest in peace.

The African Pharmaceutical Forum (APF) being one of the regional forums of FIP, focuses on pharmacy practice in the African region. APF subscribes to the FIP Development goals which highlight the fact that pharmacy is essential for access to health, a safe supply chain and the responsible use of medicines. I would like to call on all African pharmacists to be part of this vision and action plan. COVID-19 pandemic reminded all of us that times change, and the profession has to change in order to meet the demands of the changing landscape. This transformation is well supported by FIP, its Forums and Sections, and is based on science and education in the development of a pharmacy workforce which is responsive to the change. COVID-19 was an eye opener which showed that pharmacy should and could adapt to the changing practice landscape and provide essential healthcare services as we move towards the 2030 target for universal health coverage (UHC). Pharmacists can make big contributions in the

fight against both communicable and non-communicable diseases and drive real change towards ensuring access to care for our teeming healthcare seeking populace across the continent. I would also like to call on all national pharmaceutical associations across the continent to work with APF towards increasing partnership dialogue, understanding and activity across the region thus enabling the profession to have a greater impact on improving pharmacy services and health by focusing on distinct local or regional needs. This is the objective of APF and I welcome us all to work together to achieving it.

I would like to remind all pharmacists whether here in Brisbane or at home, to celebrate the profession in style on World Pharmacists Day 2023. “Pharmacy strengthening health systems” is the theme for this year and it is right within the FIP World Congress for this year. Resources and promotional materials are available on the FIP website, www.fip.org

To enable you maximize your reach for the day. Please communicate with your representatives back home to share reports of your WPD activities and other activities of your national association with the Forum to enable us to compile an accurate archive of activities around the continent. Your reports can be sent via email to africanpharmaforum2018@gmail.com. I wish you all a fruitful WPD2023.

Pharmacists are well positioned to ensure strengthening of health systems. FIP sustainable development goals give us direction in this regard. Every nation can prioritize the development goals based on their situation and needs. I believe everyone has a role to play, irrespective of where we live or area of practice.

Enjoy Brisbane and looking forward to receiving us all at the AGM as well as in Cape Town, South Africa for FIP 2024 World Congress.

Pharm. Jocelyn Chaibva (Mrs.)
APF Interim President



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FROM THE EDITOR'S DESK



A lot has happened in the past year. For those of us in APF who are aware, we spent a good portion of the year congratulating our president, Dr. Prosper Hiag, on his election as one of the Vice Presidents of FIP, a feat that finally happened at the Council meeting that

preceded the 80th Annual Congress in Seville. As a mark of his zeal to represent African pharmacists on the global stage, he had thrown his hat to contest for the position a couple of times before finally emerging successful in Seville. Consequently, he has had to step down as the President of our Forum especially when he was elected to serve, naturally, I might add, as the FIP Liaison for the African region. His able Vice, Pharm. Jocelyn Chaibva who had served the Forum in a previous capacity as the Editor-in-Chief then had to step up as the Interim president while we make ready to elect a substantive president in Brisbane. It has been fun working through these various changes this year.

As we were concluding our various plans towards attending this congress, we were confronted with the very sad news of the passing of the president of FIP, Mr. Dominique Jordan. Dominique was a focused leader who through his vision of a more strategic FIP in delivering enhanced pharmacy services across the world conceived of the notion of OneFIP where all the structures of FIP are working as one seamless one rather than the various fragments and silos through which we were operating hitherto. He was a conscientious leader who would always listen to different shades of opinion on all matters and use this information to arrive at practical and practicable steps forward. I remember his many meetings with the leadership of the various regional forums as we plowed through the various issues surrounding the OneFIP strategy as it concerns the Forums. We are

now at the very tail end of concluding the new way of working with regards the Forums and we will all be doing Dominique's memory a great service by completing this task in the shortest possible time frame. Adieu and good night, our president.

In the spirit of the OneFIP approach, we were able to get across to some additional regional associations who had not been partnering with APF hitherto to provide their country reports as a way to begin to get to know ourselves better. I know that by the time we get to subsequent editions, we will have many more reports to carry and we may even be able to initiate the additional strategic agenda item of having more than one publication a year. When countries report consistently, it will be difficult to leave everything to just once a year and we could pivot to having monthly or quarterly newsletters with the Journal reserved as usual for the FIP Congress. We also initiated the additional translation of our Journal to include Portuguese thus accommodating English, French and Portuguese speaking African countries in our reading list. Please check out the 2022 APF journal for this.

In September this year, we initiated APF digital events on the FIP Platform. This will not only bridge the gap between FIP congresses but also serve as a means of reaching ourselves in lieu of a regional workshop. When we are able to plan and host a regional event, the digital event will still remain an additional rallying point for us to meet, share ideas and experiences as well as learn from each. The 8-star pharmacist concept of teacher, learner and so on will find expression for us through these digital events. The theme of the first digital event was '**Experiences from the field: Re-inventing the roles of Pharmacists in Africa Post-COVID-19**'. We plan to hold a second one before the end of this year and we ask you to keep your virtual ears open for the announcer. Our next stop on this train will be to have translations for our digital events in French



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and Portuguese to enable all of Africa benefit from all of us.

Though there has been reports of new strains of COVID-19 and other threatening global catastrophes, we are glad to be able to pack our bags for another time of enrichment and networking in Australia. There have been so many additional invitations attached to this Congress that I am looking for a way to divide myself into at least four parts so I can maximize my time there. Alas, it is not possible, so I will limit myself to what I can do with regards the sessions, meetings and social events. We will have elections for various positions on the APF exco and as our constitution dictates only countries that are financially up-to-date with its commitment to the Forum that can nominate its members for the positions. We are expecting that those so nominated and eventually elected will bring innovative ideas and a fresh zeal to lift the Forum to a newer level of achievement and progress.

I took the cover story for this edition from submissions made by students in my department on artificial intelligence and the healthcare industry. You will undoubtedly learn one or two things from the story which will either open your eyes to go and learn more or clear your doubts about something you believed in prior. The continuing education pieces are also carefully curated to add to our knowledge of the benefits of cocoa and on taking our foray into technology a bit further. Come along with us on this fresh journey of learning and discovery.

As we usually reiterate, we are still looking forward to more regional associations informing the Forum of its activities especially its national conferences to enable appropriate participation. I can say categorically that the President of APF with or without the Secretary-General has attended the last five or more conferences of the Pharmaceutical Society of Nigeria as Nigeria consistently invites APF exco to its annual conference which holds in November each year. We want to be able to give this categorical statement

about other countries in the coming years. Contributions to The African Pharmacist and invitations to exco can be sent directly via email to africanpharmaforum2018@gmail.com and the subject line should include Contribution to The African Pharmacist or Invitation to Annual Event as the case may be to make it easy to track the message. Permit me to repeat that as Africans and as pharmacists in Africa, we must respond when called upon to contribute to the global discussions, we should celebrate our wins on the global scale, and we should call attention to specific areas of need that is our own priority rather than blindly accepting whatever is thrust upon us. The Forum is set up to ensure that regional priorities are on the front burner until practical solutions are applied and this can only be possible when we are all speaking together.

As usual, this edition of the African Pharmacist is packaged for your enjoyment and enrichment. The various country reports are accompanied by pictures that speak to the different activities. We also carry the communique of the Annual General Meeting/Scientific Symposium of the West African Postgraduate College of Pharmacists (WAPCP) and our report of the preceding years FIP congress which serves as a juicy reminder about the events as well as providing details for those who were unable to attend. Remember, that as only online versions of The African Pharmacist are in production, we urge you to visit the APF website (www.africanpharmaforum.org) to download your copy to your laptop as the heavy file produced is usually too heavy for mobile phones.

Do have a great day and wishing you an excellent time in Brisbane and thereafter.

Dr. Arinola E. Joda *FPSN, FPCPharm, MCPAN*
+2348099157854



COVER STORY

ARTIFICIAL INTELLIGENCE AND HEALTHCARE DELIVERY

Oluwaseun D. Samuel, Mary N. Echem, Foluke A. Ayeni and Emmanuel N. Anyika

Department of Clinical Pharmacy and Biopharmacy, Faculty of Pharmacy,
University of Lagos, Idiaraba Campus, Idiaraba, Lagos

INTRODUCTION

Intelligence is the ability to understand, learn, and make judgments based on reason (Cambridge Dictionary). Alan Turing is considered one of the founders of AI, with the popular Turing Test used to examine the ability of a machine to imitate human behaviour (Turing, 1950). However, John McCarthy gave the first official definition of AI. He attempted to describe it as the science and engineering of making intelligent machines (McCarthy, 1997). This definition has been continuously revised following increasing development in this field. AI encompasses using computers and computational methods to simulate human intelligence (Howard, 2019) and is a multi-disciplinary concept with a basis in logic, computer engineering, statistics, and so on. This enables its application in numerous fields, such as medicine and healthcare, cybersecurity, education, etc. According to the International Business Machines Corporation (IBM), AI is a field that combines computer science and robust datasets to enable problem-solving (IBM, 2023). Artificial intelligence can be said to be a stream of science linked to an intelligent machine learning, majorly intelligent computer programs, which produces results in the same way to human attention process (Mak *et al.*, 2019). The method generally comprises getting data, developing efficient systems for the uses of obtained data, illustrating specific conclusions and self-corrections and proper adjustments (Hassanzadeh *et al.*, 2019). Generally artificial intelligence is used for machine learning and to imitate the cognitive tasks of individuals. (Hassanzadeh *et al.*, 2019). AI simulates human intelligence processes using machines, particularly computer systems (Burns, 2023) and includes five major techniques: machine learning, artificial neural networks (ANN), natural language

processing, computer vision, and image processing (Burns, 2023). In addition, artificial intelligence (AI) can be defined as an area of engineering and science associated with the computational understanding of what is known as intelligent behaviour and artefacts creation to exhibit such a behaviour. (Shapiro, 1992). A British mathematician called Alan Turing in 1950 was one of the founders of AI and modern computer science. Alan Turing defined artificial behaviour in a computer as the ability of a system to operate and achieve human level of performance in cognitive tasks. This became popular later as the Turing test. (Turing, 1950). Programs which allows computers to function to perform in ways that make humans seem intelligent are called artificial intelligent systems. The concept 'artificial intelligence' is a broad term including six major areas: natural language processing, knowledge representation, drawing conclusions, automated reasoning, machine learning, computer vision, and physical interaction (Howard, 2019). These six areas form the bedrock of AI and its applications in various fields. Like other fields, such as robotics, the automotive industry, social media, gaming, transport, and astronomy, the healthcare industry has been significantly impacted by the advent of AI in the past decade. Medical artificial intelligence development has been linked to the development of artificial intelligence programs which is intended to help the clinician in diagnosis formulation, the therapeutic decision making and predicting its outcome. They are designed to assist or help health care professionals in carrying out everyday activities especially tasks that rely on manipulation of data and knowledge. These systems include Artificial Neural networks (ANNs), evolutionary computation, fuzzy expert systems



and hybrid intelligent systems.

COMPONENTS OF ARTIFICIAL INTELLIGENCE SYSTEM

Artificial Neural Networks (ANN)

ANN is the most popular artificial intelligence technique in modern medicine judging by the volume of publication in the last two decades (Steimann, 2001). ANNs are majorly computational analytic tools, which was inspired by the body's biological nervous system. They consist of networks of highly interconnected computer processors called neurons which are capable of performing parallel computations for data processing and knowledge representation. They have the ability to learn from historical examples, handle imprecise information, analyze non-linear data and generalize enabling application which makes it a very attractive important tool in the field of medicine. These networks are made up of layers of neurons which includes an input layer, one or more middle or hidden layers and an output layer which are fully connected to each other. An example of use of ANNs is the ability to group and recognize patterns remarkably which has attracted scientist and researchers who utilizes them in solving different clinical issues. Since it is used in image analysis in radiology as well as histopathology, it is also used in interpretation of intensive care setting and waveform analysis. Stamey (1996) developed a neural network derived classification called ProstAsure index which is used to classify prostates as benign and malignant. There are other surgically relevant uses of diagnostic applications of ANNs which include abdominal pain, appendicitis (Personenet *et al.*, 1998), retained common bile duct stones (Golub *et al.*, 1998), glaucoma (Henson *et al.*, 1997) and back pain (Bounds *et al.*, 1990).

Prognosis

Prognostication is very important in planning targeted treatment strategies and follow-up. ANNs has the ability to exploit relations between variables and is suitable to analyze complex cancer data. This

has been seen to predict survival in patients with breast and colorectal cancer. (Burke *et al.*, 1998). High-risk cancer patient's benefits due to accurate identification as such may facilitate aggressive adjuvant's therapy, which may cure the disease and prolong survival.

Evolutionary Computation

This is the basic term for several computational procedures with a foundation on natural evolving process that mimics the mechanism of natural selection and survival of the fittest in solving real problems. Genetic algorithms are medical applications which are the most used type of evolutionary computation. (Holland *et al.*, 1975). They work by creating many random solutions to the problem at hand. The solutions which are added to the population are the best while inferior ones are eradicated. For example: a cytologist analyzing a cytological specimen to decide whether they are malignant or not, is searching in the space of all possible cell features for a set of features permitting him to provide a clear diagnosis.

Fuzzy Expert Systems

Fuzzy logic is the art of reasoning, thinking and inference that recognizes and makes use of the real life phenomenon that all things are a matter of degree. This enables data handling methods that permits ambiguousness' and as such is suited for medical applications. Fuzzy logic performed better than multiple logistic regression analysis in diagnosis of lung cancer using tumor marker profiles (Schneider *et al.*, 2002). This has been explored in the diagnosis of acute leukaemia (Belacelet *et al.*, 2001), breast (Sarkar *et al.*, 2001) and pancreatic cancers (Halm *et al.*, 2000).

Hybrid Intelligent Systems

Are neural networks which are mainly involved in learning, evolutionary computation with search and optimization while fuzzy logic is concerned with imprecision. All three technologies have an advantage when combined together to produce hybrid intelligent systems which can work in a



complementary manner. Once again, the application of hybrid intelligent systems has been explored in many diverse clinical scenarios. Examples are breast cancer diagnosis (Pena-reyes *et al.*, 1999), coronary artery stenosis (Sztandera *et al.*, 1996).

CLASSIFICATION OF ARTIFICIAL INTELLIGENCE

AI can be classified in two different ways: according to caliber and their presence.

According to their ability, AI can be categorized as:

- i) Artificial Narrow Intelligence (ANI) or Weak AI: It performs a narrow range task, i.e., facial identification, steering a car, practicing chess, traffic signalling, etc.
- ii) Artificial General Intelligence (AGI) or Strong AI: It performs all the things as humans and also known as human level AI. It can simplify human intellectual abilities and is able to perform unfamiliar task.
- iii) Artificial Super Intelligence (ASI): It is smarter than humans and has much more activity than humans in drawing, mathematics, space, etc.

Thus, AI is divided into Strong and Weak AI (Wang and Siau, 2019).

Weak or narrow AI deals with specific tasks, such as Apple's Siri, United Bank of Africa's Leo, Amazon's Alexa, etc. This is currently the major application of AI. Strong AI, on the other hand, (and artificial superintelligence) is currently underway, which is capable of developing and simulating multiple complex tasks similar to human behaviour, such as possessing emotions and feelings (Wang and Siau, 2019; Karger and Kureljusi, 2022). However, AI experts presume this would take years or may never happen. The advent of strong AI is expected to generate significant ethical and legal implications.

Recent advances in AI include its applications in machine learning algorithms, chatbots, imaging technology, and the advent of virtual assistants such as Siri, Alexa, etc. Perhaps, the most disruptive is the recent introduction of ChatGPT by OpenAI, which uses AI to respond to and provide answers on diverse

subjects using pooled information on the web. This has attracted significant global attention. The healthcare industry has significantly benefited from the impact of AI in the past century. One of the first applications of AI was in 1976 by Gunn, who explored using computer analysis to diagnose abdominal pain (Gunn, 1976). Artificial neural networks (ANN) are one of the most applied AI techniques in the healthcare industry and have been extensively applied in interpreting signals on electrocardiograms and encephalograms in cancer diagnosis and prognosis (Renganathan, 2019). However, as with most disruptive developments, there are pros and cons of innovation. As seen with the use of technology, the applicability of AI has left a gnawing fear about the risk of outsmarting humans and eradicating the jobs of professionals.

APPLICATIONS OF ARTIFICIAL INTELLIGENCE IN HEALTHCARE

Applications in Healthcare Delivery

The application of artificial intelligence can be seen in the diagnosis, monitoring, prediction of the disease and in the development of new drugs. Some specific applications of AI in healthcare include:

Information synthesis

The applicability of AI in medicine and healthcare is largely based on its ability to quickly synthesize and make conclusions from large datasets that clinicians, research institutes, and hospitals are unable to gather within a short time (Mintz and Brodie, 2019). With the introduction of smart wearable devices and electronic health records, health and behavioural data are available in immensely significant amounts that can be utilized in making decisions on lifestyle patterns linked to specific diseases and can improve human health long-term. AI is suitable for storing, filtering, and analyzing such big data.



Artificial neural networks

This subset of AI is perhaps the most widely applied in medicine and healthcare. ANN is a computational model simulating the biological neural network comprising a network of neurons passing information throughout the body (Regnanathan, 2019). ANN models can predict a complex interrelationship between models. It includes input, hidden, and output layers (Regnanathan, 2019).

Clinical data generation

AI techniques have been used to screen, aid diagnosis, and predict the prognosis of patients with chronic diseases such as cancer. This is made possible through clinical data generated from electronic medical records and large pools of results of clinical investigations (Jiang *et al.*, 2017). Clinical data is converted to machine-readable structured data using a branch of AI called natural language processing (Karakulah *et al.*, 2014). This machine-readable data becomes the input in machine learning, another subset of AI that converts and stores this information for screening, predicting diagnosis, and appropriate treatment (Jiang *et al.*, 2017).

Automated appointment (booking) systems

AI is being used to conserve the time of healthcare professionals by scheduling appointments using automotive appointment systems.

Robot-assisted surgeries

With the introduction of the da Vinci® Surgical System (Intuitive Surgical Inc., Sunnyvale, CA, USA), the scope of performing most minimally invasive surgeries has changed drastically. Robot-assisted surgeries (RAS) are now being utilized as the gold standard of treatment for various urological conditions such as urolithiasis, prostate cancer, prostate obstruction, etc (Pal and Koupparis, 2018). The advantages of RAS include improved dexterity and precision, a wider range of movement, three-dimensional vision, reduced bleeding, faster recovery rate, and primary surgeon camera control (Pal and Koupparis, 2018) (Figure 1).

Genome sequencing

This is a broad venture which is believed to allow scientist to inspect etiology of various diseases. However, we can't predict the amount of data we will process to obtain the useful data needed for this. Machine learning and hardware have proven useful in this regard to help obtain data with computer support and accelerates research. Due to this research its now discovered that causes of diseases is not due to mutation of single gene but involves multiple genes as well as their interaction. Genome sequencing is very important in early detection of disease, non-invasive prenatal test, infertility, mental health tests, cluster redistribution and prediction of genetic therapy. The sequencing of a genome in the past usually last up to days but can now be significantly shortened. The major advantage of artificial intelligence is the medical use. Generally, the physicians can access the condition and pharmacist can analyze adverse drug effects and other health risks which are associated with medication with the artificial programs. For example, trainee surgeons can collate information of programs like various artificial surgery simulators (gastrointestinal simulations, brain simulation, heart simulations etc.)



Figure 1: Representation of a robot-assisted surgery



Epidemic outbreak prediction

The use of artificial intelligence can enable public health professionals study history of epidemic outbreaks using various resources including social media activity to predict origin and time when an epidemic can affect a given population with precise accuracy.

Other applications include:

Virtual health assistants

Automated task scheduling

Applications in Pharmacy

Artificial intelligence is also impacting pharmacy practice specifically. From the way new products are identified and developed to optimal outcomes on drug use by patients, AI offers new ways of working.

Research

Drug research has evolved from trial and error with natural products to high-throughput screening of thousands of potential drug compounds using AI (Karger and Kureljusi, 2022). The use of AI in drug discovery is a large market, with major big Pharma deploying its use to discover new drug compounds. AI in research involves the use of machine learning (support vector machines), ANN, and deep learning (Karger and Kureljusi, 2022). Deep learning has been used to predict the pharmacological properties of drug compounds and suggests probable novel antibiotic compounds (Aliper *et al.*, 2016; Stokes *et al.*, 2020). Coupled with AI platforms such as AiCure®, AI is used to predict target patients to enrol in clinical trials and predict patient behaviour. This is expected to significantly shorten the time for the drug discovery process.

Medication adherence

The sole aim of medicines is to treat diseases but without an adequate way and frequency of taking drugs, success of therapy is almost impossible. New innovations in technology have been introduced to monitor therapy. Chronic diseases such as diabetes, hypertension that have no clear symptoms would require innovations such as this to ensure patients do not skip doses of their medications. Inadequate adherence is one of the major causes of uncontrolled

chronic diseases. To combat this challenge artificial intelligence is now used to develop an adherence model to adjust the communication of text messages to patients. In 2018 a study carried out by Agency for healthcare research and quality showed adherence of two groups where the first group was control and respondents applied a drug from the bottle which had to record date and time of opening. The second group had respondents use the same bottle and SMS reminder system as the SMS had motivational content and frequency of messages adjusted using AI algorithms. The result showed that adherence of the investigated group significantly improved over 3 months compared to that of the control group. (AHRQ, 2018).

An AI platform (AiCure®, New York, NY) has been created to understand patient behaviour and remotely monitor patient adherence during clinical trials (AiCure, 2023). This platform was utilized to monitor and increase adherence in patients receiving direct oral anticoagulants (Labovitz *et al.*, 2017). In the study, the AI platform was used to automate directly observed therapy using reminders, visually confirming medication ingestion on patients' smartphones, and sending the information to a server (Figure 2). Patient adherence increased by 67%, which was also confirmed by plasma sampling. Similar AI platforms can be applied to understand patient behaviour and improve treatment adherence.

Improvement of treatment outcomes

Using drug interaction checkers like MedScape, iFacts, and Micro-Medex, adopting use of electronic health records, and AI-based servers that can detect errors in medication doses and drug-drug interactions would help significantly improve treatment outcomes. In 2019, Adebayo Alonge, founder of RxAll, received the Hello Tomorrow Global Challenge award for his AI-based hyperspectral handheld scanner (RxScanner) which detects counterfeit drugs (Yale, 2019).

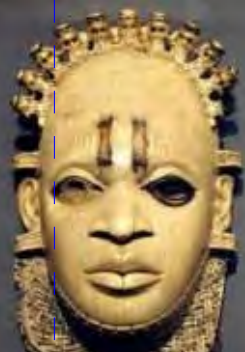


Figure 2: Application of AI (AiCure®) in virtually assessing adherence to direct anticoagulant therapy (Labovitz *et al.*, 2017).

Adverse drug reactions

An adverse event can be defined as any injury resulting from medical intervention related to a "drug" (Donaldson *et al.*, 2000). Most adverse events are preventable and linked to human error, inadequate information, and time to comb through large amounts of data (Syrowatka *et al.*, 2022). Next level programming (NLP), a component of AI, has been utilized to comb through large pools of data, including health records, journal articles, and abstract presentations to match adverse events and medication safety (Wong *et al.*, 2018). This has led to the development of several NLP frameworks that provide easily accessible information on adverse events, saving clinicians time and aiding decision-making (Tang *et al.*, 2019). Most hospitals in the US and UK use these AI applications to screen for adverse events and appropriate doses of drugs during prescribing and dispensing.

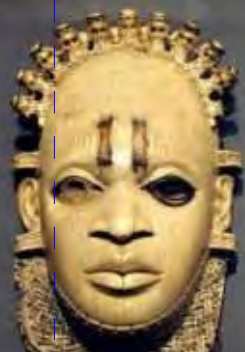
Drug Discovery and Development

In preliminary drug discovery (that is early stages) the use of machine learning starts from initial screening of drugs to the predicted success rate. Recently, artificial intelligence has become a very important part of the pharmaceutical industry for the useful applications in vast technical and research fields (Duch *et al.*, 2004). The emergence of ideas in accepting the applications of artificial intelligence in pharmacy practice includes drug formulations, drug

discovery, genome sequencing as well as other healthcare applications. (Jiang *et al.* 2017). The uses of artificial intelligence systems also make possible prediction of in vivo responses, pharmacokinetic parameters of the therapeutics and suitable dosing. (Gobburu *et al.*, 1996).

