



NAPPSA DIGEST

The News Magazine of the Nigerian Association of Pharmacists and Pharmaceutical Scientists in the Americas

SEPTEMBER 2022 >>> Vol. 2 No. 1

Harnessing NAPPSA Intellectual Capacity and Know-how

Revisiting the Foundation of Our Organizational Strength



In this Issue:

- NAPPSA Endowment News
- Regulatory and Therapeutic Updates
- Improving Emergency Medical Services in Nigeria
- A Look at the history of Vaccines

Contents



06

COVER

Harnessing NAPPSA Intellectual Capacity and Know-how

Revisiting the Foundations of our Organizational Strength

10

NAPPSA ENDOWMENT NEWS

WSFS Financial Announces Merger with Bryn Mawr Bank

DEPARTMENTS

03

Message from the President

04

From the Editor's Desk

13

NAPPSA B-2-B Network

The Post-Pandemic Edition of Roadshows Gather Momentum

19

Therapeutic Update

Pharmacotherapy for Overweight and Obesity

Cancer Vaccines:
Preventive, Therapeutic, Personalized

Long COVID Symptoms, Management and Where We're Headed

Dietary Protein May Lower Risk for Hypertension

A Guide to COVID-19 Tests

27

Regulatory Update

New COVID-19 Test-to-Treat Program:
Pharmacists vs. Physicians

Dietary Protein May Lower Risk for Hypertension

NAPPSA Digest

NAPPSA Digest is a quarterly publication of the Nigerian Association of Pharmacists and Pharmaceutical Scientists in the Americas.

Editorial Team

Anayo Ukeje, PhD (Chair)

Victoria Oshunkentan, PharmD

Victoria Adu, PharmD, BCPS

Patrick Nwakama, PharmD, BCPS

Anthony Ikeme, PhD

29

International Desk

Speech by: The Hon Minister for Health at the Flagoff of the Nigerian Diaspora Strategic Capacity Building and Knowledge Transfer Programme

Improving Emergency Medical Services in Nigeria:
THE ROLE OF THE PARAMEDICS

35

Career Spotlight

A focus on pharmaceutical sciences

36

Blogger's Corner

Comprehensive Medication Reviews

37

Science History

The development of the First Vaccine

39

Event Calendar

Catalogue of upcoming events

MESSAGE from THE PRESIDENT

We are honored to bring to you another issue of the NAPPSA Digest. Our esteemed editorial team has put together another dynamic issue, and I wish to express deep gratitude for their devoted work. Despite the uncertainty the past couple of years have brought us, we have continued to obtain successes. This year shows equal promise of many things to look forward to, and we invite you to stay engaged and committed to the cause.

We hope you will take note of the feature article, "Harnessing NAPPSA Intellectual Capacity and Know-How: Revisiting the Foundations of our Organizational Strength." It is a great expose of the progress NAPPSA has made in leveraging her Intellectual capacity and knowledge-base to advance the cause of the organization. It is such a great way to start the second volume of our great NewsMagazine and set us off on our way to a phenomenal start in continuing NAPPSA's vision and mission in 2022.

We are delighted to see that the B-2-B Roadshows have now re-started in earnest. Thanks to the NAPPSA IPP, Dr Anthony Ikeme and the B-2-B Chair, Emmanuel Ezirim for continuing to drive this very important financial pillar of our great organization.

In addition to that, we are eager to have our first Virtual Town Hall, this is a great opportunity for our members to learn more about NAPPSA's current activities, network and share their thoughts and feedback. It will be held virtually on May 15, 2022.

We also want to highlight the work of the Interdisciplinary Collaborative Team, made up of



three organizations - NAPPSA, NANNNA and ANPA who work together to host an educational series for healthcare professionals in Nigeria. They host a webinar once per quarter, and each organization takes turns leading as the host.

Finally, we are preparing for the 2022 Annual NAPPSA Scientific Conference, which will be held in Tampa, Florida from 22-25 of September. It is designed to provide members and attendees an environment for knowledge sharing, continuing education acquisition, as well as peer interaction, through a combination of podium presentation, round table discussion and poster presentations.

I would like to thank the editorial team under the leadership of Dr. Anayo M. Ukeje, members of the Newsletter sub-committee and to all the contributors for creating another remarkable edition of NAPPSA Digest.

Teresa Pounds
Teresa Pounds, PharmD
NAPPSA President



FROM the EDITOR'S DESK

The production of the first issue of the second volume of the NAPPSA Digest is testament to the unyielding efforts of the editorial team even when faced with difficulties. The promise to sustain the quarterly publication of this quality Newsletter against all odds is backed with true commitment by the Editorial team.

This edition is full of informative News and quality articles. The lead article appropriately titled **"Harnessing NAPPSA Intellectual Capacity and Know-How"** contributed by our indefatigable IPP, Dr Anthony Ikeme, highlights NAPPSA's knowledge-base and capacity and how this is being leveraged to accelerate her growth and development as a professional organization. It also pinpoints opportunities for utilizing this knowledge base to maximize NAPPSA's impact in healthcare and pharmaceutical sectors in Nigeria, USA and globally.

NAPPSA Endowment Fund News relating to the "merger of our endowment fund host bank **Bryn Mawr Bank** with **WSFS Financial** is also featured in this edition.

Also featured is update on the NAPPSA B-2-B