Drug Design

Artificial intelligence can also be applied pharmaceutically in drug design. This can be carried out by monitoring the interaction of the 3D models of molecules and target sites (both receptors and enzymes) which can then be used to represent therapy. This is actually achieved based on behavioral history pattern of molecules. Since, artificial intelligence tries to recognize images from inspection of examples of other images it generates potential drugs based on behavior of the molecule in its structural base. Different companies involved in drug programming in collaboration with scientist have created an algorithm that finds out an interaction between broad biological system and drugs which narrows into smaller group of activities. It points out the testing of millions of cases make extremely accurate prediction of interactions. This is the key to ensure success of drug development because artificial intelligence can scan all possible combinations more quickly than and narrow down possible actions.



Clinical trials

Clinical trials are long term process and are very expensive to carry out and machine learning has several useful potential applications in helping to organize clinical trials. The application of predictive analysis in identifying candidates for clinical trials as well as finding the perfect sample size for improved efficiency, adjusting the differences in patient's recruitment sites and using electronic medical data to reduce data errors. This reduction in error can lead to more cost effective testing. Machine learning can be used in in remote monitoring in clinical trials and in accessing real time data for increased security of drug and patient information; for example, observing biological and other signals of injury or death of participants. (Fagella, 2019)

Formulation of Pharmaceutical Preparations

The application of neural networks as one of the artificial intelligence technology is a modern approach to solve complex problems of formulating pharmaceutical preparations. The use of the ANN in formulating of pharmaceutical preparations is due to its advantages such as non-linearity and the ability to model and optimize with a small number of experiments. ANN have been successfully applied in designing compositions of pharmaceutical preparations, optimizing production processes, predicting the stability of pharmaceutical preparations, providing and controlling quality, in vitro testing the rate of release of the active substance from the pharmaceutical form and in vitro / in vivo correlation. With newer software packages the application of ANN in the design and development of new pharmaceutical preparations is also foreseen and is simple in assessing the stability, safety and efficiency simultaneously reducing cost (Ibric *et al.*, 2007).

Specific applications in hospital pharmacy

There are various applications of artificial intelligence in hospital pharmacy practice. These involves organizing dosage forms for

individualized patients, treatment policies, suitable or available administration routes selection. (Jiang *et al.*, 2017). There applications are seen in the following:

1. Maintaining medical records: there is maintenance of medical records of patient which if done manually is a cumbersome task. The collection, tracing of data and storage of data are made easy by implementing the artificial intelligence system. For example, Google deep mind health project which assist in bringing up medical records in short span of time.
2. Assisting in repetitive task: artificial intelligence technology also assists in some repetitive tasks, such as examining the ECHO, ECG, X-RAY imaging, radiology etc., for the detection of disorders and diseases (Manikiran *et al.*, 2019). A medical start up is necessary for the improvement of patient condition by combining deep learning with medical data. Deep learning can be used for almost all types imaging analyses such as x-ray, ECHO, ECG and CT scan.
3. Designing of treatment plans: artificial intelligence technology is efficient in the managing effective treatment plan. (Manikiran *et al.*, 2019). When a patient is in critical condition, artificial intelligence is very useful in controlling suitable treatment plan selection. Every data ranging from patient history, medication, reports from laboratory findings etc., are considered are considered in designing of treatment plan as suggested by the program.
4. Health support and medication resistance: A few years ago artificial intelligence use is recognized as efficient in health support services and for medication assistances. (Jiang *et al.*, 2017). For example, a virtual nurse can be created which has a pleasant voice and cordial face which aims is helping patients to guide the treatment of patients as well as



supporting them with chronic condition between doctors' visits. This is seen in Ai cure which is an app on existing smartphones webcam, it monitors patients and assists them to control their conditions.

5. Artificial intelligence helps people in health care system: these programs are capable of collecting and comparing the data from social awareness algorithms. (Jiang *et al.*, 2017). There are wide range of information recorded in healthcare system which involves the medical history of patients along with their treatment history of the patients and also their history from birth as well as their lifestyle choices.

Specific applications in the pharmaceutical industry

Artificial intelligence has helped technological advancements in the industry by speeding up innovative processes. Artificial intelligence can be of good help in processing data and presenting results that would help decision making, saving human effort, time, money, as such saving lives. (Zhang *et al.*, 2014) . the following are ways artificial intelligence is used in the pharmaceutical industry.

1. Drug repositioning - Artificial intelligence is useful in identifying the best available molecular starting points to reinitiate a project with re-purposing a known drug or combination to test if it can treat another related or un-related disease condition based on its targets, genomic fingerprint or mechanism of action. (Yussupova *et al.*, 2016)
2. Alternative indication identification - By studying data pertaining to indications of drugs and sorting them on quality and relevance will make pharmacist know new promising indications for a particular class of inhibitors and publish them for research and trials. (Roff, 2017)
3. Drug epidemics - The use of artificial intelligence can enable pharmacists identify overuse and abuse of drugs and other substances which can lead to initiation of

control activities in a shorter period than would naturally occur. For instance, the tracking of the overuse of cough syrups using AI would have enabled the problem of abuse of these agents in a much shorter period than when it was finally escalated as a national issue in Nigeria.

In addition, artificial intelligence can be used to *Personalize treatment for patients*

Help build new tools to aid in diagnosis and treatment.

OTHER PROSPECTS OF AI ON HEALTHCARE

Precision medicine

With increasing development in AI, the applicability of AI in using individualized patient information (based on genomic, social, medical, and medication history) to aid clinical decision-making is expected to increase significantly.

Drug discovery

AI is expected to further significantly shorten the drug discovery process. It is also expected to increase the number of novel drugs.

IMPLICATIONS

As with previous technological advancements, there is a heightened fear of humans losing jobs to machines. The loss of jobs due to technology is referred to as 'technological unemployment' (Peters, 2017), as was observed with typists and elevator operators. Rapid advancement in AI has left individuals and even professionals questioning the security of their jobs. Currently, most of these concerns are considered largely hypothetical (Bajorath, 2022). As coined by the American Medical Association, 'augmented intelligence' refers to the "enhanced capabilities of human clinical decision-making when coupled with these computational methods and systems." (AMA, 2018) which is a desired state that combines the best of the human and the machine. Quick and accurate analysis of the vast amount of data that can be generated with AI to make accurate clinical decisions can be utilized to reduce the risk of errors associated with



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prescribing. This usefulness of AI has been adopted in several hospital and community pharmacies in the US, Canada, and UK.

In addition, as stated by the American Society of Health-System Pharmacists (ASHP), the integration of AI into healthcare is primarily to improve treatment outcomes for patients (Oddis, 2019). Seeing this as the overall goal would reduce the fears and threats of being overtaken by AI and open pharmacists up to creative ways to pioneer the use of AI in drug discovery and clinical pharmacy practice. The pharmacist's role is primarily to utilize the platforms, products, and systems provided by AI to improve decision-making, communicate with patients, and encourage adherence in order to assure optimal outcomes for each individual patient.

CONCLUSION

In summary, AI is rapidly changing the status quo in virtually every field, including healthcare. There are more artificial intelligence applications in medical diagnosis and treatment with increasing technology which has promoted better diagnosis and treatment of diseases in patients as well as medical teaching. It offers insights generated from real-world data to provide more accurate information on patients and expected outcomes. As a result of AI, the designing of new hypotheses, strategies, prediction and analyses of various associated factors can easily be done at a cheaper overall cost and in significantly less time. As the field continues to emerge, the 10-star Pharmacist should be aware, adaptable, and flexible to the changing roles and focused on how AI can be adapted and adopted for increasing adherence, opportunities for drug discovery, precision medicine, appropriate dosing, and reducing prescribing errors. This will help ensure the pharmacists continuing relevance in healthcare delivery globally.

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PREPARATIONS FOR FIP 2024 IN CAPE TOWN, SOUTH AFRICA

Introduction:

It is with great excitement that South Africa can finally count the days to the 2024 FIP World Congress that will take place in Cape Town, South Africa in September 2024.

The organiser:

The FIP World Congress is organized by FIP itself under the leadership of the Congress Director and COO, Carola van der Hoeft. FIP takes leadership of all logistics, programme, speakers, advertising, marketing, venue bookings, social events, and invitations as per every other year. FIP also takes sole responsibility for all expenses associated with the congress.

FIP also relies on the member organisation, PSSA, for

support and guidance in terms of understanding the local culture and ways of work, and to ensure high nationals like the Minister of Health, or DG attends the opening ceremony. PSSA is therefore not the organizer of the event and as such, no organizing committee will plan or execute any activities on behalf of PSSA or FIP. The Cape Western Province branch will support the PSSA National Office in this task of supporting FIP as they are the local branch at the local on the event.

The dates:

The 2024 FIP World Congress will take place from Sunday 1 to Thursday 5 September 2024. A detailed breakdown of the preliminary academic programme, for your planning, is as follows.

	Morning	Lunch time	Afternoon
Sunday 1 September		Session: Pharma in South Africa	15h00: Opening ceremony 17h00: Welcome reception and opening of exhibition
Monday September	Plenary session Breakaway session	Lunchtime symposium	Breakaway sessions Plenary session
Tuesday September	Plenary session Breakaway session	Lunchtime symposium	Breakaway sessions Plenary session
Wednesday 4 September	Plenary session Breakaway session	Lunchtime symposium	Breakaway sessions Plenary session
Thursday September	Professional tours to pharmacies and pharmacy museum (organized by Cape Western Province Branch of PSSA)		

Over and above the academic programme there are other potential pre- and post-congress symposiums that may take place on the Saturday (31 August) or Thursday (5 September) to different tourist attractions in Western Cape, South Africa and the African continent. These pre- or post-Symposiums are normally at an additional cost to attend and separate registration is needed. These tours are organized by PSSA exclusively.

There are also a number of social events to keep in your planning and budget. The welcome reception on Sunday evening is included in your registration

fee as a delegate and is thus free to attend (highly recommended). In addition, there are some other social events you may choose to register for. These events are not compulsory, and it is a choice to attend them or not.

- Section dinners on Monday 2 September from 20h00
- FIP Fun Run on Tuesday 3 September: Early morning there will be a fun 5 km run (or walk) for those interested and all entrance fees will be donated to the FIP Foundation.



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Early Career Pharmaceutical Group (ECPG, formerly known as YPG) evening on Tuesday 3 September: a network event for all young pharmacists and pharmaceutical scientists, and pharmacy students are welcome too.

Closing dinner on Wednesday 4 September: This event aims to be a highlight and last change to say farewell to new friends and colleagues before they departure from Cape Town.

The venue:

The 2024 FIP World Congress will take place at the Cape Town International Convention Centre (CTICC).

The logo:

In 2024, FIP will be 112 years old as the organisation was founded on 25 September 1912. In these 112 years, the World Congress was only once hosted on the African continent and that was in 2005 in Cairo, Egypt.

One can thus understand that apart from South Africa being excited to bring this global event to home soil, our colleagues on the rest of the African continent is equally excited and share the proudness of this moment with us. For this reason, as a symbol of inclusivity, it was suggested and approved to have the African continent as part of the official congress logo, but to display it in the

organizations and structures had the opportunity to submit theme suggestions during May 2023. Once the theme is announced, the FIP Congress Programme Development Group (CPDG) will start preparing the programme layout and call for session proposals from FIP structures accordingly.

A call for abstracts will follow where African colleagues will have the opportunity to submit their contributions to the international stage. Information on the abstract submission deadline will be communicated as it is published.

One of the parallel sessions will aim to focus on more local South African content during the sessions. These sessions are not specifically aimed for only South Africans to attend, but rather to allow for showcasing of the work we do in South Africa to international delegates and to foster collaboration and networking. All sessions will be open for any registered congress participants to attend.

Who may attend:

Attendance of the 2024 FIP World Congress is open to any pharmacist, pharmaceutical scientist, pharmacy educator, community service pharmacist, intern, student or pharmacist's assistant in South Africa and the world. **There is no pre-requirement for membership to PSSA or FIP to be able to register to attend this event.**

Sponsorship opportunities:

The sponsorship proposal will be available shortly, which will explain the different sponsorship opportunities and exhibition options available. Regardless, the first gold sponsorship as well as a few other opportunities have already been secured.

Any interested party could reach out to Mariet (mariet@pssa.org.za) for more information. If you are interested in supporting FIP as sponsor or exhibit at the FIP 2024, please send an email to sophie@fip.org and the prospectus (once available) will be sent to you as soon as possible.



The congress theme and programme:

The congress theme and sub-themes will be announced by FIP soon. All FIP member



COUNTRY REPORT

PHARMACEUTICAL SOCIETY OF NIGERIA (PSN)

INTRODUCTION

This is a year with many gains for pharmacy as a profession both politically and professionally in Nigeria. It is our pleasure to give a brief account of our activities.

THE 95TH ANNUAL NATIONAL CONFERENCE OF THE PHARMACEUTICAL SOCIETY OF NIGERIA (PSN)

The 95th annual national conference of the Pharmaceutical Society of Nigeria (PSN) tagged "TIN CITY 2022", was held at Crispian Suites and Events Centre from Monday 31st October to Saturday 5th November 2022. The Conference, with the theme "MEDICINE SECURITY IN AN UNSTABLE ECONOMY" was a huge success, judging by a large turnout of two thousand and sixteen (2016) pharmacists from all over the country. The conference recorded zero security breach despite the huge turnout. At the end of the Conference, the AGM held and elected the following Pharmacists to serve and pilot affairs of the Society for the next year:

1. Pharm. (Prof). Cyril O. Usifoh, *FPSN, FPCPharm, FNAPharm*
President
2. Pharm. Ibrahim H. Binji, *FPSN* -
Deputy President (North)
3. Pharm. (Dr.) Egbuna C. Udeorah, *FPSN*
Deputy President (South)
4. Pharm. Olugbenga A. Falabi, *FPSN*
National Secretary
5. Pharm. Ikenna C. Mbata, *MAW, FIMC*
Asst. National Secretary
6. Pharm. Gafar 'Lanre Madehin, *FPSN*
National Treasurer
7. Pharm. Luka Wetben
National Fin. Secretary
8. Pharm. (Dr.) Felix Ndiukwu, *MAW* -
National Pub. Secretary
9. Pharm. Dr. Margaret O. Ilomuanya
Editor-in-Chief
10. Pharm. Martins O. Oyewole, *FPSN*
Internal Auditor

11. Pharm. (Dr.) Obianuju Onwuatuwegwu, *FPSN, FPCPharm* -
Unofficial Member
12. Pharm. Dr. Kingsley Chiedu Amibor *FPSN, FPCPharm*
Unofficial Member
13. Pharm. Mazi Sam I. Oluabunwa, *OFR, MON, FPSN, FNAPharm, FPCPharm, NPOM*
Immediate Past President

PHARMACY COUNCIL OF NIGERIA (PCN)

I bring warm felicitations from the management and staff of the PCN to the President of PSN, members of NEC and Council, Fellows, and indeed all members of the Society on the event of the 2022 Annual General Meeting of PSN being my maiden participation as the Registrar, Pharmacists Council of Nigeria (PCN).

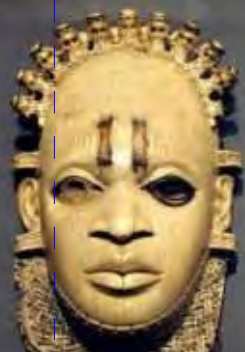
I want to use this opportunity to appreciate the President of PSN, the Council, and the entire members for the warm support and confidence reposed in me as I take charge of the Administrative affairs of the Registry.

The highlights of the activities of PCN so far are presented below:

Appointment of PCN Registrar. The PCN Governing Council at a Special Meeting held on April 07, 2022 confirmed the appointment of Pharm. Ibrahim Babashehu Ahmed, *FPSN, FPCPharm*, as the substantive Registrar, Pharmacists Council of Nigeria (PCN) at the expiration of the tenure of Pharm. N. A. E. Mohammed, *PhD, FPSN, FNIM, FPCPharm, FNAPharm*. The appointment took effect from June 14, 2022.

Presentation of Scorecard (June 2014 - June 2022)

The Public Presentation of the Scorecard of the tenure of the former Registrar, Pharm. N. A. E. Mohammed, *PhD, FPSN, FNIM, FPCPharm, FNAPharm* from June 2014 – June 2022 held on June 07, 2022 at Transcorp Hilton Hotel, Abuja. The scorecard highlighted major activities and milestones achieved during the period under reference.



Registration and Licensing

Total Number of Pharmacists in the Register

- 31,349

Total Number of Pharmacists Licensed as of 15/09/22

- 16,271

Number of Premises Certificates Issued - 6,838

Total Number of Pharmacy Technicians Registered

- 12,143

Total Number of Patent and Proprietary Medicines Vendors (PPMVs) Registered - 112,140

Groundbreaking Ceremony for the Construction of Coordinated Wholesale Centre (CWC) in Oba, Anambra State

The groundbreaking ceremony for the construction of Coordinated Wholesale Centre at Oba, Anambra State was performed by His Excellency, Executive Governor of Anambra State, Prof. Charles Soludo on Friday, June 17, 2022

Activities of the Education and Training Department

Total Number of Pharmacists Inducted between January - August 01 - 1,204

Foreign Pharmacy Graduate Orientation Programme (FPGOP) and Pre-registration Examination for Pharmacists (PEP)

PCN successfully conducted the first cycle of Foreign Pharmacy Graduate Orientation Programme (FPGOP) and Pre-Registration Examination for Pharmacists (PEP) programmes for 2022 as follow:

FPGOP: Held April 25 - June 05, 2022 of which 129 were inducted from among those who participated in the first cycle.

PEP: Held in March 2022 with a 97% pass rate. As we recall, PEP was introduced to ascertain equality in knowledge and competencies of new graduates with the growing number of Faculties of Pharmacy across the country.

Accreditation and advisory visits

Accreditation and advisory visits are routinely carried out by the Council and this year, a total of 7 universities were visited.

Enforcement Activities

In furtherance of PCN Mandate to sanitize the practice environment for the benefit of the Nigerian populace from January 2022 till date, enforcement activities

were conducted in eight (8) States of the Federation to ensure compliance with extant laws.

Digital List of Registered Pharmacists and Premises

Pharmacists Council of Nigeria implemented the digital list of registered pharmacists and premises which was published and the PCN website towards the end of 2021.

Registration of Pharmaceutical and Sales Representatives/Online Registration

The Registration of pharmaceutical and sales representatives commenced in year 2022. Similarly, registration of online pharmacy commenced in 2022.

Commissioning of PCN Lagos Zonal Office Building

The new purpose-built Lagos Zonal Office building at Yaba was completed and commissioned in the last quarter of 2021. The building has since been fully occupied and Registry activities ongoing.

Award of ISO 9001:2015 Certificate to PCN

In recognition of PCN's compliance to global quality management system standards, PCN was awarded the ISO 9001:2015 Certification by NECA Global Certification Limited (NGCL) after a successful audit of the PCN Head Office/Registry as supported by PQM+ USP. The PCN has consistently worked towards improving her processes, and ensuring we remain in compliance with the standard.

Global Benchmarking of PCN and NAFDAC by WHO

The Nigeria Regulatory System has attained Maturity Level 3 (ML3) having fulfilled the standards as prescribed by the World Health Organisation. PCN and NAFDAC underwent WHO re-benchmarking between February 21 and 25, 2022 and were found to have fulfilled the requirements to attain (ML3).

Signing of the new Pharmacy Council Law by the President

The long-awaited Pharmacy Council of Nigeria Act 2022 has been signed into law by President Muhammadu Buhari, *GCFR*.



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NATIONAL AGENCY FOR FOOD AND DRUG ADMINISTRATION AND CONTROL (NAFDAC)

The Nigeria Regulatory System has attained Maturity Level 3 (ML3) having fulfilled the standards as prescribed by the World Health Organisation. PCN and NAFDAC underwent WHO re-benchmarking between February 21 and 25, 2022 and their collaboration fast tracked the fulfillment of the requirements to attain the ML3. NAFDAC continues to roll out strategies and programmes to meet its mandate of safeguarding the health of the people of Nigeria.

NATIONAL INSTITUTE FOR PHARMACEUTICAL RESEARCH & DEVELOPMENT (NIPRD)

The current Director-General, Dr. Obi Peter Adigwe *NPOM* is the 4th since inception of the institute in June 1989, with Dr. John Alfa, *FPSN* as the 8th Chairman of the NIPRD Governing Board. Dr. Adigwe secured a reappointment for a 2nd term in office for another four years (2022-2026) by the President and Commander-in-Chief of the Armed Forces Federal Republic of Nigeria Muhammadu Buhari, GCFR on 10th of June 2022. Based on the reengineering and restructuring of NIPRD, the President of Nigeria, conferred on the DG/CEO of NIPRD the prestigious Award of the National Productivity Order of Merit in June 2022.

NIPRD is deeply involved in the development of phytomedicines from drug discovery to the final finished product, as well as the formulation of relevant Active Crude Extracts (ACE). NIPRD's development efforts are focused on phytomedicines for the management of diseases such as Prostate Cancer, Alzheimer's Disease, Fibroid, Sickle Cell disorder, Diabetes and HIV/AIDS, etc. The Institute has also developed techniques in nanotechnology and bioinformatics for improvement in pharmaceutical formulations/dosage forms for orthodox drugs and herbal medicines.

DRUG DISTRIBUTION

Uppermost is the signing into law of the Pharmacy Council of Nigeria (PCN) Act 2022 which was passed by the national assembly and assented to by the

President of the Federal Republic of Nigeria. The enactment of this law is a symbol of love for the citizenry of the country as finally, all premises where medicines are article of trade are now to be regulated by the PCN. Germaine in this law also is that the practice of two cadres in pharmacy is now being regulated by the PCN unlike in the time past when it was Pharmacists Council and the Pharmacy technicians felt that the Council does not have jurisdiction to regulate them. The new law also fosters a better relationship between the PCN and NAFDAC.

Nigeria has grappled with a chaotic drug distribution system for a long time. However, in the year reviewed, the first Coordinated Wholesale Centre (CWC) was commissioned in Kano, Kano State in the Northwestern part of the country. The CWC is an alternative created by the government to abolish open drug markets. In addition, creating order in our distribution chain got a boost with the launching of a new drug distribution center in Lagos by New Heights Pharmacy and the unveiling of the NAFDAC Track and Trace system deployed by GS1. Alpha Pharmacy also commissioned its Cold Chain stores.

PSN AND ITS INTERNATIONAL AFFILIATES

WEST AFRICAN POSTGRADUATE COLLEGE OF PHARMACISTS (WAPCP)

Annual General Meeting

The College's 36th Annual General Meeting and Scientific Symposium (AGM/SS) took place in Monrovia, Liberia from the 20th to 23rd March 2023. The PSN President, Pharm Cyril Usifoh was in attendance. To further build capacity and improve the integrity of fellows of the College, WAPCP in collaboration with the American Society of Health System Pharmacists (ASHP) inaugurated the International Pharmacy Practice Residency (IPPR) programme. ASHP serves as the sole accreditation organization for Pharmacy residencies and Pharmacy technician training programs in the U.S.A. It was agreed that WAPCP, having identified the benefits of the program, should proactively take steps to undertake the international accreditation.



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Benefits of the international accreditation include enhanced credibility of the residency program within the West African region and globally. Furthermore, it demonstrates the program's commitment to excellence and quality improvement in the hospital. The Program, being facilitated by WAPCP Nigeria chapter, officially commenced at the Delta State University Teaching Hospital on May 2, 2022.

INTERNATIONAL PHARMACEUTICAL FEDERATION (FIP)

The Society is a member body of FIP and has always supported the Federation. In the year under review, FIP has increased her online professional engagement and PSN members have taken advantage of these initiatives to widen and deepen the insights of her members both professionally and ethically. We encouraged members to participate in the different webinars organized by FIP.

We were officially represented in FIP Congress, Seville 2022, Council meeting by the President and the National Secretary while forty-six (46) other Nigerian pharmacists were in also in attendance. The 80th FIP World Congress held from 18th – 22nd September 2022 with the theme “Pharmacy united in the recovery of health care”. According to FIP, over 2,300 attended the congress, however, we noted with concern the trouble our delegates had in getting visas to travel to attend the Seville 2022 congress in Spain. FIP confirmed that 108 Nigerian pharmacists registered to attend the congress, whereas, only about half the number got visas.

The 81st FIP World Congress of Pharmacy and Pharmaceutical Sciences is scheduled to hold in Brisbane, Australia from the 24th to 28th of September. Arrangement are being concluded for the delegation of 80 registered members of PSN led by the PSN President, Prof. Usifoh FPSN to be present in Brisbane. The issue of visa rejections by large proportion of delegates to FIP congresses is becoming an embarrassing tale that needs strategic intervention.

COMMONWEALTH PHARMACISTS' ASSOCIATION (CPA)

Pharm Ibrahim Binji *FPSN* the PSN Deputy President

(North) recently assumed office as Councilor representing PSN at the Commonwealth Pharmaceutical Association (CPA).

One of the activities of the CPA is the CPD (Continuing Development Programme) which all Pharmacists in Nigeria are encouraged to participate in actively to enhance their knowledge and skills. A new course on Tuberculosis Overview was added to the CPA CPD platform on 24th March 2022, a Malaria course was added and in September, a new CPD course on Diabetic Eye Complication was launched. We encourage all Pharmacists in Nigeria to Onboard. The Annual individual membership fee can be paid offline by interested individuals. However, individuals are encouraged to join their own National Pharmacy Association (In this case PSN) to gain free membership to CPA.

The Pharm Aid (2021-2022) donation of BNF by CPA has since been received at the PSN National Secretariat and distributed accordingly.

The CPA, through collaboration with University College London Hospitals has offered 10 free slots for “critical care courses” to Pharmacists working in low and middle-income countries in the commonwealth.

WORLD PHARMACISTS' DAY (WPD)

The 2022 pharmacy week was held across the country between 23rd- 26th September 2022 featuring career talks, media campaigns, road walks and a symposium on the year's theme which was **Pharmacy: United in Action for a Healthier World**. The Pharmaceutical Society of Nigeria National, its state branches and the different technical and interest groups participated in the celebrations using different forums, media and audiences. Pharmacists from Nigeria were well represented in the WPD Champions collated from 140 countries on its WPD site.

Plans are underway for the celebration of the 2023 edition with theme '**Pharmacy: Strengthening health systems**' though the President, National Secretary and other delegates will still be in Brisbane on the day.



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ASSOCIATION OF PROFESSIONAL BODIES OF NIGERIA (APBN)

The Pharmaceutical Society of Nigeria was ably represented at the following activities of the Association of Professional Bodies of Nigeria which took place in the year 2022:

Presidential retreat – March 24th to 25th 2022

Professional Summit – July 12th to 15th 2022

Annual General Assembly – 21st September 2022

PSN was represented at all Board and council meetings.

Pharm. Mrs Adefolake Adeniyi MAW was elected Asst. General Secretary (ASG) of APBN

Representatives of the PSN YPG were part of the delegations to the APBN retreat at Port Harcourt and the Summit held in Abuja.

PSN FOUNDATION

Report of Activities From Nov. 2021 To August, 2022 by PSN Foundation Project Team

As the PSNF Project Team continues in its bid to ensure that it delivers on its mandate of attracting and implementing projects that impact on pharmacists and pharmaceutical practice, more projects and activities were embarked upon to achieve improved visibility and defined professional roles for pharmacists in the public health space.

During the period under review and following the graduation of the project team from the PACFaH (Partnership for Advocacy in Child and Family Health) project, the PSNF Project Team came out successful in its bid as a member of the consortium to implement the BMGF-funded IntegratE phase 2 project in eleven (11) states. A Memorandum of Understanding was successfully signed as a member of the SFH-led consortium to implement the 5-year project.

The project team succeeded in its support for review of major national policy documents such as the Task Shifting Task Sharing policy that will further enshrine pharmacists' role in public health and invariably impact positively on national health indices while creating more evidence-based visibility for pharmacists in quality service delivery. Equally the project team participated in series of

advocacy meetings, consultative engagements and consensus building nationally and in various states to create enabling environment for actualization of pharmaceutical roles and operationalization of national resolutions on health, especially those that impact on pharmacy practice.

Several other meetings held with government agencies and other implementing partners, and of note is the commencement of our collaboration with the Federal Ministry of Health National Tuberculosis and Leprosy Control Program on providing pathway to actualize the 2013 National Council on Health resolution that seeks to recognize community pharmacies as DOT centers.

The PSNF Project Team at every opportunity attended relevant and prospective collaborative meetings to seek avenues to strengthen and promote good pharmaceutical practice. Several such meetings are still being attended with various organizations, even as the PSNF increasingly gains more visibility in the public health space.

Professional associations and groups, particularly ACPN and regulatory bodies were conferred with at every stage of project conceptualization, consensus building and project implementation as these impact on their services and/or constituencies.

The project team specially appreciates the support of the PSN NEC and PSNF BOT for ensuring a smooth IntegratE project take off.

CONCLUSION

The Pharmaceutical Society of Nigeria as the host of the APF at our national secretariat in Lagos, Nigeria continues to meet its financial obligations to the Forum as at when due. We continue to take giant strides to advance the practice of pharmacy in Nigeria.

**PHARM. (PROF). CYRIL O. USIFOH, FPSN
PRESIDENT**

**PHARM. GBENGA FALABI, FPSN
NATIONAL SECRETARY**



COUNTRY REPORT

PHARMACEUTICAL SOCIETY OF GHANA

INTRODUCTION

Pharmaceutical Society of Ghana (PSGH) is the professional body (association) of pharmacists in Ghana.

Vision:

We strive for the well-being of all through the provision of excellent pharmaceutical services at all times.

Mission:

To provide accessible, affordable, sustainable and quality pharmaceutical services to all through professionalism, continuous professional development, leadership and collaboration with government, local and international organizations and other relevant stakeholders.

Founded on 19th December, 1935, the PSGH has over the years continued to advocate for the provision of sustainable, accessible, affordable and humane quality pharmaceutical services by contributing to the formulation of policies as well as the passage of laws and regulations on health in general and the pharmaceutical sector in particular.

The PSGH continues to act as the umbrella organisation for all the different practice groups in pharmacy to ensure unity and cooperation despite the diversity of practice.

MEMBERSHIP

The membership of the PSGH in GOOD STANDING as at 31st December, 2022 was **Four Thousand and Twenty Five (4,025)**.

The membership of PSGH is made up of members in five practice groups namely:

1. Community Pharmacy Practice
2. Hospital Pharmacy Practice
3. Industrial Pharmacy Practice
4. Academia, Research, Administrative and Social Pharmacy Practice
5. Medical Representation

There are other practice groups that do not have a formal recognized grouping. These include Pharmacists in Regulation (who are considered under Government and Hospital Practice Pharmacists (GHOSPA) presently and Pharmacists in Information Technology. The PSGH is working towards getting a formal recognized group for them.

PSGH has regional branches in ten regions of the country. The PSGH maintains the 10 recognized regional branches despite the creation of 6 new administrative regions.

The PSGH also has the Lady Pharmacists Association of Ghana (LAPAG), a special interest group of ALL Lady Pharmacists. LAPAG takes up special advocacy and projects affecting children and women's health. LAPAG has been very active in sexual and reproductive health campaigns as well as cancers that affect women including breast and cervical cancer education and screening.

In 2020, the PSGH approved a new interest group called the Young Pharmacists Group (YPG-PSGH) as part of the official PSGH groups. The YPG-PSGH is made up of pharmacists who are thirty-five years and below or who completed pharmacy school in the last five years. At the 2022 FIP Congress in Seville, the name of the Young Pharmacists Group was changed to Early Career Pharmaceutical Group (ECPG) to incorporate older pharmacists and pharmaceutical scientists who were still relatively new to the profession. The YPG-PSGH has begun the processes to change its name in line with the change by FIP.

COLLABORATION AND COOPERATION WITH RELEVANT INSTITUTIONS AND AGENCIES

The PSGH cooperates and collaborates with various institutions, agencies and organizations in order to realize its vision and aspirations. Some of



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these include; the Ministry of Health, Pharmacy Council, Ghana College of Pharmacists as well as pharmacy training institutions and many associations and civil society organizations.

SOME ACTIVITIES OF PSGH DURING THE PERIOD UNDER REVIEW **ADVOCACY**

We reported last year on some advocacy actions we took to get pharmacists to be recognized vaccinators. The manual for pharmacists to be vaccinators have been launched. This was led by the Ghana College of Pharmacists. The initial focus will be on the COVID-19 vaccines after which there would be vaccination against other vaccine preventable diseases. Pharmacists are required to be trained and certified by the Ghana College of Pharmacists for them to become vaccinators. On the COVID-19 Antigen Testing in Community Pharmacies, the manual is ready to be launched.

2022 ANNUAL GENERAL MEETING

The PSGH held its face-to-face Annual General Meeting (AGM) for the first time in three years after virtual AGMs in 2020 and 2021. The AGM took place in the Northern Regional Capital of Tamale at the University for Development Studies (UDS). The AGM was held from Wednesday, 31st August to Sunday, 4th September, 2022. The theme for the 2022 AGM was ***“Optimizing the Pharmaceutical Workforce in a Rapidly Evolving World”***.

The thematic speaker was Pharm. Mrs. Mansa Nettey, the CEO of Standard Chartered Bank Ghana Plc and President of Ghana Association of Banks.

The Plenary Symposium that followed the Opening Ceremony was a debate on the increasing pharmacist numbers dubbed ***“Landmine or goldmine: The rising number of pharmacists is the pathway to optimizing the workforce in Ghana”***. It was a good academic and professional exercise that stimulated a lot of thoughts on the way forward.

As has been the practice, all practice and interest groups also had the opportunity to meet among themselves to discuss issues peculiar to their practice and interests. Other sessions that constitute Continuing Professional Development were held.

A communique was issued at the end of the AGM and copies presented to the Minister for Health.

WORLD PHARMACISTS DAY COMMEMORATION

The World Pharmacists Day (WPD) is celebrated on 25th September each year in Ghana in collaboration with the Pharmacy Directorate of the Ministry of Health. In 2022, the PSGH celebrated the World Pharmacists Day (WPD) nationally over a period of one month with activities in the various regions to create awareness about the pharmacy profession. The global theme for the 2022 WPD was *“Pharmacy united in action for a healthier world”*. The global theme was combined with our public health focus for 2022 which was on OBESITY. A 10km health walk was organised to commemorate the 2022 WPD after which it was launched with speeches at the Elwak Sports Stadium with representatives of the Ministry of Health. This was followed by a news paper supplement in the largest circulating newspaper in Ghana with various areas of the pharmaceutical sector publishing activities and stories on the profession to create awareness. Various media engagements were held nationally and in the regions to create awareness about how pharmacy is making the world healthier.

WORLD ANTIBIOTIC AWARENESS WEEK (WAAW)

PSGH has continued to be strong on advocacy and awareness creation on Antibiotic Resistance. A global action plan to tackle the growing problem of resistance to antibiotics and other antimicrobial medicines was endorsed at the Sixty-Eighth (68th)



World Health Assembly in May 2015. The PSGH has since 2015 commemorated the World Antibiotic Awareness Week and made it a month long national activity where all regional branches engage in various activities to educate the public and draw attention to the menace of antibiotic abuse and misuse leading to antibiotic resistance. The theme for WAAW 2022 was: '**Preventing antimicrobial resistance together**'. As in previous years, the slogan of World Antimicrobial Awareness Week was '**Antimicrobials: Handle with Care**'. At the launch of the 2022 WAAW week at the Auditorium of the Ministry of Health, the PSGH Vice President, Pharm. Kwabena Asante Offei, reiterated the need to stop antibiotic abuse.

The PSGH regional branches replicated the public education via the media, churches, mosques, schools and markets.

INDUCTION OF NEW MEMBERS INTO THE SOCIETY

A total of six hundred and sixty-four pharmacists were inducted by the Pharmacy Council in February, 2022. This represented two batches of newly qualified pharmacists for the year 2020 (250) and 2021 (414). In December, 2022, a total of Five hundred and Forty-One pharmacists (541) passed the Ghana Professional Qualifying Examination. Ninety-One passed the July examination awaiting induction. Thus, a total of about Six Hundred and Thirty-Two (632) will be inducted in 2023 into the pharmacy profession.

REPORT OF THE PHARMACY DIRECTORATE OF THE MINISTRY OF HEALTH FOR 2022

The Pharmacy Directorate of the Ministry of Health seeks to ensure universal, equitable and sustainable access to priority, efficacious and safe medicines and other health technologies of acceptable quality for all people living in Ghana and to promote their responsible use by healthcare providers and consumers.

The work of the Directorate seeks to impact positively on broad areas such as selection, strategic purchasing, global trade and research and development, use of medicines, quality assurance and governance as well as health technology assessment, patient safety, risk management and good governance.

VISION, MISSION, KEY PRIORITIES & KEY RESULTS

The vision and mission as well as key results areas for the pharmacy directorate for 2022 is as follows:

Vision:

To support the health sector and build a healthy population by providing quality pharmaceutical services and products whilst ensuring efficiency in the provision of the services and rational use of the products for national development.

Mission:

Advocating pharmaceutical service equity and excellence through appropriate policies, standards and ethics. Key priorities for the Pharmacy Directorate for the year 2022 were:

1. Medicines Policy and Regulation
2. Health Technology Assessment (HTA)
3. Antimicrobial Resistance (AMR)
4. Pharmaceutical Traceability
5. Pricing of Pharmaceuticals

Result areas:

1. **Medicines Policy and Regulation - Revision of the Standard Treatment Guideline (STG) for COVID-19**

The Pharmacy Directorate is involved in developing and reviewing broad policies for the sub-sector of the Ministry as well as activities that inform policies and guidelines in the pharmaceutical sector in Ghana.

One of the specific objectives for the year 2022 was to review the Standard Treatment Guideline (STG) for Covid-19.



2. Antimicrobial Resistance - Launch Antimicrobial (AMR) Multi-partner Trust Fund (MPTF) project and the 2022 World Antibiotic Awareness Week (WAAW)

The Antimicrobial Resistance (AMR) Multi-Partner Trust Fund (MPTF) is an initiative driven by the World Health Organization (WHO), the Food and Agriculture Organization (FAO) and the Organization for Animal Health (OIE) and other partners, to leverage the 'one health' approach within the multi-sector complexities and complications of AMR to accelerate implementation of the National Action Plan (NAP).

The initial phase of implementation of this project will take two years in Ghana. To kickstart this activity, the AMR secretariat of MOH and other implementing agencies in collaboration with the Tripartite propose to launch the project in order to raise awareness of the commencement and existence of the MPTF project in Ghana. The launch of Ghana's AMR MPTF was held on 11th February 2022 at the Conference room of the Ministry of Health.

In November, the MOH hosted various stakeholders to launch the 2022 WAAW on the theme '*Preventing antimicrobial resistance together*'. Stakeholders, partners and the general public were reminded of the need to prevent antibiotic resistance. This is a collective responsibility.

Three AMR platform meetings were held in 2022, one was held in the first quarter and the remaining two in the third and last quarter of 2022. The AMR platform meetings were held to update members on ongoing AMR activities as well as on the end-term assessment of the National Action Plan on AMR. The updates included, but were not limited to, the following: AMR activities from AMR Secretariat, FAO activities, projects, AMR MPTF-WHO, SORT IT project, Fleming funds office, CWa PAMS AMS pilot project.

3. Pharmaceutical Traceability - Inauguration of the Pharmaceutical Traceability GS1 Steering committee, TWG and Secretariat

The Steering Committee members, Technical Working Group members and Secretariat for the Ghana Pharmaceutical Traceability Project were inaugurated in the first quarter of 2022. Various speeches on the relevance of pharmaceutical traceability were given by key stakeholders including the WHO Country Representative, a representative from USAID and FDA. The terms of reference of the three governance structures were outlined during the inauguration by the honourable Minister.

The Minister of Health stated the implication of falsified medicines on human life, giving real life example of the use of falsified medicines within the healthcare system. He expressed his relief in the GS1 initiative as a means to minimize falsified products in Ghana and to increase product identification and patient safety.

He stated that the National Pharmaceutical Traceability initiative is anchored on the Ministry of Health's National Health policy that ensures the availability and appropriate use of quality medicines and medicinal products using technology and devices to facilitate product data identification, capture and transfer directly into supply chain solutions. He stated that it will enhance verification of products at service delivery points to improve efficiency in the upstream operation with Global Trade Item Number identification across board. In the second, the Ghana Pharmaceutical Strategy was launched with Five (5) Strategic Objectives namely:

- **Strategic Objective 1:** A functional governance framework that is sustainable and accountable for implementation and evaluation of the traceability strategy.



- **Strategic Objective 2:** Enhanced regulatory framework for verification and traceability of pharmaceutical products.
- **Strategic Objective 3:** Efficient public and private supply chain systems using standardised identification, capture, and reporting of high-quality supply chain data.
- **Strategic Objective 4:** Information and communications Technology (ICT) leveraged to ensure effective management of health commodities through identifying, capturing, sharing, and effectively using data.
- **Strategic Objective 5:** Appropriate skill mix of health care providers empowered.

4. Health Technology Assessment (HTA)

-Finalization and dissemination of the HTA report on Burkitt's Lymphoma (BL)

Ghana has established structures for Health Technology Assessment (HTA) within the health system and technical work has commenced. The Ministry of Health recently commissioned HTA on Burkitt Lymphoma (BL) as part of the scope of work to explore coverage of childhood cancers under the National Health Insurance Scheme (NHIS) in Ghana. The focus was to use evidence from HTA on BL to guide the possible extension of the current anti-cancer medicines on the NHIS medicines list to cover childhood cancers and to inform policy on financing of childhood cancers in Ghana.

HTA on BL was completed and the report finalized in 2022.

- Launch of the HTA Process Guideline

The Government of Ghana acting through the Ministry of Health has demonstrated commitment to the use of Health Technology Assessment (HTA) in decision-making to optimise the allocation of resources in achieving Universal Health Coverage (UHC). This has been through the establishment of the governance structures for HTA, the development and launch of a 5-year strategy for HTA, and the development of this HTA process guideline for

Ghana. The process for conducting HTA is as important as the output of HTA and associated recommendations and decisions. In developing the process guide for HTA in Ghana, key principles followed were multi-stakeholder involvement and consultation, transparency, and the use of evidence in a deliberative process.

The HTA process guidelines were developed in response to the HTA strategy for Ghana which defines a clear strategic area for evidence-based manuals and guidelines to strengthen the conduct of HTA and the uptake of HTA recommendations. The Ghana HTA process defines the steps required for HTA, indicates the related responsibility, and provides an estimate of the associated timelines as well as the resource inputs required. The process also contains core steps and auxiliary actions which feed into the process.

The process guideline was launched in the final quarter of 2022.

5. Pricing of Pharmaceuticals - Finalization, Launch and Dissemination of the National Medicines Pricing Strategy

In order to mitigate the negative impact of high medicine prices on the healthcare system, Ghana's National Medicines Policy (NMP), 3rd edition 2017, recommended several interventions working in concert to optimize medicines prices for the benefit of the health system and ultimately, the patient. The implementation of this policy is ongoing in Ghana.

The pricing strategy was developed as a tool to guide implementation of the pricing interventions recommended by the NMP, in line with WHO recommendations in a country specific manner. This is to achieve optimized pricing that sustains the public health interest



and a vibrant private sector.

The strategy was finalized and launched in the final quarter of 2022.

Conclusion

The directorate has achieved its core deliverables for 2022. There were auxiliary actions requiring strategic funding. They would be rolled over to 2023 as an ongoing initiative.

The directorate would draw on the synergies within the various components of the Technical Coordination Directorate to optimize its impact on broad health outcomes.

REPORT BY THE FOOD AND DRUGS AUTHORITY (FDA) ON REGULATION OF MEDICAL PRODUCTS

Introduction

The Food and Drugs Authority (FDA) is the national regulatory agency in Ghana mandated by Parts 6, 7 and 8 of the Public Health Act, 2012 (Act 851) to assure the safety, quality and efficacy of human and veterinary medicines, food, vaccines, biological products, cosmetics, medical devices, household chemical substances and clinical trials oversight, and the control and use of tobacco and tobacco products, through the enforcement of relevant local and international standards to protect public health in Ghana. The core operational activities of the Authority are product registration, facility inspections, market surveillance, and safety monitoring. This report gives an account of FDA's performance in executing its core mandate with specific focus on allopathic and herbal medicines, and medical devices for the year 2022.

Product Registration

The FDA in 2022 received a total of twenty-two thousand, and sixty-seven (22,067) product registration applications, representing an increase of 6% from the previous year; out of which seventeen thousand, and forty-five (17,045) products were registered as compared to fifteen thousand, eight hundred and twenty-four (15,824) in 2021 indicating a 5% decrease as well; out of this number

67% were foreign products, and 33% local products. 31.4% of the registered products were Pharmaceutical products; representing five thousand three hundred and forty-seven (5,347) products. Three thousand four hundred and two (3,402) allopathic medicines were registered while nine hundred and forty-three (943) of Herbal medicines, six hundred and fifty-one (651) Medical devices one hundred and eighty-one (181) veterinary medicines and one hundred and seventy (170) herbal supplements were registered representing 63.6%, 17.6%, 12.2%, 3.4% and 3.2% respectively.

Facility Licensing

The number of applications received in 2022 increased from five thousand, and twenty-two (5,022) to six thousand four hundred and sixty-eight (6,468). Out of the applications received, four thousand, seven hundred and ninety-two (4,792) licensing inspections were conducted, which is a 5% increase over the 2021 performance. Three thousand, three hundred and ninety-nine (3,399) facilities were licensed in 2022. For Drugs Inspectorate activities eighty-one (81) facilities were issued with license while for Medical Devices, Cosmetics and Household Chemicals activities one hundred (100) facilities were licensed, making a combined total of two hundred and eighty-one (281) registrations. In all, a total of nine thousand eight hundred and twenty-nine (9,829) inspections were conducted in 2022.

Market Surveillance

In 2022, one thousand, three hundred and thirty (1,330) market surveillance operations were carried out across the country; an increase of 0.5% over the previous year's performance. The number of outlets visited also increased by 0.5% which translates to fifteen thousand, two hundred and fifteen (15,215) outlets. The number of non-compliant products was recorded at ninety-five thousand and ninety-



three (95,093) during surveillance, a 329.6% increase over the previous year. As part of market surveillance operations, Take Back Unwanted Medicines (TBUM) project aimed at collecting unused and expired medicines from consumers for safe disposal, one thousand and ninety-nine (1,099) units of medicines were collected.

Safety Monitoring of Medical Products

The FDA received two thousand eight hundred and twenty-one (2,821) Individual Case Study Reports (ICSRs). Four thousand two hundred and sixty-four (4,264) were entered into the safety watch system in 2022, this included ICSRs received in 2022 and those carried over from the previous period. Causality assessments were carried out for one thousand, six hundred and one (1,601) ICSRs by the Technical Advisory Committee (TAC). There were no signals.

Clinical Trial Authorization

A total of fifteen (15) new clinical trial applications were submitted to the FDA. Twenty-six (26) amendments and two hundred and forty-eight (248) additional documentation were also received during the year. The Clinical Trials Department received two hundred and twenty-three (223) Serious Adverse Events (SAE) reports in 2022. All SAE reports were processed to the Technical Advisory Committee for causality assessment. Eight (8) Good Clinical Practice (GCP) inspections were conducted over the period under review. Three (3) annual GCP Trainings were conducted while thirteen (13) onsite GCP Trainings were conducted in 2022. All 15 fresh Clinical Trials applications were received and reviewed, within the stipulated timelines (60 working days).

Support for Local Industry (Pharmaceutical)

The FDA collaborated with PUM Netherlands Senior Experts to organize a fourteen-day (14) marathon training on Qualification and validation for twenty-seven (27) local pharmaceutical companies in Ghana. This training was the first of its kind in the history of the organization. On-site technical support (in collaboration with PUM Experts) on Qualification

and Validation for twenty-seven pharmaceutical companies were initiated after the training. This improved their compliance levels with respect to Qualification and Validation to 70% having developed the basic documentations such as VMP, URS and Protocols for validation activities. The FDA reviewed twenty-three (23) conceptual designs for proposed new pharmaceutical manufacturing facilities to ensure GMP and other relevant regulatory requirements are met at all stages of the projects. Thirteen (13) new pharmaceutical projects under construction were monitored quarterly to offer timely technical support to avoid potential Good Manufacturing Practices (GMP) deficiencies at the various stages of the respective projects.

Summary of Key Achievements

The Centre for Laboratory Services and Research (CLSR) expanded its ISO 17025:2017 accreditation from 48 to 58 tests for drugs, medical devices, cosmetics, household chemical substances and food laboratories. The food lab was accredited for the first time for 5 tests.

The Drugs Laboratory of the CLSR achieved WHO ML4 vaccine procuring and was awarded a WHO-Prequalified Quality Control Laboratory (QCL) status. This means that results of analysis from this laboratory are acceptable globally. It is the first lab in West and Central Africa to achieve this feat.

The FDA opened new offices bringing its services closer to its clients and consumers by operationalizing the Western North Regional Office in SefwiWiawso, two district offices in the Central Region, at Kasoa in the Ewutu Senya East District and at Assin Fosu in Assin Central District. Furthermore, the FDA obtained office spaces at Nalerigu in the Northeast Region and Kade in the Eastern Region to operationalize a regional office and district office respectively in 2023.

The FDA-GSA joint application system was



operationalized to enable applicants obtain the FDA registration and GSA certification simultaneously with a single application. The first ten (10) product applications were successfully processed via this system, which aims to save our applicant's valuable time.

The FDA in collaboration with ProPer Alliance, launched the ProPerSeals Platform to enable consumers verify registration status of FDA regulated products and to support Intelligence gathering and investigation of complaints to enhance supply chain security and counteract the incidence of substandard and falsified FDA regulated products. Under the FDA's Progressive Licensing Scheme (PLS) which provides a 3-tiered approach for licensing manufacturing facilities of micro and small-scale enterprises;

- i. Fifty-six (56) cosmetics and household chemical substances and two hundred and thirty-seven (237) food manufacturing facilities were licensed.
- ii. Two Hundred and fifty-two (252) cosmetics and household chemical substances and nine hundred and thirty-four (934) food products were registered. Ghana through the FDA was awarded WHO Framework Convention on Tobacco Control (FCTC) Project 2030 to develop and implement national tobacco control strategy, strengthen inter-agency coordination, facilitate revision of the smoke free policy, implementation, and enforcement on the ban on tobacco advertisement. As part of this project, over one thousand, two hundred and ninety-one (1,291) public places and points of sale were monitored.

The FDA as a Regional Centre for Regulatory Excellence (RCORE) in collaboration with the School of Public Health of the University of Ghana organised the following in 2022:

- i. The first Advanced RCORE Fellowship Training Programme in Clinical Trials

Oversight for Eleven (11) African regulators.

- ii. The first RCORE Fellowship Training Programme that included participants from francophone West Africa (Gabon, Senegal, Cameroon and Guinea Conakry and Benin).
- iii. The programme has since 2014 strengthened the capacity of more than 80 regulators and researchers on the African continent to ensure access to quality safe and efficacious medicines.
- iv. FDA supported Nigeria, South Africa and Rwanda through its capacity strengthening programmes including training courses, assisted self-benchmarking and study tours in their preparation for their formal WHO benchmarking for Maturity Level 3 in 2022.

CONCLUSION

The FDA strives to intensify core regulatory activities of product registration, facility licensing, market surveillance, product quality testing, clinical trials and safety monitoring, control of tobacco and substances of abuse and related auxiliary functions and offer continuous support to the local industry through capacity building and pursue donor support towards the strengthening of same.

REPORT OF THE PHARMACY COUNCIL

Introduction

The Pharmacy Council is mandated by the Health Professions Regulatory Bodies Act, 2013 (ACT 857) to guarantee the highest standards of pharmaceutical care in Ghana through the under-listed key priority activities among others;

Education, Training & Research

Pharmacy education is the bedrock of pharmacy



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practice. The Pharmacy Council in Ghana, therefore, considers pharmacy education as one of its priority areas. The transition from BPharm to PharmD which started in 2013 became necessary considering the global trends in contemporary pharmacy education and practice, as well as feedback from relevant stakeholders.

Pharmacy education in Ghana since its inception in January 1953, has trained over 6,000 pharmacists working in healthcare, manufacturing, regulation, academia, and other sectors of the economy over the past 69 years. Some of the trained pharmacists work

for the West African Region and beyond.

Currently, there are 7 accredited universities offering the 6-year Doctor of Pharmacy Degree programme as the only undergraduate pharmacy program in Ghana. The corresponding enrolment figures as indicated in Table 1.

Table 1: Distribution of enrolment in Pharmacy Training Institutions (2017–2022)

No.	Institution	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Total
1	KNUST	352	387	265	320	324	311	1,959
2	UG	77	110	82	62			331
3	CU	136	197	142	128			603
4	UHAS	84	52	45	39	37	30	287
5	UDS	224	181	108	50			563
6	UCC	103	80	47				230
7	EUCHS	68	55	61	39			223
TOTAL		1,044	1,062	750	638	361	341	4,196

Post-Registration Trainings

The Council implements a CPD policy that makes it mandatory for all practicing pharmacists to obtain a minimum of ten CPD credit points by participating in various accredited CPD programs annually before one becomes eligible to practice in the ensuing year.

Advanced Pharmacy Services

The Pharmacy Council in collaboration with the Ghana College of Pharmacists has developed a draft policy document that seeks to provide guidelines for practicing Advanced Pharmacy Services in Ghana. The training of the practitioners is done by the College whilst the Council provides the regulatory framework and certification of the graduates and the community pharmacies where they practice.

Advanced Pharmacy Services for the purpose of this policy, shall include but not be limited to;

- Certified Immunizer
- Certified Compounding Pharmacist
- Certified Medication Therapy Manager
- Certified ARVT Adherence Counsellor

- Certified Prescribing Pharmacist
- Certified Family Planning Provider

Electronic Pharmacy Services

The Pharmacy Council of Ghana in collaboration with a Private Partner, RX Health Info Systems, and all the Regulators in Health has developed a National Electronic Pharmacy Platform (NEPP) capable of delivering electronic pharmacy services throughout the entire country.

The health insurance and e-prescribing modules of NEPP were developed in partnership and support from the National Health Insurance Authority, the Medical and Dental Council, FDA, and other state institutions. This platform aims to provide safe and secure access to medicines and pharmaceutical services through accredited internet-based applications such as online pharmacies and e-commerce platforms while protecting the public.

NEPP was formally launched by His Excellency Alhaji Dr. Mahamudu Bawumia - Vice President



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of the Republic of Ghana on 18th July 2022 to monitor and facilitate safe and secure access to medications and pharmaceutical services in Ghana through accredited internet-based applications such as online pharmacies and other e-commerce platforms.

The platform will enable pharmacists to access and manage patient information, prescription data, drug information, and other critical data in real-time.

With the nationwide rollout on January 1, 2023, involving all health facilities in a tiered approach offers a crucial step towards modernizing our healthcare system and improving patient medication safety in Ghana.

Digitalization of Services at the Council

The Council has developed and deployed an electronic payment system that is linked with the practitioner and facility online renewal systems to facilitate our relationship with our major stakeholders.

Additionally, the Council is implementing online CPDs and Pharmacists are able to verify their CPD credits online.

The Council is also developing Inspection and Monitoring software with an inbuilt geo-location and enforcement system to administer fines and penalties to offending practitioners and facilities.

Partnerships & Collaboration

Pharmacy Council Ghana hosted the Registrar of the National Pharmacy Council of Rwanda on a 4 days study visit in August 2022.

The following were the main mission for the study visit to the Council:

1. Exploration of the mandate of both Councils;
2. Exchange on the best practices in the regulation of the pharmacy profession;

3. Exchange on resource mobilization strategies;
4. Initiate a formal collaboration between the two institutions.

The Parliamentary Select Committee on Health paid a maiden working visit to the Pharmacy Council on 7th June 2022

The Pharmacy Council also engages regularly with the FDA, PSGH, GMA, and other institutions at different levels to build consensus on several issues.

SOME SCHEDULED EVENTS OF THE PSGH FOR 2023

1. 2023 Annual General Meeting/Conference- 5th - 8th September, Takoradi, Western Region. Theme: "The Pharmacists for National Development"
2. Commemoration of World Pharmacists Day-25th September
3. Commemoration of World Antimicrobial Awareness Week (WAAW) 18th-24th, November. Theme: "Preventing Antimicrobial Resistance Together"

Pharm. (Dr.) Samuel Kow Donkoh
PRESIDENT

Pharm. (Dr.) Dennis Sena Awitty
EXECUTIVE SECRETARY



COUNTRY REPORT

NATIONAL ORDER OF PHARMACISTS OF BENIN REPORT

The National Order of Pharmacists of Benin (ONPB) held its ordinary general meeting this Tuesday, May 9 in Cotonou. The meeting brought together the pharmacists registered on the board of the different sections, which are: A, B and C. The managers of the different sectors took stock of the activities of the past year and presented the outlook for 2023.

The National Order of Pharmacists of Benin, ONPB, collected blood bags through a blood donation campaign that it organized. It was in partnership with the Claudine Talon Foundation and the National Agency for Blood Transfusion, ANTS. The premises of the Faculty of Health Sciences, FSS hosted the operation on February 1 and on February 2 the operation ended at the headquarters of the Order in Akpakpa

MORE THAN 200 EQUIPPED PHARMACISTS

Good management of the general social security system in Benin, the question is of concern to the National Social Security Fund, which has initiated training for pharmacists of all sections focusing on social protection in pharmaceutical

establishments in Benin. Organized in partnership with the national order of pharmacists of Benin and the direction of work, this instructive workshop for, among other things, more information on the declarative obligations and payment of social security contributions of the pharmacist, the control of employers and the relations of work and its implications.

This workshop took place at the Royal Bénin Hotel in Cotonou on July 4, 2023

DEVELOPMENT CHALLENGES FACING PHARMACISTS IN BENIN

The National Order of Pharmacists of Benin as part of the 2021 edition of the International Pharmacist Day takes stock of its actions and recalls the role of the pharmacist in the health system, making him an important player in development in Benin. The message of the order on the International Pharmacists Day was delivered by the President.



COUNTRY REPORT

COMMUNITY PHARMACISTS ASSOCIATION OF ZIMBABWE (CPA) REPORT

The Community Pharmacists Association of Zimbabwe (CPA) is a registered Trust under the Trusts and Deeds office. It is an affiliate of the Pharmaceutical Society of Zimbabwe. It subscribes to the mission of FIP, which is : “to improve global health by advancing pharmacy practice and science to enable better discovery, development, access to and safe use of appropriate, cost-effective, quality medicines worldwide”. This is enshrined in FIP Development Goals. Activities undertaken by CPA address some of the development goals

1. FIP Development Goal 19: Access to medicines, devices and services:

The Community Pharmacists Association (Zimbabwe) worked in collaboration with other stakeholders to improve access to quality medicines. They attended and participated in quarterly Human Medicines Liaison Committee Meetings organized by the Medicines Control Authority. This is a platform where issues relating access to and availability of quality medicines are discussed and addressed. The other stakeholders are representatives from Pharmaceutical Wholesalers Association, Pharmaceutical Manufacturers Association, Hospital Pharmacists Association and the public sector.

2. FIP Development Goal 8: Working with others:

The Community Pharmacists Association and Pharmaceutical Wholesalers hosted a joint

conference in July 2023. This was to align our agenda towards building more holistic solutions to the practice of pharmacy. The theme of the conference was “**CPA and PWA: Partners for Quality Medicines and Pharmaceutical Care**”. The conference was also attended by participants from Ministry of Health and Child Care, National Medicines and Therapeutics Advisory Committee, Pharmacists Council, Medicines Control Authority, Health Professions Authority, captains of pharmaceutical industry, Medical Practitioners and Association of Health Funders of Zimbabwe. The topics covered included the following:

- a) “Health financing” from health funders’ perspective healthcare funders,
- b) “Supply chain: cost of compliance” presented by representative from pharmaceutical manufacturers;
- c) “National policy on medicine supply: The National Development Strategy (NDS1)”
- d) “Workforce development programs and Continuous professional Development”
- e) Professionalism and Ethics: the role of the regulators
- f) Digital health: telemedicine

3. FIP Development Goal 8: Working with others and FIP development Goal

The Annual Joint Congress is organized by the PSZ and College of Primary Care Physicians



(CPCPZ/PSZ Joint Congress) was held in June 2023. The theme was *“Beyond our walls: Expanding healthcare and wellness through interprofessional collaboration.”* Attendance was over 400 participants. The topics covered included the following:

- a) National Health Financing
- b) COVID-19: lessons learnt,
- c) The use of point-of-care testing in improving access to health,
- d) Management of Diabetes,
- e) Management of Cardiovascular Disease,
- f) The HIV pandemic: PrEP and PEP. The Association, PSZ and CPCPZ greatly appreciate the sponsorship conferences have received from the pharmaceutical manufacturers and wholesalers and other distributors of products and services.

4. FIP Development 5: Competency Development:

The Association has collaborated with the schools of pharmacy and the Harare Institute of Public Health in the provision of continuous professional development and training of pharmacy support staff. The HIPH has been accredited with the University of Washington and has facilitated educational courses in **“Clinical HIV Management”, “Leadership and Management in Health”, “Fundamentals of the**

Implementation Science”, “Policy Development and Advocacy for global Health”. The trainings were facilitated by HIPH online and more than two hundred pharmacists and other healthcare practitioners undertook the trainings. Certificates of participation were issued.

5. FIP Development Goal 2: Early career development strategy: PSZ and CPA supported the training of pharmacy students by offering mentorship and financial support to Zimbabwe Pharmacists Students Association (ZPSA). ZPSA Executives attended the IPSF-Afro Congress held in Accra Ghana in July 2023 and won the bid to host the IPSF-Afro conference in 2025. The ZPSA has been part of PSZ and CPA during World Pharmacists Day commemoration and the outreach programs of “Pharmacists Against Drug Abuse “(PADA). They carried out campaigns on mental health and fight against drug abuse at secondary and tertiary institutions.

Presented by:

Pharm. Jocelyn Chaibva

Chairperson of CPA Trust Zimbabwe



COUNTRY REPORT

PHARMACEUTICAL SOCIETY OF BOTSWANA (PSB) REPORT

1. Introduction and Background

The Pharmaceutical Society of Botswana (PSB) is a professional association which is duly registered with the Botswana Registrar of Societies since 1988.

The main mandate of the association is to advocate for Pharmacy professionals in the effective execution of their mandate of providing quality Pharmaceutical Healthcare to the nation as well as to be a partner in matters related to the Pharmacy Industry at large.

2. PSB Executive Committee

The current PSB Executive Committee was appointed into office at the 32nd Annual General Meeting which was held on 4th of March 2022 in Francistown, Botswana. The Exco was declared into office for the next two years with the resolution to continue the Restructuring and Re-branding exercise through the development of a 5-year Strategic Plan of 2024-2029.

The members of the 2022-2024 PSB Executive Committee are as follows:

- Ms. Thapelo Ntwaagae – *President*
- Mr. Bathobakae Keafentse – *Ag. Vice President/Community Pharmacy Representative*
- Ms. Cynthia Oatlhotse – *Secretary*
- Ms. Amelia Makojoa – *Vice Secretary*
- Mr. Peo Plaatjie – *Treasurer*
- Mr. Aubrey Seno – *Wholesalers Representative*
- Mr. Khotso Mahlomola – *Hospital Pharmacy Representative*
- Mr. Lebogang Koitsiwe – *Immediate Past President*

The Exco is also supported by delegates to the Botswana Health Professions Council, the Pharmacy Board and Human Resource Development Council.

3. PSB Affiliates and Collaborations

The PSB serves as a parent professional body and has sub-sector associations as affiliates: Community Pharmacists Association of Botswana (COPAB), Botswana Pharmaceutical Wholesalers, Distributors and Manufacturers, Association (BoPHARMA) and University of Botswana Pharmacy Students Association (UBPSA).

These affiliates help drive the mandate of PSB at sub-sector level.

PSB collaborates with different stakeholders on issues of concern to the pharmaceutical industry and its personnel in Botswana. Our major collaborative stakeholders include Ministry of Health, Botswana and Business Botswana through which we are members to the High-Level Consultative Council (HLCC, chaired by His Excellency the President of Botswana).

4. 2022-2023 Activity Report

- The Profession was proud to witness the Graduation of the first cohort of Pharmacists from the University of Botswana.
- Contributed toward the Medicines and Related Substances Bill. The bill that is a review of the MRSA Act of 2013 for the regulation of medicines in Botswana.
- Participated in the Private Practice Guidelines Review for regulation of Pharmacy Practice in the private sector
- Participated in the review of the National Health Strategy.
- On-going consultative engagements with Ministry of Health on two issues in relation to shortage of medicines as a



challenge to the pharmaceutical supply chain and in relation to shortage of pharmaceutical personnel in dispensing of medicines at public facilities.

- Engagements with Botswana Investment and Technology Centre in collaboration with Africa Arise as they carry out a study to understand the Pharmaceutical value chain in Botswana and develop a case for investors.
- PSB convened a Pharmacy Pitso (gathering) on the 22nd of July 2023, Gaborone IHS Auditorium to discuss issues pertaining to Pharmaceutical Industry and come up with resolutions to address them. The gathering was a success as so far two position papers were handed to relevant stakeholders as resolutions from it.
- PSB Restructuring and Re-branding drive. As an on-going activity from the 2022 AGM resolutions, the Exco is tirelessly working on the 5-year Strategic Plan, Constitutional Review and Logo review to be presented for adoption by members at the November 2023 AGM.
- Professional Development
As a resolution from the Pharmacy Pitso and as part of the Strategic Plan, the Exco through different task teams is working towards strengthening professional development.
The following documents are under review for adoption by members at the November 2023 AGM before presentation to the Botswana Health Professions Council for implementation:
 - Internship Program Review
 - Scope of Pharmacy Practice Review
 - Continued Professional Development (CPD) Framework

- Training Institution Standards

5. Upcoming Events

- Celebration of Pharmacy Week and Pharmacist day from 18th to 25th September 2023 themed “Brown Paper Pharmaton- Medicine Safety” with activities planned across the country.
- PSB 32nd Annual Conference shall be held from 16th to 19th November 2023 in Gaborone under the theme, “Developing the business environment towards sustainable availability of medicines for the future”
- Annual General Meeting - 17th November 2023 in Gaborone.

6. Presence in Social Media

Visit our social media pages to know more about PSB and for updates:

Facebook and LinkedIn pages:
[Pharmaceutical Society of Botswana](#)

Passed by:

Ms. Thapelo Ntwaagae

PSB President

Ms. Cynthia Oatlotse

PSB Secretary

Email: pharmasocietybots2022@gmail.com



COUNTRY REPORT

ALGERIA FEDERATION OF PHARMACY REPORT

Summary of the 6th National Congress of the Algerian Federation of Pharmacy (FAP)

The 6th National Congress of the Algerian Federation of Pharmacy convened on December 21 and 22, 2023, at the prestigious Sheraton Club des Pins Resorts in Algiers, Algeria. The central theme of the congress revolved around health innovations.

This annual event served as a convergence point for health professionals and academic researchers from diverse fields and various countries. The scientific program was rich in content, including plenary sessions, workshops, free oral presentations, and exhibitions covering various aspects of the pharmaceutical domain, such as biology and the pharmaceutical industry.

The plenary sessions covered a wide range of topics, commencing with therapeutic education and extending to subjects like ISO accreditation in medical biology, the current landscape of precision medicine, and digitalization and serialization within pharmaceutical production.

Notably, the Algerian Federation of Pharmacy, in collaboration with the European Union, the Ministry of Health, and the United Nations, delivered a presentation highlighting the objectives and accomplished milestones within the framework of the project titled "Solidarity European Response to COVID-19 in Algeria." This initiative was succeeded by an animated discussion in the realm of vaccinology, with a specific focus on the vaccination efforts against COVID-19.

The congress dedicated attention to the sphere of medical devices and emerging technologies in glycemic profile management.

Concurrently with the plenary sessions, an array of

workshops were conducted, encompassing topics namely the development of cosmetic products, the regulation of medical devices but also the financing of health expenditure in Algeria as well as high cost therapies from the point of view of the hospital pharmacist.

Through the avenue of free communications, attending colleagues engaged in discussions and presentations that unveiled findings from a range of pertinent scientific studies.

A pivotal round table gathered several actors from the pharmaceutical field in Africa to deliberate upon pharmacy education in the continent. This encompassed a comprehensive assessment of various training profiles, proposing strategies for harmonizing these educational pursuits, with a specific focus on the education of Health Products Regulations across Africa.

Participants also collaborated for the establishment and further advancement of the "African Association of Schools of Pharmacy" project and formalization of the membership of the Faculty of Pharmacy of Algiers in the association.

Thus, this annual congress facilitated the congregation of diverse health professionals across various disciplines, fostering an environment conducive to the exchange of valuable experiences and the expansion of knowledge.

Pr. BOUDIS Abdelhakim

President of the Algerian Federation of Pharmacy (FAP)



COUNTRY REPORT

PHARMACEUTICAL SOCIETY OF SOUTH AFRICA (PSSA) REPORT

FIP ACTIVITIES

Pharmaceutical Society of South Africa (PSSA) remains a committed member organisation to FIP through the support of the NEC as well as volunteers and speakers dedicating time and expertise to FIP to gain representation for our members and foster collaborations in return.

Representation in FIP Structures

A number of PSSA members are volunteers in FIP on a variety of committees:

- Tammy Chetty – Industry Pharmacy Section (IPS) Treasurer
- Yahya Choonara – Industry Pharmacy Section (IPS) Executive committee associate; Academic Institutional Member (AIM) Executive committee member for the African region
- Mariet Eksteen – Workforce Development Hub Global Lead for Development Goal 7: Advancing Integrated Services
- Avanthi Govender Bester – Industry Pharmacy Section (IPS) Executive committee associate
- Ntombizodwa Luwaca – Early Career Pharmaceutical Group (ECPG, formerly known as YPG) Media Coordinator, Graphic Designer 2023/2024
- Sham Moodley – Community Pharmacy Section (CPS) Executive committee member (2022-2026)

PSSA, a member organisation of FIP, is represented by Ivan Kotzé on the FIP Council. Andy Gray serves as a director of the FIP Foundation.

Attendance at the 2022 FIP World Congress

During the FIP Council meeting, three new Statement of Policy documents were presented for adoption by the Council. For each of these three documents, a PSSA member volunteered to participate in the working group that developed the documents. This was a great opportunity to share expertise from a South African perspective, learn from global colleagues, and implement these new learnings locally. Jameel Kariem contributed to the FIP

Statement of Policy on the role of pharmacy professionals in point-of-care testing, which can be accessed here: <https://www.fip.org/file/5238>. Mariet Eksteen participated in the FIP Statement of Policy on Continuing Professional Development which can be assessed here: <https://www.fip.org/file/5241>, while Nicole Keuler was nominated to the committee who work on the FIP Statement of Policy on Quality Assurance of pharmacy and pharmaceutical sciences education which can be accessed here: <https://www.fip.org/file/5242>.

Yahya Choonara received the 2022 FIP Distinguished Pharmaceutical Science award for outstanding contributions made to pharmaceutical sciences.

Rendani Tshilambwana, a postgraduate student from Sefaku Makgatho Health Sciences University, was the winner of the FIP Health and Medicines Information Section poster competition. Varsha Bangalee (University of KwaZulu-Natal) was recognised in absentia as FIP Champion.

South African delegates were involved in a number of academic sessions during the congress including Sham Moodley, Mariet Eksteen, Sabiha Essack and Joggie Hattingh as Chairs or Presenters. Details can be found on the FIP Seville congress website. Several South African delegates mounted posters on different days of the Congress including Teri-Lynne Fogarty, Maryke de Villiers, Frasia Oosthuizen, Lindi Zikalala-Mabope, Rendani Jennifer Tshilambwana, Moliehi Matlala and Makaira Purasram. Details can be found on the FIP Abstract website.

At an Association Executive's meeting, the aspects addressed the impact of COVID-19 on future pharmacy workforce planning, specifically addressing the mental health and wellness of pharmacists and pharmacy professionals. Highlights of recent successes



and effective strategies to expand scope and reimbursement in a post-COVID environment were important to note and implement in South Africa.

In addition to participation in the last congress, South Africa was represented by colleagues in a number of FIP digital events and Global Surveys, Reports and Publications. They include Merilynn Steenkamp, Sham Moodley, Neelaveni Padayachee, Teri-Lynne Fogarty, Simoné Eksteen, Michelle Gijzelaar, Mariet Eksteen, Natalie Schellack, Nsovo Mayimele, Refiloe Mogale, and members of the industrial, community and hospital pharmacy sections. Details can be found in relevant FIP websites including the FIP previous events site

Annually FIP develops or reviews Policy of Statement documents to align the Federation with current affairs and, in the process, develop suggestions for governments, member organisations, academic institutions, and pharmacy professions. During 2023, several PSSA members served on these committees.

FIP and the Global Self-Care Federation (GSCF) have a history of collaboration. During the past year, Sham Moodley (ICPA Vice-Chair) and Mariet Eksteen (PSSA National Office) participated in events hosted through this collaboration.

SOUTH AFRICAN LEGISLATIVE MATTERS

1. National Health Insurance (NHI) Bill (Bill 11 of 2019)

The Parliamentary Portfolio Committee on Health concluded the National Health Insurance (NHI) Bill public hearings and worked through the written comments received. The report of the Committee was tabled in the National Assembly (NA). During a plenary session on 12 June 2023, the NA accepted and passed the Bill with minor changes. It was then sent to the National Council of Provinces (NCoP) for concurrence. The Bill will be subject to more public hearings before the NCoP considers it for adoption.

Several public parties and other institutions have already indicated that they will challenge the Bill's legality and constitutionality in the courts as soon as

it is promulgated. The South African Medical Association (SAMA) has rejected the Bill in its current form.

The PSSA supports and is committed to realising the goal of equitable and universal health coverage for all South African citizens and residents. The PSSA recognises the right of access to health care services enshrined in the Constitution of the Republic of South Africa. It is the objective and policy of the PSSA to ensure that pharmacists are recognised for their irreplaceable role in the healthcare team. Pharmacists are essential to the provision of comprehensive pharmaceutical care services, which ensure optimal patient outcomes. Pharmacists provide not only curative services but can contribute to the preventive services needed to combat South Africa's quadruple burden of disease.

The Bill's objective is to achieve universal access to quality healthcare services by establishing an NHI Fund and to set out the power, functions and governance structures for pooling resources and purchasing healthcare goods and services to meet the population's needs.

Whilst the main focus of the NHI Bill is on the creation and governance of the NHI Fund and its ancillary structures, the Bill is currently also very prescriptive on several points concerning the methods of delivery and by whom healthcare services should be provided. It is the position of the PSSA that the Bill should not be restrictive in terms of where and by whom healthcare services should be provided. Instead, it is recommended that the wording of the Bill should follow an enabling construct which would allow the detail to be prescribed by regulation. This will allow amendment of the regulations from time to time, accommodating technological advances as well as task sharing between healthcare professionals, for the benefit of the population, without the need to revisit the primary legislation.

According to the National Department of Health (NDoH), NHI will be implemented in a phased



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manner over several years. NHI means users should expect health care for all free at the point of care and better-quality health services delivered at accredited NHI facilities. Therefore, no user fees or co-payments will be charged when users access the services covered under NHI.

South Africa has two parallel health sub-systems: the public and the private healthcare systems. The private healthcare system services about 16% of the population, with 51% of the country's total healthcare spend. The public sector services 84% of the population, with 49% of the country's total healthcare spend (Private sector spending is an individual's after-tax voluntary contribution).

NHI will ensure that all who live in South Africa will have their healthcare paid for by a single NHI Fund. A government agency will administer this Fund and purchase health services for legally eligible healthcare users. The system will be financed through taxation, with funds appropriated annually through Parliament. The financial allocation will be progressively linked to a progressive increase in the benefits the Fund will cover. As a result, a single fund can subsidise between the rich and the poor, between the healthy and the sick, and between the young and old.

It should be noted that the NHI Fund will be classified as a Schedule 3 Public Entity similar to the Medical Research Council (MRC) and not a Schedule 2 State Owned Enterprise like Eskom. The main difference between Schedule 2 and 3 entities is that Schedule 3 entities are mandated to fulfil the government's specific economic or social responsibilities, rely on government funding, and have limited autonomy. In contrast, Schedule 2 entities are profit-driven and operate more independently, according to an opinion piece written by Dr Olive Shisana (Shisana, 2023).

The Health Market Inquiry exposed the private health sector as neither competitive nor efficient. Competition authorities found runaway costs and significant overuse without improvements in health outcomes. The exorbitant costs stem from medical

scheme administration, which accounts for 15% of expenses. The evidence suggests that the private sector is inefficient and unsustainable in the long run, according to the article.

There is much uncertainty surrounding the Bill and how exactly it will affect the public in terms of additional payroll tax or a surcharge on taxable income, as that would be the source of funding for the fund. It was mentioned that the financial impact of the NHI taxation system must not create an increased burden on households compared to the current system. However, there will be no option for opting out of NHI for eligible people. The NDoH expects it will cost less than the current 8.5% of Gross Domestic Product to have a single-payer system rather than the current two-tier multi-payer system.

2. Dispensing fee for pharmacists (Medicines and Related Substances Act, 101 of 1965)

The draft dispensing fee for 2023 was published on 02 December 2022. The final dispensing fee was not yet published when writing this report. However, a notice signed by the Minister on 25 July 2023 to be published was received. The fee was not yet evaluated, reflecting a small increase from the draft fee published on 02 December 2022.

The initial calculations received from Mediscor and MediKredit show an average increase of 2.5% in the draft dispensing fee. The increase in the Single Exit Price (SEP) appears to theoretically result in a further minor increase in the dispensing fee.

Part of the problem is that only about 45% of products take the SEP increase annually, while for other products, SEP is decreased during the year, which is not taken into account by the Pricing Committee when agreeing to the SEP.

The Pharmacy Stakeholders Forum (PSF) submission pointed out clearly that the fee increase is not close to CPI as required in legislation. The Pricing Committee also cannot rely on the SEP increase to push up the dispensing fee.

It was agreed that the PSF should consider using a legal team to ask for information on how the PC



calculated and tested the fee in terms of the Promotion of Administrative Justice Act (PAJA).

It was also agreed that a new dispensing fee model should be investigated for submission to the Pricing Committee to re-evaluate the dispensing fee model. The services of an actuarial firm would be needed to achieve this, and the PSSA is in the process of sourcing funding for the project.

It should be noted that an advert appeared for the appointment of a new PC for a new term from 2024.

3. **Single Exit Price (SEP) for medicines in South Africa (Medicines and Related Substances Act, 101 of 1965)**

The PSSA does not submit comments on the annual increase in the SEP but does compare the increase to the increase in the dispensing fee and the potential impact the increase could have on the dispensing fee. The Minister of Health published a call for comment on the factors used in determining the 2024 SEP for comment on 26 May 2023. The annual increase in the SEP for 2023 was published on 20 January 2023. It is clear that the PC and the NDoH can publish the SEP increases in a timeous manner, so it is unclear why the dispensing fee process has been so severely delayed over the last few years.

4. **Section 22A(15) permits (Medicines and Related Substances Act, 101 of 1965) Pharmacist-Initiated Management of Antiretroviral Therapy (PIMART)**

The PIMART permit application process was placed on hold due to the legal action instituted by some medical professional associations against the South African Pharmacy Council (SAPC) on this matter. The matter was heard in the High Court on 23 May 2023, and the judgement was delivered on 14 August 2023 in favour of the SAPC and dismissed the application by the Independent Practitioners Association (IPA) with cost. This brings an end to a two-year pause on the issuing of permits, and a win for access to HIV treatment.

Primary Care Drug Therapy (PCDT)

On 27 January 2023, the SAPC published Board

Notice 384 of 2023 with the scope of practice of a Primary Care Drug Therapy (PCDT) pharmacist, the competency standards for a PCDT pharmacist and the criteria for accreditation/approval by the SAPC of a curriculum of a PCDT course. This allows other institutions besides the one currently approved to develop and accredit PCDT courses with the SAPC. To date, there has not been a second provider approved for PCDT.

Family planning services (reproductive health services)

The SAPC published for implementation the scope of practice for Pharmacists Providing Family Planning Services (Reproductive Health Services), the competency standards of such pharmacists and the criteria for the approval of a curriculum of a Family Planning Services (Reproductive Health Services) course. No provider or curriculum has been approved for Family Planning Services (Reproductive Health Services) yet; therefore, the permit application process has not yet been established.

5. **Compounding of medicines**

The regulation relating to compounding had to be revised due to a court case ruling against the South African Health Products Regulatory Authority (SAHPRA). The draft regulations were published in July 2022 but included changes to Section 35 of the Medicines and Related Substances Act (here after 'Medicines Act') that can only be changed by parliament. The PSSA submitted comments on 19 August 2022, pointing out this error. The same draft regulations were republished without Section 35, and the PSSA again submitted comments on 13 October 2022. The final regulations were published for implementation on 08 December 2022 in Government Gazette No. 47673.

In follow-up, SAHPRA published a guideline for comment for Good Medicine Compounding Practice (GMCP) on 06 June 2023. The GMCP guideline is meant to apply to all compounding performed and not only small scale, and therefore input from the



PSSA is essential on behalf of community and hospital pharmacies that compound on a small scale.

6. Complementary Medicines Regulations

Similar to the compounding regulations, the Regulations made in terms of The Medicines Act relating to Complementary Medicines and Health Supplements had to be revised due to a court case ruling against SAHPRA. The draft regulations were published for comment on 24 March 2023 in Notice No. R.3258 in Government Gazette No. 48353. The PSSA did submit some comments. Even though the final regulations have not yet been published, SAHPRA has initiated the revision of their technical guidelines, and a Guideline on a roadmap and transitional process for the regulation of Category D medicines has been published for comment on 17 July 2023.

7. Advertising of medicines regulations

On 10 February 2023, the Minister of Health, on the recommendation of SAHPRA, published the draft regulations regarding the advertising of medicines. It specifically referred to the advertising of Schedule 2 medicines. There is a concern regarding the legal standing of these regulations as it refers to specified Schedule 2 medicines. There is no reference in the Medicines Act to specified Schedule 2 medicines. Clarity is required as to how these medicines will be specified. If it is in the Schedules to the Act, this could be challenged as no such term as specified in Schedule 2 is described in the Act. The assumption is that the intent is to allow the advertising of Schedule 2 medicines, such as antihistamines or cold and flu preparations but to exclude, for instance, codeine-containing medicines from being advertised to the public. The PSSA submitted comments on the draft regulations and will keep an eye out for further publications, either for comment again or for implementation.

8. Ownership regulations - Constitutional Court Judgement

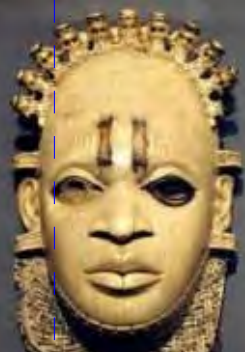
After a long and protracted legal battle, the Independent Community Pharmacy Association (ICPA) was successful in the Constitutional Court of South Africa to challenge the ownership of both Unicorn Pharmaceuticals and about 600 community pharmacies under the Clicks Group.

The regulations relating to the Ownership and Licencing of Pharmacies, as published on 25 April 2003, state in regulation 6 that *"Any person may, subject to the provisions of regulation 7, own or have a beneficial interest in a community pharmacy in the Republic, on condition that such a person or in the case of a body corporate, the shareholder, director, trustee, beneficiary or member, as the case may be, of such body corporate - (d) is not the owner or the holder of any direct or indirect beneficial interest in a manufacturing pharmacy."*

ICPA, for years, argued that there is a risk of temptation for Clicks Pharmacies to actively promote their own brands (Unicorn Pharmaceuticals) at the possible expense of patient care. The Constitutional Court agreed with ICPA. The Constitutional Court Judgement can be accessed on the court's website.

9. Fraud, Waste and Abuse (Medical Schemes Act, 131 of 1998)

The collective effort from industry players has led to the conclusion of the second output of the Fraud, Waste and Abuse (FWA) programme. The Industry Codes of Good Practice (CoGP) and FWA Tribunal rules were adopted and endorsed by stakeholders in the private healthcare sector, including regulators, medical schemes, administrators, and provider- and member associations, on 24 November 2022. The CoGP represent a principled approach for prevention, detection, investigation, restitution, and penalisation methods to mitigate and manage FWA, whilst the Tribunal is a body established to resolve disputes in FWA-related matters in accordance with Section 59 of the Medical Schemes Act (131 of 1998). These documents are backed by an FWA Charter, an industry-wide pledge to contribute to combating



fraud, waste and abuse.

10. Codeine-care initiative

The Codeine Care Initiative (CCI) continues to find a way of securing a rightful place for codeine-containing products as part of Pharmacist-initiated therapy.

In September 2022, a request was sent to all pharmacy schools to request them to inform the CCI and forward completed, current and anticipated research regarding codeine use for the attention of the Forum's Research Task Team. This includes all formal research through masters and PhD research projects as well as informal or short-duration/quality improvement research projects. The purpose of this request was to consolidate all completed, current and anticipated research outputs and findings in order to support the initiative by the Forum going forward.

A meeting in September 2022 with all the Information Technology vendors indicated that most of them are integrated with the platform and simply need an update. Other newer vendors will need funding to develop software and training of staff and users to use the software.

A delegation of the Forum met with a team from SAHPRA in October 2022 to explain the software and the objectives of the initiative. SAHPRA had several questions and concerns which need to be clarified.

At the recent Forum meeting in July 2023, the Forum again assigned a delegation to meet with SAHPRA in August 2023 to take the discussions forward. The project's components that need attention are determining whether a "codeine levy" payable by manufacturers per unit is feasible to fund the initiative, adding a codeine warning to the SAHPRA OTC directory (only one supplier is outstanding), and other funding and marketing mechanisms.

Pharmacies will soon have the option to voluntarily sign up for the Codeine Care initiative to implement the software and service in their pharmacies to support the initiative in advocating for the responsible use of codeine.

RETIREMENT OF PSSA EXECUTIVE DIRECTOR AFTER 30 YEARS

Mr Ivan Kotzé, who served as the PSSA Executive Director since April 1994, will retire from the position on 31 March 2024, marking 30 years in the position.

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COUNTRY REPORT

PHARMACEUTICAL SOCIETY OF NAMIBIA

1. Introduction of new Pharmaceutical Society of Namibia (PSN) President

The Society embraced the arrival of 2023 with a fresh leader, Ms. Frieda Shigwedha, who has been an integral part of the organization since 2018 as a committee member. Furthermore, she held the position of Vice-President for the preceding two years. With a professional background spanning 6 years as a pharmacist, she has amassed extensive expertise in various facets of pharmacy, including manufacturing, community pharmacy, medicines regulations, medicines safety, and pharmacovigilance. Beyond her pharmaceutical roles, she fervently champions pharmacy education, a cause that resonates deeply with her and to which she is unwaveringly dedicated.

2. Stakeholder engagement opportunities

a. Health Professions Council of Namibia (HPCNA)

In addition to cultivating improved collaborative connections with our counterparts in the field, PSN has consistently interacted with the HPCNA on multiple initiatives. This proactive engagement not only enhances mutual working relationships but also serves to safeguard the integrity of the pharmacy profession. The Society is pleased to note that its efforts have resulted in being acknowledged as a significant participant in all discussions pertaining to factors impacting and associated with the realm of pharmacy.

- i. Market Saturation Perception Survey: The PSN took the initiative to conduct a needs assessment survey aimed at determining the current and predicted pharmacy workforce. Following consultations with the Pharmacy Council of Namibia, it was established that there is a need for a comprehensive analysis of this effect. As PSN, promoting the professional, educational, and economic interests of pharmacists and allied pharmacy professionals, in general, and its members, in particular forms part of one of our pivotal objectives. The greatest challenge faced by both the public and private sectors is not being able to absorb graduated professionals into

employable structures, and there are multifactorial reasons leading to this predicament. Market capacity should ideally guide efforts to qualify additional pharmacists and support staff, ensuring that the current and anticipated demand is met without flooding the market, which would, in turn, render it impossible for qualified professionals to be absorbed in the market. The qualitative and quantitative analysis of the Market Saturation Perception Survey was conducted by an external expert party. The results of the survey will be shared with the HPCNA, the Ministry of Health and Social Services, academic institutions of interest, and other relevant stakeholders before the end of 2023.

- ii. Revision and review of Pharmacy Act regulations: PSN had the opportunity to comment and provide input on the following regulations of the Pharmacy Act:

- Draft regulations for the Scope of Practice of Pharmacists
- Draft regulations for Registration of Students, Maintaining of Register of Students and Restoration of Name to Register Regulations: Pharmacy Act, 2004.

- iii. Education matters: Following extensive engagements, the HPCNA granted the following provisions:

- Pharmacists who are registered as tutors and give extra tutoring lessons/classes may earn continuing professional development (CPD) points for their efforts
- It was resolved to change the maximum approval period for all pharmacies and health institutions registered as training facilities from 3 to 5 years, which is a financial bonus to the pharmacists.
- All newly registered training facilities will have an "open-ended registration" with a compulsory quality assurance inspection after 3 years.



b. Namibia Medicines Regulatory Council (NMRC)

i. Review and revision of Medicines and Related Substances Control Act: PSN was granted the opportunity to review and provide input into the following documents:

- Draft Scheduling Of Medicines & Substances Guideline Version 01
- Draft Veterinary Classification Of Medicines And Scheduled Substances, Version 01

ii. Section 31(2): One of our priority areas for pharmacy practice development is the realization and attainment of Section 31(2) licenses. This is a reference to the relevant section in the Medicines and Related Substances Control Act, 2003 ("Medicines Act"). Read together with section 62 of the Pharmacy Act, 2004 regulates the issuing of a license to pharmacists which entitles the holder to dispense, without a prescription from a doctor, Namibian schedule 2 and 3 substances. PSN drafted this framework in collaboration with the University of Namibia School of Pharmacy (UNAM SOP) as well as an implementation plan for assessing the competency of Pharmacists and issuing Section 31(2) license for the Section 31(2) licenses (under the Medicine and related substance control act) for pharmacists. A technical working group comprised of PSN, UNAM SOP and the Pharmacists Care Association of Namibia have been working together with other stakeholders to help the two councils (NMRC and the Pharmacy Council) to get the framework in place for Sec 31.2 licenses. The Sec 31.2 Application Framework & Medicine list as well as the assessment framework were submitted to the two councils for approval. The matter is an ongoing exercise and yet to be finalized.

c. Ministry of Health and Social Services (MoHSS)

i. Universal Health Coverage (UHC): As part of the Ministry's goal and vision towards Universal Health Coverage, the PSN has been actively involved in the exercise of the Prioritisation of Services for Inclusion in the Essential Health Service Package as the starting point of the

proposed UHC.

ii. Pharmaceutical Pricing in Namibia: PSN was invited by the Ministry of Health and Social Services (MoHSS) to conduct a situation analysis on pharmaceutical pricing in Namibia in September 2022. In collaboration with the United Nations Development Programme (UNDP), the core of the workshop aimed to assess the main barrier being medicines unaffordability which significantly affects medicines availability and accessibility, including many cases where evidence shows that manufacturing is relatively inexpensive. This problem is affecting all levels of income countries. The workshop also presented the World Health Organisation (WHO) Country Guidelines as a Base for Policy Development and Implementation, presenting diverse scenarios based on best evidence and practice and experience developing recommendations for medicine pricing policies in countries.

iii. Nominations to serve: The PSN was invited to submit nominations of members who could serve on the following committees:

- Namibia Medicines Regulatory Council
- National Immunization Technical Advisory Group

3. PSN-DAV project

Improving pharmaceutical care for TB and HIV/AIDS patients in Namibia

Safe - Saxon Pharmacists for Development Cooperation in Germany, in partnership with the Pharmaceutical Society of Namibia and the UNAM School of Pharmacy, are in the process of embarking on a project aimed at improving pharmaceutical care of TB and HIV/AIDS patients in Namibia. After having gained insight into the pharmaceutical supply of medicines in Namibia upon their visit, a group of pharmacists from Safe were left impressed with the highly efficient distribution of medicines in the pharmacy of one of the main district health facilities, Katutura Hospital, as part of the outreach program to provide free care to citizens without health insurance. The partnership



aims to support the Ministry of Health and Social Services' efforts in the fight against TB and HIV/AIDS, by supplementing the existing outreach programme. The intent is to pilot the planned project in one area first, starting with the Groot Aub community, by providing additional pharmaceutical staff, including pharmacy students from UNAM SOP. This will allow the monitoring of life-saving drug therapy to be intensified. After the successful completion of the two-and-a-half-year pilot phase, a significant expansion of the measures to other project regions is planned. Although the PSN will have the main oversight on the project, its implementation and execution of activities will be designated to lead by a project manager and lead, who will begin in October 2023.

4. PSN LinkedIn & Facebook Pages

In 2023, the Society inaugurated its LinkedIn profile, effectively utilizing it as a proactive channel for disseminating pharmacy and health-related information to colleagues within the field and the broader public. Simultaneously, both the Facebook and LinkedIn pages saw the introduction of the PSN's Educational Series, aimed at fostering awareness on matters concerning health. The substantial feedback, responses, and interactions from the public have proven to be highly gratifying. This platform enables our society to maintain current insights and involvement in the endeavors, projects, and successes of other associations. In totality, it stands as a remarkable educational platform. For access to these pages, the respective links are as follows:

- L i n k e d I n
page: <https://www.linkedin.com/in/pharmaceutical-society-of-namibia-psn-4b2788267>
- F a c e b o o k
page: <https://www.facebook.com/groups/883200531725579>

5. Namibia Medical Aid Funds Association (NAMAFA)

NAMAFA requested a meeting with the Pharmaceutical Society of Namibia – on the agenda comprised of the following:

- i. Update on NAMAFA Management Committee resolution on the Namibian

- ii. NAPPI Product Benchmark File
 - ii. Process update on where we are with the Namibian NAPPI Product Benchmark File
- This was consultative/collaborative engagement with the stakeholders that would be affected by the introduction of the benchmarking file. Similar engagements were held with other relevant stakeholders such as the associations for private hospitals. The engagements are a work in progress.

6. Namibia Competition Commission

The Namibian Competition Commission ("the Commission") is a statutory body responsible for ensuring fair competition through the administration of the Competition Act No.2 of 2003 and the rules made thereunder. In line with this mandate, the Commission in collaboration with the United Nations Development Programme ("UNDP") has commissioned a study into the private healthcare sector in Namibia. The aim of the study is to understand the structure of private healthcare in Namibia with a focus on analyzing the cost trends over the years. The study further aims to assess the state of competition as well as provide policy advice and competition guidelines where required, that would promote fair competition amongst the different players in the sector. The study is ongoing and the engagement is a work in progress.

7. PSN Conference and Annual General Meeting (AGM) 2023

The PSN is set to commemorate its 33rd year of establishment during the upcoming PSN Conference and AGM, scheduled for September 9th and 10th, 2023 in Windhoek, Namibia. The theme for this year is "Primary Health Care in the Namibia Pharmacy Industry: Informative, Inclusive and Innovative". Anticipated to be the most thrilling edition yet, this year's gathering will bring together pharmacists and various healthcare professionals for interactions with exhibitors, CPD point accumulation, and listening to diverse speakers addressing topics such as anxiety management, wound- b e d preparation, homeopathy, essential



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communication skills, pharmacoeconomics, oculoplastic surgery, retinal and glaucoma pharmacology, and fundamental immunization aspects, among others.

A notable addition to the program is the inaugural PSN Excellence Awards, a fresh initiative intended to honor outstanding pharmacies and individuals in both the private and public sectors. These awardees have exhibited exceptional entrepreneurship and innovation, contributing to the enhancement of pharmaceutical services and outcomes in Namibia. Such modest yet impactful occasions can serve as motivating forces for pharmaceutical collectives and practitioners to continue their dedicated service to the public, while simultaneously showcasing the indispensable contributions of pharmacists to national leaders.

Beyond the satisfaction of recognition, there's no more fitting way to give back to those who consistently contribute. The selection process commenced with nominations, accompanied by criteria justifying why the nominees deserve the award, substantiated by testimonials. An impartial panel of judges, including representatives from sponsors and individuals external to the PSN, determine the winners, ensuring fairness. We have also been fortunate to secure generous sponsorships for the winners across categories including Best Public Sector Institution, Best Private Sector Institution and Best Individual Pharmacist.

8. **PSN Education Desk (Edudesk)**

i. PSN-IUM Pharmacists Assistant Course:

Our organization maintains a highly dynamic and engaged Education Desk, responsible for providing a certified Pharmacist Assistant program spanning a duration of two academic years. This educational endeavor is conducted in partnership with the International University of Management (IUM) based in Namibia. The PSN successfully initiated its fifth intake of around thirty-five (35) students in the beginning of January 2023. The course's performance has been commendable, boasting an achievement rate exceeding 80% in successful completions.

ii. CPD Courses:

PSN partnered with the Health Science Academy (HSA) to offer a range of CPD Courses through the PSN Edudesk to Healthcare professionals (Pharmacists, Pharmaceutical Technicians and Pharmacist's Assistants) and Front shop assistants, stock controllers, pharmacy clerks and admin staff. Broad outline of programs to be presented are Quality Management Systems (QMS), Professional Development Programs (PDP) and Support Personnel Education and Learning program (SPEL).

9. **African Excellence Awards**

The PSN is proud to have been awarded as the "Best Professional Pharmacy Association, 2023 - Namibia" by the African Excellence Awards for our work in and contribution to pharmacy in Namibia. Link:

<https://www.me-markets.com/winners/the-pharmaceutical-society-of-namibia/>



COUNTRY REPORT

PHARMACEUTICAL SOCIETY OF ZAMBIA

ACTIVITY REPORT TO THE AFRICAN PHARMACEUTICAL FEDERATION

SUCCESSSES

1. Training

- * Currently there are 5 universities offering Bachelor of Pharmacy while three institutions are offering Diploma in Pharmacy.
- * This has led to increase in the number of graduates per year compared to the way things where some years back when there was only one university and one college offering bachelor of Pharmacy and Diploma in Pharmacy respectively.
- * Specialist training in Pharmacy such as clinical Pharmacy, Pharmacy Practice, Pharmaceutics, Pharmacognosy, Pharmacology, Industrial Pharmacy, Supply chain, Public health etc.

2. Local Manufacturing

- * An initiative called the Zambia Pharmaceutical Manufacturing Initiative (ZPMI) meant to increase local Pharmaceutical manufacturing was initiated in the past year and finally launched by the republican president in March 2023 who has taken this as a national priority.
- * Strategic plan and the implementation plan is almost completed which will act as guide on how to go about actualising the establishment of new local companies and re-energise the already existing companies.
- * It envisioned that this process should result in increase in local manufacturing capacity whose contribution to national medicine supply chain should also subsequently improve the current 5% to 15% by the year 2030.
- * Continuous improvement is what is being pushed so that Zambia can be a regional Hub in Pharmaceutical manufacturing, it being land linked and surrounded by 8 other neighbouring countries with a population of more than 400,000,000 people.

- * Various ministries such as Ministry of Health, Ministry of Science and Technology, Ministry of Commerce and industry and Ministry of finance and National Planning h a r e working together on this one.

- * These ministries directly or through their Agencies are putting up a strategy that is going to create an enabling environment for efficient and cost effective local Pharmaceutical manufacturing.

3. Antimicrobial stewardship activities

- * Deliberate programs on antimicrobial stewardship (AMS) are being spearheaded through the Zambia National Public Health institute (ZNPHEI).
- * The 2023 Annual Scientific Conference also focussed on antimicrobiabial stewardship having run under the theme; **“Pharmacy: United in Combating Antimicrobial Resistance through Innovation, Advocacy and Stewardship.”**
- * The entire Pharmacy Awareness Week was filled with programs such as the march past, community sensitization through media (radio and TV), direct open market presentations, school talks, etc.

4. Review of National Medicines policy

- * The 1999 National Drug Policy is now in its final stages of review.
- * The document being reviewed has been in use for the 23 years and so review has been long overdue more so that there are new trends when it comes to practice of pharmacy on the global level.
- * Great review has been done and many progressive ideas within the standard themes per WHO guidelines have been included, the full document of which when finally implemented would bring about a great change in the pharmaceutical services and the overall health service provision.



5. National Drug Quality Control Laboratories

* The country now has a full fledged National Drug Quality Control Laboratory (NDQCL) which was launched by the minister in June, 2023.

* As per good standard, this NDQCL falls under Zambia Medicines Regulatory Authority (ZAMRA), an agency of government responsible for medicine regulation.

* This has brought in confidence and assurance on the quality, safety and efficacy of the products on the market.

6. Active Continuous professional Development (CPD) programs with CPA

* Pharmaceutical Society of Zambia (PSZ) has an active CPD program with Commonwealth Pharmacists Association (CPA).

* The members now benefit from the various CPD programs that CPA floats regularly for members to enrol in and learn.

* Attendance of monthly branch scientific meetings and the annual scientific symposiums also count for CPD points.

* This has contributed to the continuous professional development of our members and easy renewal of the practising licences which is a legal requirement.

7. International affiliation

* Pharmaceutical Society of Zambia as a professional body has membership with the International Pharmaceutical Federation (FIP) and the Commonwealth Pharmacists Association (CPA).

WORK IN PROGRESS

1. Transition to Doctor of Pharmacy (Pharm D) program

* The background work has been done and now at the point of formulating a Pharm D curriculum.

* The five universities have had the round table sitting on this activity and are agreeable to taking this route.

2. Selfregulation

* The profession has pushed the great need to self regulate so as to help actualise the many things we desire to achieve as a profession in reference to the global standards.

* This has been embraced by the ministry and steps are being taken towards having this implemented which may eventually have the entire regulation of practice of health practitioners take the route that we have proposed.

CHALLENGES

1. Delayed implementation of self regulation

* This has been a talk for many years but without implementation though now hopeful that the steps being taken will result into the positive result.

2. Deficiency leadership at the Pharmacy unit in the Ministry

* Currently headed by the Assistant Director, a pharmacist sitting under the directorate of Clinical and Diagnostic Services which mostly is headed by non pharmacy professional, most cases if not always being medical doctors.

* Representation is and may not be as effective as it should be and hence we desire to have a full Director position for Pharmaceutical services.

3. Low Employment placements

* Government is not employing at the level it did in the past where graduates were employed as interns right after graduation.

* The private entity is equally not marching up to this growing demand for employment.

For/ Pharmaceutical Society of Zambia

Luke Lundau Biete

National Secretary

Cell No: +260-977752768



COUNTRY REPORT

RWANDA NATIONAL PHARMACY COUNCIL'S ACTIVITY REPORT

General Assembly

The Council held its 10th General Assembly of pharmacy professionals with the goal of bringing together all registered pharmacy professionals to share knowledge and updates on current practices in the pharmaceutical industry and support professionals in upholding competence, ethical behavior, and professionalism. This gathering fostered meaningful interactions, networking, and the exchange of ideas among pharmacy professionals, with a central focus on topics vital to their field. It also served as a platform for pharmacy experts to identify and underscore critical issues in the profession, thus contributing to the protection of public health. Additionally, this platform played a pivotal role as a global hub for disseminating and sharing the most recent advancements in the pharmaceutical industry.

Election of members of the National Pharmacy Council Board

In alignment with its mission, the National Pharmacy Council has successfully conducted elections for all positions in its organs on November 11th, 2022. In the election, registered pharmacy professionals elected candidates from among their peers to serve as members of the National Council Board and technical committees for a three-year term. A formal handover ceremony took place on December 4th, 2022, during which Dr. Innocent HAHIRWA, the outgoing chairperson, passed the torch to Hon. DCG (Rtd) Stanley NSABIMANA, the newly appointed chairperson. In his commitment, Hon. Stanley pledged to advance the pharmacy profession, ensure continuity, and uphold the esteemed legacy of pharmacy regulation.

NPC Service Charter

On December 15, 2023, the Council released its inaugural edition of the service charter. This document serves as an orientation to the expected standards of service quality and underscores the Council's dedication to consistently delivering services that align with the needs and expectations of stakeholders.

The 9th International Congress of Algerian Pharmacists

On January 22, 2023, Hon. DCG (Rtd) Stanley NSABIMANA, Chairperson and Legal Representative of the NPC, actively participated in the 9th International Congress of Algerian Pharmacists, known as the "Inter Ordre des Pharmaciens d'Afrique (IOPA)" meeting held in Algiers. During this event, he delivered a keynote address focusing on the ethical standards within the pharmacy

profession.

Pre-registration Examination

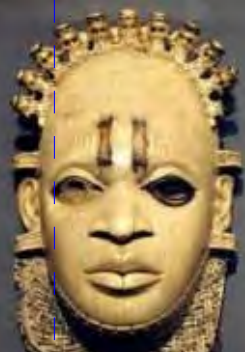
In accordance with its mandate, the Council has implemented a comprehensive knowledge assessment system aimed at evaluating the competencies and qualifications of pharmacy graduates seeking registration with the Council. This system is instrumental in ensuring that applicants meet the prerequisites for practicing the pharmacy profession in Rwanda. On March 24, 2023, the Council conducted its February session, during which successful candidates became eligible for registration and licensing. On April 16, 2023, Hon. DCG (Rtd) Stanley NSABIMANA, Chairperson of the NPC, presided over an orientation session for recently registered pharmacists. This induction program serves the purpose of instilling confidence and fostering professional values among pharmacists in their professional journey. During the session, newly inducted pharmacists had the opportunity to delve into critical topics such as the regulatory framework governing pharmacy practice in Rwanda, the code of ethics, and communication skills essential for providing effective pharmaceutical care, among other key subjects.

NPC 29th Commemoration of the 1994 Genocide against the Tutsi

The NPC solemnly marked the 29th commemoration of the 1994 Genocide against the Tutsi, reaffirming their commitment to preserving the memory of the innocent lives lost and staunchly opposing genocide ideology, along with those who have denied this tragic history. On June 2, 2023, pharmacy professionals paid their respects to the genocide victims at the Ntarama Genocide Memorial in Bugesera District by laying a wreath of flowers. In addition, the NPC, also extended its support by delivering a donation to assist the neediest survivors of the Genocide against the Tutsi in the renovation of their homes.

The National Council Board meeting

On July 14, 2023, under the esteemed leadership of Hon. DCG (Rtd) Stanley NSABIMANA, the National Council Board convened at Nobleza Hotel. During this meeting, pivotal strategic decisions were deliberated and approved, aimed at propelling the field of Pharmacy Practice in Rwanda to unprecedented heights.



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Dissemination of the indexing Program

In pursuance of its mandate, in 2021, the NPC in collaboration with its stakeholders developed and published the indexing regulations which set out the minimum requirement for students who wish to pursue a Pharmacy related program.

To ensure that the information reaches the general public especially students and proactively address potential issues during the implementation phase, the NPC undertook a multifaceted outreach approach. This encompassed visits to higher education training institutions nationwide, hosting informative discussions on local radio to engage a wider audience, publishing information in local newspapers, and issuing a comprehensive press release.

NPC Day 2023

Under the leadership of Chairperson Hon. DCG (Rtd) Stanley NSABIMANA, the NPC conducted a fruitful meeting with students from the University of Rwanda's Department of Pharmacy. The dialogue centered around the students' Indexing Program, the legal framework regulating the pharmacy profession, and potential avenues within the sector. This gathering provided a platform for open discussions regarding the challenges encountered in pharmacy education, fostering collaborative efforts to explore innovative solutions.

Meet the Pharmacist

In collaboration with the Rwanda Pharmaceutical Students' Association (RPSA), the Council appointed a speaker for the "Meet the Pharmacist" event, focusing on the theme "The Integral Role of Pharmacists in Promoting Public Health and Advancing Universal Health Coverage." During the event, special emphasis was placed on recognizing the significant impact pharmacists have at the crossroads of delivering high-quality healthcare and ensuring accessible services. Attendees actively participated in and elevated this important conversation.

The 80th FIP Congress of Pharmacy and Pharmaceutical Sciences

Dr. Innocent Hahirwa, the former Chairperson, had the privilege of representing the National Pharmacy Council (NPC) at the 80th FIP Congress of Pharmacy and Pharmaceutical Sciences in Spain. He was warmly welcomed by Mr. Dominique Jordan, the President of the International Pharmaceutical Federation (FIP), during the opening ceremony held on Sunday, September 17, 2022. Throughout the congress, Dr. Hahirwa had the opportunity to meet with Dr. Duggan, the CEO of FIP, and President Dominique Jordan. Both leaders from FIP

expressed their commendation for the commendable efforts undertaken by the NPC to advance the field of pharmacy practice in Rwanda.

NPC official visit to Ghana Pharmacy Council

On August 22, 2022, the NPC Registrar embarked on an official visit to ACCRA, Ghana, marking the initiation of a formal partnership between the two pharmacy councils. Discussions centered on potential areas of collaboration. During the visit, the Registrar met with the Deputy CEO of FDA Ghana and the Chairman of the Board of Directors of the Ghana National Health Insurance Scheme. Valuable insights were exchanged on best practices in professional regulation for public health protection. Dr. Jocelyn Azeez, Director of Pharmaceutical Services at the Ministry of Health Ghana, hosted the Registrar and the Second Counsellor of the Rwanda High Commission in Ghana. Their discussions revolved around regulatory best practices for safeguarding public health. The Vice Chancellor of Kwame Nkrumah University of Science and Technology and the Vice Chancellor of UCCGH, the first university in Ghana and West Africa, also hosted the Registrar, exploring potential areas of collaboration, including capacity building in the pharmaceutical sector.

Upon concluding the visit, the Registrar briefed Her Excellency Dr. Aisa Kirabo Kacyira, the Rwanda High Commissioner, on prospective areas of collaboration between the Ghana Pharmacy Council and the NPC.

Hosting stakeholders

On November 7, 2022 the NPC hosted Team heart and Edwards Lifesciences delegation from the USA. In light of Rwanda's vision 2050, the discussions aimed at assessing potential collaborative ways of addressing Rwanda's health supply chain challenges.

NPC Contact information

The Rwanda National Pharmacy Council can be reached using the details provided below:

Telephone: [\(+250\)784614601](tel:+250784614601)

PO Box: 1858-Kigali, Rwanda KN2 Avenue, Nyarugenge, Kigali

E-mail: info@pharmacycouncil.rw,

rwandanpc@gmail.com

Website: www.pharmacycouncil.rw



NSENGEYUKURI Jean Damascene,
Permanent Secretary
and Registrar, NPC



CONTINUING EDUCATION

GUT MICROBIOTA AND GOOD HEALTH

Dr. Edward O. Amporful

Chief Pharmacist, Cocoa Clinic, Ghana

INTRODUCTION

The terms microbiota and microbiome are often used interchangeably, although they have different meanings. Microbiota first refers to the prokaryotic organisms (bacteria and archaea) and eukaryotes (e.g., protozoa, fungi, algae, and multicellular parasites) that coexist in symbiosis with us. Microbiome means a complex ecosystem of microbial species that colonize our body, their genome, and the surrounding environment in which they live (Scuderi *et al.*, 2022). The microbiome comprises a microbial community that exceeds 100 trillion microorganisms, distributed with a density of 10^{11} – 10^{12} per milliliter. To get an idea of the biological role of this population, just think that, while the human genome consists of approximately 23,000 genes, the gut microbiome encodes more than 3 million genes and produces thousands of metabolites. The gut microbiota performs immune and metabolic functions of fundamental importance to the body. The maintenance of the qualitative and quantitative composition of the gut microbiota is essential for the maintenance of our health.

OVERVIEW OF GUT MICROBIOTA

The mammalian intestine hosts a microbial community of approximately 1,000–1,500 bacterial species called the “microbiota,” destined to evolve over the course of the host’s life and over the generations and subject to environmental changes. It has been amply demonstrated that the composition of the intestinal microbiota is also influenced by diet, age, lifestyle, and the presence of inflammatory processes. The composition of the microbiota differs substantially from individual to individual. The commensal microorganisms that reside in the intestine exceed human somatic cells at a ratio of about 10:1. In healthy adults, the microbiota is primarily composed of five bacterial phyla: Firmicutes (79.4%), Bacteroidetes (16.9%), Actinobacteria (2.5%), Proteobacteria (1%), and

Verrucomicrobia (0.1%). Normally, the gut microbiota consists of a high diversity and abundance of microbial populations, and this condition is known as “eubiosis” (balance). Over the span of a lifetime, a wide range of factors, including an incorrect diet, pathological conditions, drug abuse, pharmacological therapy, and many others, can alter diversity and abundance of the microbiota leading to a state of “dysbiosis” (imbalance).

The symbiotic relationship between the gut microbiota and the host organism has been described as mutually beneficial: the host provides the nutrients and a suitable habitat for the microbiota, while the gut microbiota supports the host’s intestinal development and maturation by providing nutrients. The microbiota is able to control and influence certain segments of the physiology of the host such as the immune system, the digestive system, and the brain. The microbiota plays a vital role in the formation of the host’s immune system, and it can be said that there is real cross-talk between the host immune system and the gut microbiota which allows the development of the host’s tolerance to the harmless antigens of the microbiota.

The human gastro-intestinal (GI) tract is one of the largest interfaces (250 – 400 m^2) between the host, antigens, and environmental factors in the human body. The human gut microbiome varies (in both composition and function) in each of the anatomical regions of the GI tract as these have different characteristics in terms of physiology, pH, oxygen tension, digestive flow rate, availability of substrates, and host secretion. Therefore, from the duodenum to the rectum, an increasing quantitative microbial gradient and a decreasing qualitative microbial gradient occur, and shows a progressive reduction of aerobic bacteria (survive and grow in oxygenated environment) in favour of obligate anaerobes (grow and survive only in the



absence of oxygen).

The human intestinal tract harbours a diverse and complex microbial community which plays a central role in human health. It has been estimated that our gut contains in the range of 1000 bacterial species and 100-fold more genes than are found in the human genome. This community is commonly referred to as our hidden metabolic 'organ' due to their immense impact on human wellbeing, including host metabolism, physiology, nutrition and immune function. The gut microbiome coevolves with us and that changes to this population has major consequences, both beneficial and harmful, for human health.

The disruption of the gut microbiota (or dysbiosis) can be significant with respect to pathological intestinal conditions such as obesity and malnutrition, systematic diseases such as diabetes and chronic inflammatory diseases such as inflammatory bowel disease (IBD), encompassing ulcerative colitis (UC) and Crohn's disease (CD). The intestinal microbiota of healthy individuals is known to confer a number of health benefits relating to pathogen protection, nutrition, host metabolism and immune modulation.

GUT MICROBIOTA, INFLAMMATION AND CERVICAL CANCER

Cervical cancer is one of the most significant malignancies in females, and the third leading cause of cancer-related deaths worldwide. It has been estimated that there are about 530,000 new cases and 275,000 deaths worldwide each year (Olusola *et al.*, 2019). The surface of the cervix comprises two kinds of epithelial cells layers: the outer squamous cells and columnar glandular cells along the inner canal. The junction of columnar cells and squamous cells is termed the squamocolumnar junction. This junction is prone to precancerous lesions and canceration. In the early stages, cervical cancer is often unnoticed due to the inconspicuous symptoms. However, many common symptoms such as vaginal bleeding,

abnormal vaginal discharge, and dyspareunia occur when cervical cancer advances to the terminal stage (Reed *et al.*, 2021). Although the development of cervical cancer could be prevented by routine screening and other treatment approaches, mortality rates do not decrease significantly.

The microbiome, which refers to the microbiota within a host and their collective genomes, has recently been demonstrated to play a critical role in cancer progression, metastasis, and therapeutic response. The microbiome is known to affect host immunity, but its influence on human papilloma virus (HPV) gynecologic malignancies remains limited and poorly understood. To date, studies have largely focused on the cervicovaginal microbiome; however, there is growing evidence that the gut microbiome may interact and substantially affect therapeutic response in gynecologic cancers. Inflammation is a kind of defense mechanism to various stimuli. Tissue damage and various contributing factors can trigger inflammation (Zhou *et al.*, 2021). When the host body shows inflammatory signs, it results in the following phenomenon: elevated cellular metabolism, vessel wall dilatation, the release of soluble mediators and increased blood flow (Ferrero-Miliani *et al.*, 2007). The inflammation period is classified into an acute period and a chronic period. Immune cells migrate to the injury site to initiate inflammation by regulating soluble mediators in the acute phase. Persistent inflammation contributes to the chronic period. The salient feature of chronic inflammation could be explained by lymphocytic infiltration. Antibodies or cytokines are secreted by T and B lymphocytes, which are involved in tissue damage and inflammatory cell recruitment. Chronic inflammation can lead to atherosclerosis, diabetes, aging, autoimmune diseases, and even cancers.

The microflora is a collection of living microbes that live in biological organs. There are various



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microbes on the body's surface, and the human body is a habitat of trillions of microbes (Adak and Khan, 2019). Complementing microbiome with humans is established a complex mutualistic host-microbial relationship. The human body provides a suitable living environment for microbes. The microbiome plays a crucial role in the development and normal function of the body, including modulating the immune system, absorbing nutrients and protecting the body (Van de Wiele *et al.*, 2016). When the homeostasis of microorganisms is compromised, the microorganisms themselves or their secretions will cause a series of immune responses in the organism. With the advent of research, the relationship between the microbiome and inflammation has become increasingly apparent. Moreover, the role of microbiome and inflammation in the occurrence and development of cancer has also been reported by numerous research studies. Persistent inflammation can result in chronic inflammation, which is one of the inducing factors of the tumor. In the presence of chronic inflammation, the organism's susceptibility increases, making the cells prone to cancer.

As in the gastrointestinal tract, the female reproductive tract is a habitat for microbes. Most microbes coexist with the body, affecting human health and disease. The state of the microbiome is dynamic. The microbiome remains in dynamic balance when the body is healthy, whereas high bacterial diversity and low numbers of lactic acid bacteria indicate a bacterial imbalance or inflammation.

Furthermore, many factors are reported to affect the balance of microbiome. On the one hand, epidemiological factors, such as dietary habits, contraception, smoking and sex life, are the contributing factors. On the other hand, social environmental factors (sanitary conditions, living area, and socioeconomic) also influence the composition of the microbiome. In Hispanic women and women of African descent (30–40%), a non-lactobacillus predominance of the vaginal microbiome is more common while in Caucasians and

Japanese women *Lactobacillus* species dominate the vaginal microbiome. Interestingly, these areas also tend to have higher cancer prevalence rates than areas where *Lactobacillus* is the dominant species (Miller *et al.*, 2018), which is the subject of future study. The result may suggest that *Lactobacillus* is a major defender of the microenvironment protecting the female reproductive tract.

The dynamic balance of the vaginal microbiota could also be affected by the host's hormone or immune system. Due to the effect of estrogen, the vaginal microbiome becomes more volatile during menstruation, relatively stable and less diverse after menstruation (MacIntyre *et al.*, 2015). After menopause, the lack of estrogen in women caused an increase in anaerobic bacteria in the vaginal flora and a decrease in *Lactobacillus*.

Lactobacillus plays a role in protecting the body and maintaining function in the female reproductive tract or gastrointestinal tract. The composition of the vaginal microbiota may influence local immunity and be involved in the occurrence of cervical cancer and clearance of the human papilloma virus (HPV). The vaginal microbiota, dominated by various species of *Lactobacillus*, may play a protective role against opportunistic infections (Audirac-Chalifour *et al.*, 2016). After utilizing those decomposition products of glycogen, *Lactobacillus* produces lactic acid that keeps the pH of the vaginal environment below 4.5 and acidizes the mucosal surface.

Lactobacillus is a significant factor that maintains the health of the female reproductive tract, and the lack of *Lactobacillus* may promote the overflow of several anaerobic bacteria associated with sexual transmission. Cervical lesions could be caused by these anaerobic bacteria.

As the main defender of the cervicovaginal microenvironment, *Lactobacillus* maintains the dynamic balance of the entire cervix-vaginal microflora. The progression of cervical cancer is



related to changes in the composition of the microorganism in the cervix vagina, especially the failure of *Lactobacillus* and the overgrowth of anaerobic bacteria. Cervicovaginal microbiological disorders have become a key factor in inflammation, HPV infection and cervical cancer. *Lactobacillus* competes with pathogens for territory in the vaginal epithelium and inhibits the growth and development of pathogens by secreting lactic acid, bacteriocins and H_2O_2 . An additional benefit of *Lactobacillus* is that it could also activate the complement system, trigger a local immune response, and further control the pathogen.

Dietary polyphenols are compounds of natural origin present in food items such as vegetables, fruits, cereals, tea, coffee, dark chocolate, cocoa powder, and wine. Polyphenols act in the gut microbiota to favour the increase of beneficial bacteria and hamper the increase of pathogenic bacteria. The microbiota act on polyphenols to increase their bioavailability. The two-way interactions between polyphenols and the gut microbiota affect human metabolism and reduce cardiometabolic risk. A significant portion of unabsorbed polyphenols are acted upon by the colonic bacterial enzymes in the large intestine, and consecutively generate metabolites having diverse physiological implications. Colonic microflora may transform polyphenols into bioactive compounds, which have the ability to influence the intestinal ecology and affect human health. Cocoa is an excellent source of polyphenols (Singh *et al.*, 2019)

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CONTINUING EDUCATION

THE USE OF TECHNOLOGICAL INTERVENTIONS IN IMPROVING MEDICATION ADHERENCE

Ogunkunle, Ololade Olamide and Olugbake, Olubusola

Department of Clinical Pharmacy and Biopharmacy, Faculty of Pharmacy,
University of Lagos, Idiaraba Campus, Idiaraba, Lagos

INTRODUCTION

Adherence is defined as the extent to which a person's behaviour corresponds to desirable healthcare goals jointly established with the healthcare provider (WHO 2003; Cramer *et al.*, 2008). Despite the importance of adherence, rates remain suboptimal across patient populations and medical conditions.

Medication adherence is affected by multiple factors, including patient beliefs, socioeconomic influences, and the type of prescribed therapies (Simon *et al.*, 2021). Educational interventions to address these issues have been shown to be effective (Simon *et al.*, 2021). However, this does not guarantee that medications will be taken, especially if regimens require multiple doses each day or a patient has various medications to take. Interventions to tackle lack of medication adherence have been the focus of technological advancements in recent times (Simon *et al.*, 2021). These technologies have shown significant increases in medication refilling rates specifically in patients with chronic diseases like cardiovascular diseases (CVD) such as hypercholesterolaemia, hypertension, and coronary heart disease. According to a report published by the WHO in 2003, adherence rates in developed countries average only about 50% (WHO, 2003). Adherence is a key factor associated with the effectiveness of all pharmacological therapies but is particularly critical for medications prescribed for chronic conditions. Of all medication-related hospitalizations that occur in the United States, between one-third and two-thirds are the result of poor medication adherence (Osterberg and Blaschke, 2005). Patients are generally considered adherent to their medication if their medication adherence percentage, defined as the number of pills absent in a given time period ("X") divided by the number of pills prescribed by the physician in that same time period, is greater than 80% (Osterberg and Blaschke, 2005).

Poor or inadequate adherence to prescribed regimens cause negative effects on health and economic status of an individual (Velligan and Kamil, 2014). Poor adherence can be due to multiple reasons which can be patient-related or medication related. Patient-related factors that impact adherence include simple forgetfulness, disorganized behaviour, cognitive impairment, and having a poor understanding of the reasons for taking a certain medication (Weiden *et al.*, 2009). Medication-related factors including side effects, drug burden and poor efficacy are also important factors to be taken into consideration. Other factors include problems with the healthcare delivery system (Weiden *et al.*, 2009). Poor adherence has been found to lead to higher rates of relapse and re-hospitalization. The increasing inclusion of technology into everyday life has witnessed the introduction of technological interventions, such as mobile applications, electronic pill boxes, automated telephone calls, and messaging to support patients and health care professionals (HCPs) in disease management (Free *et al.*, 2013; Hood *et al.*, 2016). These technological interventions have the potential to enhance medication adherence, leading to improvements in clinical and nonclinical outcomes for patients with chronic diseases. A study by Al-Arkee *et al.*, (2021) documented that mobile apps appear to enhance medication adherence and improve health-related outcomes. In another study by Wu *et al.* (2012), Medication Event Monitoring System (MEMS) feedback was used as an educational tool for patients. It showed 74% of the intervention group adherent to medication versus 36% in the control group. In another study by Young *et al.*, (2016), an electronic pill organiser reminder was used as a medication reminder intervention with improvement found in the intervention group.



The aim of this paper is to discuss the role of technological interventions in improving medication adherence, the benefits, challenges as well as pharmacists' role in use of technology to improve adherence.

DISCUSSION

Medication adherence is a global challenge for the healthcare community. Accurately measuring and monitoring patient medication adherence is equally challenging. Patient self-reporting is the most commonly used measure of medication adherence (El Naem *et al.*, 2020). Pill counts, prescription refills, and directly observed therapy (DOT) are other conventional ways to measure adherence (Mason *et al.*, 2022). Technology has been continuously disrupting the conventional norms of healthcare and has offered many options to measure and improve medication adherence (Stirratt *et al.*, 2018; Roh *et al.*, 2021; Mason *et al.*, 2022). Various technological interventions have been developed to tackle medication non-adherence. These interventions span a spectrum of approaches, from simple reminder systems such as text-messages and alarms, to more complex strategies involving smart pill dispensers and wearable devices that monitor medication-taking behaviours. These technologies leverage behavioural psychology, cognitive science, and data analysis to tailor interventions to individual patient needs, thus enhancing their adherence.

Some available interventions to patients include:

- A Medication Event Monitoring System (MEMS) which makes use of electronic caps that record date-and-time stamps every time the patient opens the pill bottle (Mason *et al.*, 2022).
- Electronic pill boxes which have the capacity to store multiple medicines record and send a cellular signal to a web-based server when opened (Adje *et al.*, 2022).
- Electronic audiovisual reminder devices (AVRD) are pillboxes with lights that flash and send out an alarm at specified times, reminding patients to take medications (Mistry *et al.*, 2015).

- Smart blister packaging involves tracing the removal of the pill from the blister. Removing the pill from the blister creates a break in the label circuit, which is recorded by a microchip with a date-and-time stamp (Mason *et al.*, 2022).
- Video-based monitoring requires patients' video-record their medication ingestion on their smartphones and sharing it with their practitioners (Adje *et al.*, 2022).
- AI-backed mobile applications aim to improve adherence via patients' smartphones via sending time and dosage alerts to reminding patients to get their prescriptions refilled (Babel *et al.*, 2021).

Figure 1 below shows a composite of measures to improve patient medication adherence using these techniques as described.

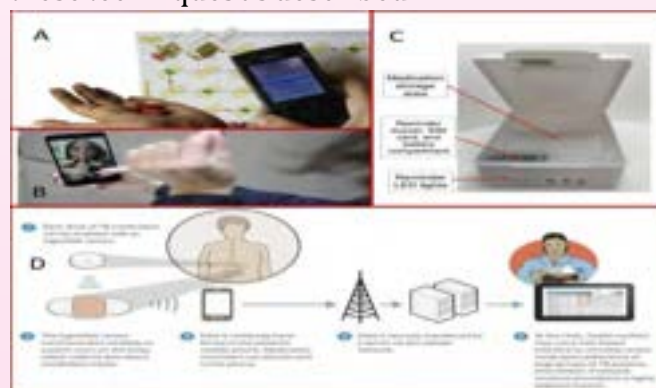


Figure 1: Examples of different adherence monitoring technologies.

(A) 99DOTS, a feature phone-based adherence technology (with permission from Everwell Health Solutions) (Source: Subbaraman *et al.*, 2018)

(B) SureAdherence, a video DOT strategy (with permission from SureAdherence Mobile Technologies) (Source: Subbaraman *et al.*, 2018)

(C) evriMED, a digital pillbox (with permission from the Wisepill Technologies) (Source: Subbaraman *et al.*, 2018)

(D) an ingestible sensor-based adherence monitoring approach (Source: Belknap *et al.*, 2013).

Key: DOT = directly observed therapy; LED = light emitting diode; TB = tuberculosis; SIM = subscriber identification module



Figure 2: Smart Pill; EctectRx's technology tracks medication adherence. A tiny sensor embedded in each pill is activated when it reaches the patient's stomach. (Source: Reuters, 2019)

Figure 3: Smart Med Reminder system that includes a connected prescription vial cap, companion mobile apps and a cloud-based service that reminds patients to take their medication and monitors their progress. (Source: Downey, 2018),



Figure 4: Smart pillbox; smart pillbox so you don't forget anything: here's PILLDRILL (Source: IoTWorlds, 2023)



BENEFITS

There are several benefits to the use of technological interventions to improve medication adherence, some of which are listed below:

- **Reminders:** Reminders can promote good habit forming in pill-taking behaviour. The reminder serves to prevent forgetfulness in medication adherence (Haberer *et al.*, 2016).
- **Personalised medication management:** This offers personalized solutions to meet individual patients needs. The needs of patients are individualized as the best possible intervention to tackle their non-adherence is used (El-Gayar *et al.*, 2013).
- **Remote monitoring:** This enables remote monitoring and is highly beneficial for patients with chronic conditions or limited mobility (Bokolo, 2020).
- **Medication tracking and data analysis:** This allows precise medication tracking which provides valuable insights into adherence patterns and helps healthcare providers give the best care (Schnall *et al.*, 2016).
- **Education and information:** This provides easy access to information about patient's conditions and their medications (Pousinho *et al.*, 2016).

CHALLENGES

There is no doubt that technology is transforming medication adherence monitoring and measurement. However, there are many challenges with it:

Proxy measures: The opening of the bottle or removal of the pill does not guarantee ingestion. The electronic devices cannot confirm that a pill was ingested, only that it was removed from the bottle, pill organizer, or blister pack. (Stirratt *et al.*, 2018).

Cost: The cost of technology is one of the potential limiting factors to its usage and adoption by both patients and healthcare practitioners (Mason *et al.*, 2022).

Privacy issues: Technology often blurs the issues of confidentiality and access to patient data. This is a big deterrent to the use of technology

Technical barriers: There are various technical barriers that prevent the use of these devices. System accuracy and data fidelity are some of the major

technical barriers associated with the acceptance of technological interventions. Energy consumption and the lifetime of the devices are the additional challenges with technology. (Mason *et al.*, 2022).

Literacy: In many parts of the world, literacy and technology dexterity could be a limitation to the widespread adoption of technological innovations.

PHARMACIST'S ROLE

Pharmacists are often the first point of contact of many patients to healthcare professionals and they serve many roles in ensuring optimal outcomes for their patients and clients. Pharmacists can serve as a bridge to help patients adopt and manage technological innovations that will enable them to improve their adherence and better take responsibility for their own health. Some of the ways pharmacists can perform this role are as follows:

Education and Counselling: Pharmacists play a vital role in educating patients about technological interventions that facilitate medication adherence. They explain how these tools work, offer instructions on their proper usage, and address any concerns or queries patients may have (Murray *et al.*, 2020). Pharmacists also provide counselling on the significance of medication adherence and its potential impact on health outcomes (Santo *et al.*, 2018).

Selection and Implementation: Pharmacists actively participate in selecting and implementing appropriate technological interventions for medication adherence. They assess different platforms, applications, or devices based on individual patient needs, medication regimens, and ease of use (Grainger *et al.*, 2017). Guiding patients in choosing the most suitable option and ensuring smooth integration into their daily routines is a critical role that pharmacists can perform effectively.

Training and Support: Pharmacists offer comprehensive training and continuous support to patients in effectively utilizing technological interventions. This includes teaching patients how to set medication reminders, monitor adherence,



and troubleshoot any issues that may arise (Kim *et al.*, 2019). Moreover, pharmacists assist patients in interpreting the data collected through these interventions, allowing them to better understand their progress in adhering to the prescribed medication regimen. For instance, pharmacists can support patients use of different point of care testing devices that enables them to track improvements in their health through enhanced adherence.

Monitoring and Evaluation: Pharmacists play an active role in monitoring and evaluating patients' medication adherence through technological interventions. They can help review adherence data collected via apps or devices, identify any patterns of non-adherence, and take prompt action to provide personalized recommendations or interventions (Liu *et al.*, 2016). Addressing potential barriers to adherence is also within their purview.

Collaborative Care: Pharmacists collaborate closely with other healthcare professionals, including physicians and nurses, to ensure a comprehensive and coordinated approach to medication adherence. They share adherence data, collaborate on medication management strategies, and communicate any necessary adjustments in the treatment plan to optimize patient outcomes (Free *et al.*, 2013; Machado *et al.*, 2019).

In summary, the involvement of pharmacists in leveraging technological interventions to improve medication adherence is crucial. Their expertise in medication management, patient education, and collaborative care makes them invaluable in optimizing the use of these interventions and ultimately enhancing patient outcomes.

CONCLUSION

Technological interventions have demonstrated promising results in enhancing medication adherence. Interventions including use of wearable technologies, mobile applications, smart pillboxes and telehealth systems have shown positive outcomes in improving adherence rates. However, their effectiveness can be influenced by various factors including patient characteristics, medication regimen complexity, and user interface design. Healthcare providers should

carefully consider these factors when implementing technological interventions and customize them to meet individual patient needs. Further research is required to optimize the design and implementation of these technologies to maximize their impact on medication adherence and, ultimately, enhance patient outcomes. By leveraging the power of technology, healthcare providers can enhance patient outcomes and contribute to the effective management of chronic diseases.

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CONTINUING EDUCATION

ROLE OF POLYPHENOLS IN MODERN NUTRITION

Dr. Edward O. Amporful

Chief Pharmacist, Cocoa Clinic, Ghana

For years now I have been sharing insights on polyphenols and health and wellbeing. Admittedly, it started with my interest in cocoa—the increased consumption of which, I have no doubt at all about its overall health impact on the country. I will be using a lot of materials from the article written by Williamson (2017).

Modern nutrition is a multidisciplinary subject and draws from epidemiology, biochemistry, chemistry, behavioural science, biology, food science and medicine. Nutrients comprise macronutrients (carbohydrate, fat and protein), which are digested and stored or used in the body. There are micronutrients (vitamins and minerals), which are stored or temporarily retained in the body and are essential for facilitating basic biochemical processes. There are several other compounds that are not stored in the body and do not contribute directly to basic biochemical processes, but which fine-tune cells and protect against stress, helping to improve long-term health in many ways. Polyphenols belong to the group of compounds that are not stored in the body but which fine-tune cells and protect against stress, helping to improve long-term health in many ways.

Polyphenols are a diverse group of molecules that are consumed in all diets. They originate only from plant-based foods and have been termed non-nutrients, plant secondary metabolites, phytonutrients, 'antioxidants', dietary bioactives and protective factors. Although there are many chemical types, the number of polyphenols which are important in the diet is much smaller.

'Polyphenol' is used to refer to flavonoids, tannins and phenolic acids and their various chemically modified or polymerized derivatives. The main classes of polyphenols in diet are flavanols (including the catechins and tannins from cocoa, tea), flavanones (mostly hesperidin from citrus

fruit), flavonols (including quercetin from tea, apples and onions), hydroxycinnamic acids (phenolic acids, often called 'chlorogenic acids' and abundant in coffee and many fruit and vegetables) and anthocyanins (coloured polyphenols in fruit and vegetables).

Polyphenols are well absorbed. This is made up of absorption both parent molecule and of the lower molecular weight compounds produced by the gut microbiota. The concentration reaching the blood is highly dependent on the parent polyphenol administered and the breakdown products as a result of the actions of the gut microbiota. In general, the peak concentrations of polyphenols in the blood after food intake are usually less than 1 μ M, whereas, for gut catabolites, concentrations can exceed this figure more than 10–100 times that of the parent compound.

Polyphenols in plants protect the plant from stresses, e.g. UV light, attacks from pests. Polyphenols provide colour to attract certain insects. Polyphenols are generally classified as antioxidants but their importance to health and wellbeing go way beyond this property.

Phenols are present in cocoa as monomeric (–)-epicatechin (EC) and (+)-catechin, dimeric procyanidins, (especially procyanidin B2 and B1), oligomers and polymers. Cocoa also contains other polyphenols in lower amounts, such as flavones (luteolin, apigenin), flavanones (naringenin), flavonols (quercetin, isoquercitrin, hyperoxide, etc.), phenolic acids and anthocyanins. Many human intervention studies have been reported on cocoa, with a focus on its constituent flavanols (–)-epicatechin and its oligomers (procyanidins). The effects of flavanol-rich cocoa consumption include improved endothelial function, decreased susceptibility of low-density lipoprotein (LDL) to oxidation, inhibition of platelet aggregation and activation, and decreased levels of F2-



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isoprostanes. Regular consumption of flavanol-rich cocoa reduces blood pressure, blood cholesterol, F2-isoprostanes and susceptibility of LDL to oxidation. The European Food Safety Authority (EFSA NDA Panel 2014) has accepted cocoa flavanols as improving endothelium-dependent vasodilation. Many of the effects of flavanol-rich cocoa are mediated through interactions with nitric oxide metabolism in the blood vessel endothelium- improving endothelial dysfunction, increasing vasodilation and lowering blood pressure and overall reduction in cardiovascular disease risk.

Tea is a rich source of catechins and gallic acid. Green tea contains the 'monomeric' compounds as found in the plant, but black tea contains mostly oxidized catechins, a chemically diverse group of polymerized molecules called the astringins and tannins. Cocoa, green tea and black tea all contain various amounts of epicatechin, which is one of the most active polyphenols in these foods. As a result, some of the benefits associated with cocoa have also been found for tea, such as reduced risk of cardiovascular diseases. A Cochrane review summarizes the effects of tea, after 3- to 6-month intervention, as lowering blood pressure, lowering LDL-cholesterol, but with no effect on high-density lipoprotein (HDL)-cholesterol and a grading of the evidence as low/moderate quality (Santesso and Manheimer, 2014). Regular consumption of tea is also associated with reduced risk of developing type 2 diabetes in meta-analyses.

Quercetin is mainly found in tea, apples and onions. All these foods contain other biologically active components in addition to quercetin, and so some of the effects observed for tea described above could be partly ascribed to quercetin, and similarly for onions and apples. Regular consumption of quercetin-rich foods reduces the risk of type 2 diabetes, reduces platelet aggregation and thrombus formation. When given chronically over 4 weeks, quercetin (as 3-O-glucoside, also bioavailable) improved endothelial function and reduced inflammation, but did not affect flow-

mediated dilation.

Many reviews and intervention studies have been reported on coffee and its constituent hydroxycinnamic acids (chlorogenic acids). The epidemiological evidence for a protective effect of coffee consumption against the risk of developing type 2 diabetes is very strong and shows a convincing dose-dependent effect. Coffee consumption increases glutathione levels and protects against DNA damage, but with inconclusive effects on protein and lipid damage. Coffee consumption may also reduce the risk of colon cancer. One of the difficulties in making conclusions on the polyphenol component of coffee is separating out the effects of caffeine, which has substantial biological activity (both positive and negative).

Most micronutrients such as vitamins and minerals have an officially approved daily intake recommended value. For polyphenols a sufficient dose for an effect is needed every time of consumption and that, unlike minerals and vitamins, the active component is not stored or temporarily retained in the body. The beneficial effect of polyphenols (e.g., cocoa flavanols, but not stored in the body), the magnitude of the effect is dependent on dose. The daily/regular consumption of polyphenol-rich foods is therefore important to one's health and wellbeing. Cocoa is an excellent source of polyphenols.

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COMMUNIQUÉ

35TH ANNUAL GENERAL MEETING & SCIENTIFIC SYMPOSIUM OF THE WEST AFRICAN POSTGRADUATE COLLEGE OF PHARMACISTS (WAPCP) HELD AT THE PAYNESVILLE CITY HALL, PAYNESVILLE, LIBERIA, FROM MONDAY 20TH-FRIDAY 24TH MARCH 2023

The West African Postgraduate College of Pharmacists (WAPCP) held the Opening Ceremony of the 35th Annual General Meeting and Scientific Symposium at the Paynesville city hall, Liberia from 20th to 24th March 2023. Participants came from the five (5) Member countries-The Gambia, Ghana, Liberia, Nigeria and Sierra Leone. Prof. Serigne Omar Sarr from the Republic of Senegal (Francophone Country) was also present at the Opening ceremony. The theme of the Conference was "**Substance abuse: a threat to future workforce**", with the sub-themes. *The Consultant Pharmacist: taking the responsibility for mitigating substance abuse* and *'Substance abuse as a disease'*.

The Chairman of the occasion was Honourable Shankar Jhamni, President & Chief Executive Officer of Lucky Development Corporation, Liberia. The Special Guest of Honour was the Honourable Minister of Health, Dr. Wilhemina S. Jallah, a Public Health Physician and a Fellow of the West African College of Physicians.

Goodwill messages were delivered by His Excellency Godfrey A. E. Odudigbo, Nigeria Ambassador to the Republic of Liberia; President, West African College of Physicians, represented by the Chairman of the Liberia chapter of the College, Dr. Musu Duoko; President of West African Postgraduate College of Nurses & Midwifery, represented by Dr. Marion K. Zubah; Registrar/Secretary General, West African Postgraduate College of Medical Laboratory Sciences, Dr. Godswill C. Okara, represented by Mr. Henry Koahr; Representative of the President, West African College of Physicians and Surgeons, Dr. Benjamin Harris; Representative of the Ghana College of Pharmacists, Rector Yvonne Esseku; President, United Methodist University of Liberia, Dr. Yar Donleh Gono; Sierra-Leone Postgraduate College of Health

Specialties, College of Pharmacy, represented by Dr. Wiltshire Johnson; President University of Liberia, Rev (Dr.) Sarwolo Nelson; Prof. Christiana M. Adeyeye, DG NAFDAC, represented by Dr. Gbenga Fajemirokun; Prof. Serigne Omar Sarr from the Republic of Senegal, and Dr. Obi Adigwe, DG, National Institute of Pharmaceutical Research and Development, NIPRD, Nigeria.

Prof. Hasipha C. Tarpeh, Chairman, Department of Clinical Pharmacy & Pharmacy Practice, College of Health Sciences, University of Liberia, delivered the keynote address, while sub-themes were presented by Prof. Eric Woode and Prof. (Mrs.) Oluwatoyin Odeku.

A total of eighty three (83) new fellows were admitted into the different specialties of the West African Postgraduate College of Pharmacists.

Conference resolved as follows:

- 1) Substance abuse is a hydra-headed problem requiring a multi-dimensional approach towards mitigation, including collaboration across the region among all healthcare professionals as a key to assuring the goal of reducing illicit drug use while enhancing a healthy, virile workforce.
- 2) Recognized the need to include substance abuse modules in the pharmacy curriculum, a move that is geared towards the training of all students across the region in providing appropriate solutions to the problems of substance abuse.
- 3) Noted that substance abuse is a chronic non-communicable disease and sufferers should be treated with empathy and social support.
- 4) Noted the need for collaboration between academic/research Pharmacists and the Industry, to ensure outputs that are contextual and applicable to our various local scenarios as it relates to substance abuse.



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- 5) Reiterated the dire need for Member countries to present a united front in fighting the war against substance abuse, by placing the emphasis on PREVENTION through public enlightenment and educational programmes.
- 6) Advocacy with Governments of Member States on encouraging the formulation and implementation of policies that are geared towards curtailing illicit drug use.
- 7) Provide a mechanism to fund research and development in the discipline of substance abuse and addiction.
- 8) Noted the efforts of the National Regulatory Authorities (NRAs) across Member countries in mitigating against the scourge of substandard and falsified medicines and urged that more concerted actions be taken to curtail the use and abuse of illicit drug substances.
- 9) Noted the enormous responsibility of building the proposed WAPCP secretariat and conference centre, which foundation laying was performed in Lagos, Nigeria on the 16th May 2022, and called on Governments of Member countries and well-meaning corporate bodies and individuals to support this laudable project.
- 10) Noted with commendation the recent developments in the College including the launch of the International Pharmacy Practice Residency pilot program and the introduction of specialties in the Fellowship program curriculum.
- 11) Resolved to integrate eligible pharmacists in the Francophone and Lusophone ECOWAS states into the WAPCP.
- 12) Expressed profound appreciation to the Government and the good people of Liberia for their warm reception and hospitality.
- 13) The 36th Annual General Meeting and Scientific Symposium and 66th Council meeting will be held in the Gambia in 2024.

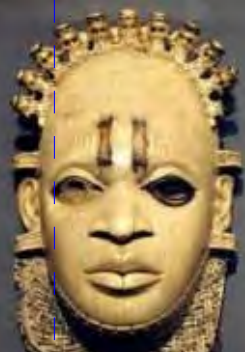
At the conclusion of the Annual General Meeting, the following Fellows were elected as Principal Officers of the College for the 2023/2025 biennium.

1. Alhaji Murtada Sesay (Sierra Leone)
-President
2. Prof. Hasipha Tarpeh (Liberia)
-First Vice President
3. Prof. Mahama Duweijua (Ghana)
-Second Vice President
4. Prof. Ibrahim Oreagba (Nigeria)
-Secretary General
5. Dr. (Mrs.) Fatoumatta Jah Sowe (The Gambia)
-Deputy Secretary General
6. Mr. Joseph Nyoagbe (Ghana)
-Treasurer
7. Dr. Timothy O. Fajemirokun (Nigeria)
-Editor-in-Chief

SIGNED

**Prof. (Mrs.) Cecilia Igwilo, OON., FPSN
FPCPharm, FNAPharm**
President, WAPCP

Prof. Ibrahim Oreagba, FPSN, FPCPharm
Secretary General, WAPCP



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FIP REPORT 2022



Preamble

More than 2300 participants from 104 countries attended the 80th FIP World Congress in Seville from 18th to the 22nd of September 2022 at the FIBES Sevilla, Seville, Spain. It was noted that several features of the pandemic may serve as useful springboards to develop better plans for future emergencies and accelerate change in our healthcare systems. It is our responsibility to review our shared experiences and search for solutions to advance the well-being of global communities. In creating “the new normal”, pharmacy, united together, can contribute to the recovery of our healthcare systems by building on our developments and innovations during the past two years. The congress theme was therefore aptly coined as “Pharmacy united in the recovery of health care.”

A total of 272 African delegates registered for the Congress with Nigeria, Ghana, South Africa, Sudan and Kenya leading the pack with 138, 66, 28, 15 and 10 delegates each. The Congress was co-hosted by FIP's member organisation the General Pharmaceutical Council of Spain.

Opening Address by the FIP President

In his opening address, FIP president Dominique Jordan acknowledged all pharmacists saying that 'Without you FIP is nothing. You are the soul of FIP, and you make our organization successful. Thank you for your dedication to our federation. I am proud to be your president. I want to begin by recognizing and thanking all pharmaceutical colleagues around



the world — pharmacists and their teams, pharmaceutical scientists, pharmacy educators, regulators and policymakers — for their continued efforts during this COVID-19 pandemic so that health care needs can be met.'

He added, 'Some three years ago, at our 79th world congress, in Abu Dhabi 2019, I said that the 21st century would be the century of pharmacists and that we wanted to make the pharmacist — worldwide — an indispensable player in the health systems of tomorrow. At that time, unknown to us all, the most powerful amplifier of that contribution was coming our way: COVID-19. Since then, our profession has certainly demonstrated that it is indispensable. We have been presented with extraordinary opportunities to demonstrate our value. And we have acted on them. Our steadfast dedication to serving our communities during this global health emergency has proven that pharmacists and pharmacies are integral to a well-functioning healthcare system and we have seen our profession advance at an unprecedented



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rate, expanding the scope of our activities to provide more services, including testing and vaccination. Never have so many governments acknowledged the contribution of pharmacy to health.

Prevention is better than cure and vaccination is the second most effective public health intervention after clean water. As the global leader of pharmacy, we have continued to advocate for expansion of vaccination by pharmacists. We are pleased that the number of countries with pharmacists as vaccinators has increased. According to our data as of August 2022 pharmacy-based vaccination is now available in at least 40 countries and territories — 20 more than in 2016.

The FIP president stated that, 'We have continued to develop the FIP Global Pharmaceutical Observatory, set to become the most comprehensive and respected source of pharmacy data that informs advocacy and policymaking. The evidence of impact our profession is making to patient care, public health and pharmacy innovation is driven by data from our members transformed into intelligence. We have supported the profession with a wide variety of resources to facilitate role and service expansion. We are leading and coordinating actions in many areas, defining standards as well as recommending FIP-approved training, CPD and tools, enabled by our Provision and Partnerships Programme and the awarding of the FIP Seal.

COVID-19 has opened our eyes wider to the vulnerabilities of our healthcare workforce, weaknesses in our health systems, and the importance of tackling inequity of access to medicines and vaccines. In 2015, 17 Sustainable Development Goals were adopted by the United Nations as a universal call to action to end poverty, protect the planet and ensure that, by 2030, all people enjoy peace and prosperity. FIP's work is fully aligned with these Sustainable Development Goals, as I have described through the launch of the FIP Roadmap. Goal 3 is good health and well-being for all and has 13 targets. Our profession can be proud to have contributed to all the SDG 3 targets in myriad ways. I will give just one example from each

of the six world regions.

(Western Pacific) In Australia, pharmacists screen people for increased risk of cardiovascular disease, leading to behavioural changes beneficial to health outcomes.

(Americas) In Brazil, pharmacists are preventing HIV infections by prescribing antiretrovirals for pre- and post-exposure prophylaxis.

(South East Asia) In India, as recognised partners in the national tuberculosis control programme, pharmacists provide screening, referral and directly observed treatment; improving patients' health and helping stop the spread of this disease.

(Eastern Mediterranean) In Lebanon, pharmacies run diabetes awareness campaigns, distributing information, measuring blood glucose, and making referrals where needed.

(African region) In South Africa, pharmacists administer childhood vaccinations, such as for polio and measles, under an expanded programme on immunisation.

(Europe) In Switzerland, community pharmacists identify people at risk of colorectal cancer, giving access to stool tests, advising on results, and referring to a physician when needed.

FIP is the home of the profession globally, combining science, education and practice under one roof. Practice cannot exist without science or education and only through the collaboration of these three domains can we ensure universal health coverage. Thanks to pharmaceutical scientists, not only do we have vaccines against COVID, we also now have a vaccine for malaria and more than a million children in Africa have received a dose. Thanks to pharmacy educators, we are enabling our workforce and ensuring that our profession will be able to meet the needs of our communities."

The FIP president added that "All our combined actions have contributed to better health across



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the world. Global life expectancy at birth increased from 66.8 years in 2000 to 73.3 years in 2019, largely due to gains in maternal and child health, and in communicable diseases such as AIDS, tuberculosis, malaria and hepatitis. In fact, save for diabetes, there has been progress in all other SDG 3 target areas: non-communicable diseases (cardiovascular disease, cancer, chronic respiratory diseases and mental health); substance abuse; road traffic; sexual and reproductive health; universal health coverage; environmental health; tobacco control; medicines and vaccines; health financing and workforce; and emergency preparedness. He reminded participants to join him and many other colleagues on World Pharmacists Day next Sunday to celebrate these achievements and promote our great profession and to celebrate the 110th birthday of FIP on that day.”

He further noted that, 'it is clear that the COVID pandemic has disrupted health services as well as bringing additional burden.' He said, “We also see an increase in mental health care needs in our populations, including among health professionals. Adding wars and food insecurities to this landscape, and it can be no surprise that decades of improvements in health outcomes are now under threat of reversal. According to the United Nations, global life expectancy fell back to 71 years in 2021, largely due to the impact of COVID. If universal health coverage is to become a reality, growth in the provision and use of essential health services through pharmacy must accelerate further. Pharmacy — through its many sectors and areas of expertise — is vital to universal health coverage, he reminded leaders urgently. The pandemic remains a global crisis, but we are now better equipped — with knowledge, strategies, evidence, vaccines, treatments and strategies — compared with where we were in 2020. We must be proud of the contributions that our profession has made to get us here and we now have good evidence to share, reflect on, and use to transform pharmacy globally, so that we are fully equipped to contribute to the

present and future challenges of health systems. We must take the opportunity to create more comprehensive plans to better manage health crises that may be on the horizon, not only future pandemics, but in terms of urgencies resulting from global problems such as undiagnosed hypertension, obesity, antimicrobial resistance and poor access to immunisations.”

Mr. Jordan concluded by thanking all our



volunteers who give their time and their expertise to FIP, so we advance our profession together to achieve our vision of a world where everyone benefits from

access to safe and effective medicines and pharmaceutical care, leaving no one behind. We are proving that by taking action as One FIP we can reach our goals faster and more effectively. With trust, solidarity and actions, we will move our profession forward globally and I urge colleagues in every corner of the world to join us in being part of this exciting journey.

National and regional health ministers recognise how pharmacy strengthens health systems

Pharmacy plays a priority role in the strategic process of reinforcing and strengthening the health system. Its healthcare work and the value it brings to the system and to patients is key, said Spain's Minister of Health Carolina Darias (pictured) at the opening ceremony of the FIP congress in Seville yesterday. “Pharmacy is a key player in our health system and its contribution is essential if we are to meet the United Nations



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mandate included in the 2030 Agenda and ensure sustainable healthy lives," Ms Darias said. In particular, the minister acknowledged the role of pharmacy in ensuring the proper functioning of supply chains, advancing the fight against antimicrobial resistance, in pharmacovigilance and also in tackling depopulation of rural areas. The value of pharmacy in smaller towns was echoed by Catalina Garcia Carrasco, Councillor for Health and Consumer Affairs for the region of Andalucia, who also addressed the congress during the ceremony. She said that the Andalusian Regional Ministry of Health and Consumer Affairs is committed to strengthening pharmaceutical care and spoke of impending changes to regional law with this purpose. However, she acknowledged that, in fact, during the pandemic, community pharmacies had already proved their ability to implement continuity of care models, guaranteeing accessibility to all medicines, especially to the most vulnerable, by dispensing hospital medicines to

avoid unnecessary visits to hospitals and through the "exceptional dispensing" of medicines for chronic conditions.

New bureau members join FIP

Australian pharmacist Paul Sinclair was elected as the next president of FIP in September. Mr Sinclair, a community pharmacist and former community pharmacy proprietor, has served FIP for a number of years, including as president of its Community Pharmacy Section (2014-18) and chair of FIP's Board of Pharmaceutical Practice since 2018. Mr Sinclair will serve a year as president elect before taking office as president after the 2023 FIP congress. In addition, the FIP Council elected three new vice presidents: Dr Prosper Hiag (Cameroon), Dr Marianne Ivey (USA) and Dr Virginia Olmos (Uruguay). They are joined on the FIP Bureau by Mr Daragh Connolly (Ireland), who was ratified as the new chair of the Board of Pharmaceutical Practice.





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FIP has 151 Member Organisations

Six new organisations were admitted as members of FIP by the FIP Council in Seville, Spain, last month. These are: the Caribbean Association of Pharmacists (Jamaica), the Nigerian Association of Pharmacists and Pharmaceutical Scientists in the Americas (USA), the Pharmacists Defence Association (UK), the Saudi Pharmaceutical Society (Saudi Arabia), the Saudi Society for Clinical Pharmacy (Saudi Arabia) and the Syndicate of Kurdistan (Iraq). FIP's total membership organisation number is now 151. The FIP Council voted to admit two further organisations, the Federation of Cooperative Pharmacists of Greece and the Pharmacy Association of Lesotho, as observer organisations. Through its membership, FIP has presence in 154 countries and territories.

Happy 50th birthday to the FIP Academic Pharmacy Section

The FIP Academic Pharmacy Section celebrated 50 years of existence, engagement and advancement of pharmacy education worldwide during the FIP Congress week in Seville. "I am excited about celebrating 50 years of the Academic Pharmacy Section. I believe the next 50 years will see a concerted effort among our colleague academics and academic leaders to connect and collaborate to advance education in science and practice while advocating for education policies that impact our

profession," said Toyin Tofade, AcPS president. To mark the anniversary, the section launched its first ever series of publications by its members in a special supplement of the *Pharmacy Education* journal with 25 articles cutting across members work across the continent. She added: "We are also excited to be updating the strategic implementation plan to include two additional goals focusing on advocacy and scholarship. Our collaborations with the Young Pharmacist Group and International Pharmaceutical Students' Federation continue as we develop the next generation of pharmacists and pharmaceutical scientist leaders."

Twelve pharmacy professionals from nine countries receive global awards

The FIP congress opening ceremony saw 12 people recognised for their service to the pharmacy profession and to FIP. The federation's highest honour for pharmacy practitioners, the André Bédât Award, was given to a hospital pharmacist, Dr Roberto Frontini (Germany) The FIP Distinguished Pharmaceutical Science Award (mid-career) went to Prof. Yahya Choonara (South Africa). Dr Betty Exintaris (Australia) received the FIP Pharmaceutical Education Recognition Award (early career). This year saw the introduction of a new set and cycle of FIP awards to acknowledge pharmacy professionals at different career levels in different sectors.



Prof. Yahya Choonara
(Mid Career Award)



Dr Roberto Frontini
André Bédât Award



Dr Betty Exintaris
(Early Career Award)



Nine new FIP Fellowships were announced as follows:

Dr. Naoko Arakawa (UK)

Dr. Andreia Bruno-Tomé (Portugal)

Dr. Ryan Forrey (USA)

Dr. John B. Hertig (USA)

Dr. Michael D. Hogue (USA), a former president of the American Pharmacists Association

Prof. Pierre Moreau (Canada/Kuwait)

Ms Leonila Ocampo (Philippines)

Dr. Carl R. Schneider (Australia)

Dr. Jenelle L. Sobotka (USA), a former president of the American Pharmacists Association



André Bédât Lecture: Removing barriers

Hospital pharmacist Roberto Frontini, the winner of the 2022 André Bédât Award, FIP's highest recognition of an individual pharmacy practitioner, delivered the André Bédât Lecture at the FIP congress. Dr Frontini said that the overarching goal of the hospital pharmacy service is to optimise patient outcomes through working collaboratively within multidisciplinary teams to achieve the responsible use of medicines across all settings. His lecture described the barriers to pharmaceutical care and how they could be overcome





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Let's tango! An interactive session with a difference



The problem of stress in community pharmacy and practical tools to reduce its impact were the focus of a FIP congress session in Seville. Carwen Wynne Howells reports.

Who would have thought that dancing the tango could be an antidote to stress? Yet the mental focus required to master its intricate step sequence can be the ideal diversion from the stresses of day-to-day life. You have no option other than to “switch off” and focus on your feet rather than your feelings. In a session that explored the impact the recent COVID-19 pandemic had on the health and well-being of pharmacists and their staff, those attending were able to actively participate in a number of exercises designed to reduce their stress levels. This was an interactive session with a difference!

Pharmacy had played a key role in the pandemic but the resultant increase in workload had taken its toll. Eight out of 10 pharmacy staff surveyed had identified stress as an issue. Occupational stress and, in some cases burnout, can result in medication errors and compromise patient safety. It is therefore essential to provide individuals with tools to manage their stress levels and to increase their stress threshold.

While it was noted that stress in itself is not a bad

thing, with researchers showing that performance increases with psychological or mental stimulus — but only up to a point. Some easily adaptable measures shared during the session include Simple breathing techniques, such as “[square breathing](#).” To quote Spencer Johnson, who developed the technique: “In a minute of silence, alone with myself, I first become aware of what I am doing and then I can choose if I am going to find a better way.” It is having the ability to step away, even for a moment, and to refocus.

Raniero del Federico, of [Mindful Systems](#), introduced the concept of mindfulness (a state of receptive awareness) and explained how techniques could be introduced into the workplace. He outlined the key elements of self-care that we all need to be aware of: proper resting (disconnect), social interaction (tribal), healthy eating, contact with nature (biophilia) and work-life balance. Please visit the congress website for more details.

Pharmacists are indispensable in times of crises, congress hears



“Pharmacy united in the recovery of the healthcare system” was the theme of the first plenary session of the 2022 FIP congress. Speakers gave different perspectives of pharmacy’s role during the COVID-19 pandemic. Graeme Smith reports.

Pharmacists are emerging as true healthcare professionals who add value for patients and for health systems, said Jens Gobrecht (pictured



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above), director of European representation and international affairs at ABDA, the Federal Union of German Associations of Pharmacists. During the COVID-19 pandemic, pharmacists showed, in an exemplary manner, that they are well capable of adding value to patient well-being. Accessible throughout the pandemic, they provided medicines, accessories, information “and sometimes just comfort”, he said.

They also managed supply shortages, for example, by providing disinfectants when the market was “totally empty”. They delivered medicines to the homes of patients who were under quarantine. They adapted to the increasing use of digital tools and networks. “In doing all this, pharmacists are creating enormous added value for hundreds of millions of people in national healthcare systems,” Dr Gobrecht said. “Across Europe and worldwide pharmacists are managing colossal tasks with great success and are thus demonstrating how indispensable they are in times of crisis.”

Please visit the FIP website for more details

Vaccines for children

Martha Rebour, executive director, Shot@Life, USA, gave congress participants a flavour of her organisation's work.

Martha Rebour: We are at a critical point



Shot@Life is a United Nations Foundation advocacy campaign set up to ensure all people, especially

children, have access to life-saving vaccines. Some 25 million children missed out on their basic vaccinations in 2021, which was six million more than the 2019, pre-pandemic figure. “By expanding access to existing vaccines, we can save millions of children's lives,” she said.

Shot@Life makes its impact through raising awareness of the global importance of vaccination, advocating global immunisation programmes and mobilising US federal resources and various private sector organisations to support them financially, thereby helping to ensure that more of the world's children have access to vaccines, Ms Rebour explained.

Pharmacy can be involved, she said, describing the “Get a shot, Give a shot” partnership launched in 2013 by the Walgreens pharmacy chain and Shot@Life. It works by donating a vaccine to a country that needs it every time a vaccine is administered in one of its pharmacies. “The partnership,” she said, “is on track to help provide 100 million vaccines to children around the world by 2024.”

However, the COVID-19 pandemic has put progress in child immunisation at risk worldwide. Measles cases, which act as indicator for vaccine uptake generally, had seen a 79% increase between the first two months of 2021 and the same period in 2022. “We are at a critical point,” she said. Measles rates are similar now to what they were in 2008. “It's going to take a lot of effort to get back to where we need to be.”

Please visit the FIP website for more on this session including the talk on WHO tools

PROGRAMME SESSIONS AND MEETINGS

Though congress programming had to change somewhat in recognition of the realities of a post pandemic world, delegates were still treated many impactful and engaging sessions which dealt with the congress theme and its various aspects and angles. From the first plenary which showed how pharmacists are indispensable in times of crises to how COVID-19 impacted pharmacy education,



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from sessions on digital health to improve self-care in the elderly to how COVID-19 challenged health technology assessment norms, from strengthening social responsibility in pharmacy to assessing if intellectual property rights are justifiable in public health emergencies, and on to engaging sessions on managing stress using simple but innovative techniques, it was not immediately obvious that the Congress was one day shorter than usual. The sessions were designed to be engaging across different practice areas and specialties in order to maximize the first congress since COVID-19 hit the world. It was also noted that Congress programming will likely continue in this format for a while as COVID-19 showed that long range programming may not be a very effective methodology for the future. Social events including the opening ceremony and section dinners held but business meetings and other narrow interest meetings could not be accommodated in the Congress. Only poster presentations were approved (no oral presentations) for the Congress and a number of interesting posters were showcased on each day of the Congress.

APF MEETING@SEVILLE

After much back and forth, The African Pharmaceutical Forum (APF) held its meeting on Monday, 19th September at the TV Room, FIBES, Sevilla from 12.30pm Seville time. Issues of interest to the continent were discussed such as the proposed establishment of an Africa-wide Association of Schools of Pharmacy, the One-FIP project and its impact on the Forum, Congress hosting by South Africa for 2024 and how to reach more African member organizations across FIP to identify with the Forum. Members congratulated the APF President, Dr. Prosper Hiag who was just elected to the Bureau at the Council meeting which held prior to the opening ceremony. Attendance at the meeting was encouraging and commented on by other Forums. The Editor-in-Chief apologized for the delay in the production of the 2022 edition of The African Pharmacist and promised to have it online as soon as possible. All editions of the African Pharmacist, the official publication of APF is available for download on the APF website (www.africanpharmforum.org). Members were also encouraged to share their country information with the forum for proper engagement and participation



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PHOTO PANORAMA

NIGERIA





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PHOTO PANORAMA

GHANA





PHOTO PANORAMA

BENIN





PHOTO PANORAMA

ZIMBABWE





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ALGERIA





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BOTSWANA





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PHOTO PANORAMA

NAMIBIA

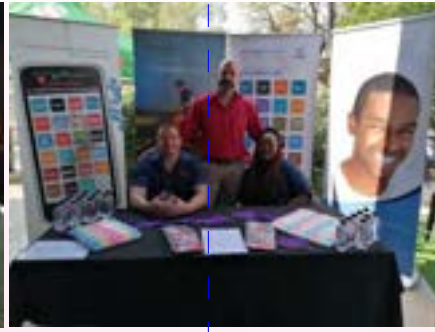




PHOTO PANORAMA

ZAMBIA





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PHOTO PANORAMA

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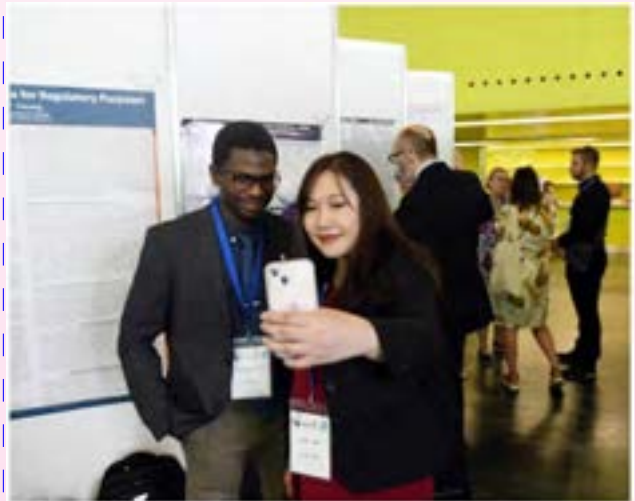


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PHOTOSPEAK @ SEVILLE FIP 2022





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PHOTOSPEAK @ SEVILLE FIP 2022





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PHOTOSPEAK @ SEVILLE FIP 2022





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UPCOMING EVENTS

Pharmacy Show
15-16 October 2023 • NEC Birmingham
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The Pharmacy Show is the major gathering for the Pharmacy Professionals of the sector for over a decade.

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To get your free ticket and other details, visit: <https://www.thepharmacyshow.co.uk/welcome>

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[View Program Here!](#) [Why You Need to Attend PharmSci 360!](#)

Contact Information

Registration & Housing

Maritz Global Events

aaps@maritz.com

1.219.354.6584

For more information, visit: <https://www.aaps.org/pharmsci/annual-meeting>



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UPCOMING EVENTS



96TH ANNUAL NATIONAL CONFERENCE
OF THE PHARMACEUTICAL SOCIETY OF NIGERIA
30th October - 4th November 2023



Venue: Gombe International Conference Centre, Gombe, Nigeria
Theme: Pharmacy Practice – A pivot to universal health coverage in Nigeria
Keynote Speaker: Dr. Manassah Daniel Jatau (Tauraron Waja) Deputy Governor, Gombe State
For more details, visit: <https://psnconference.org/>

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UPCOMING EVENTS



For more information, visit: <https://www.utwente.nl/en/euspri2024/>

HYBRID EVENT: You can participate in person at Paris, France or Virtually from your home or work.

INFECTION
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For details about this hybrid event, visit: <https://infectiouscongress.com/program/scientific-sessions/std-and-hiv-infection>



AIDS 2024
AIDS 2024, the 25th International AIDS Conference



AIDS 2024, the 25th International AIDS Conference, will take place in Munich, Germany, and virtually from 22 to 26 July 2024.

An estimated 15,000 participants from around the world will attend AIDS 2024, and the great majority will do so in person.

For details about registration and other concerns, visit: <https://www.iasociety.org/conferences/aids2024>



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UPCOMING EVENTS



CAPE TOWN 2024
FIP WORLD CONGRESS
1-5 September

For more information, visit: www.fip.org

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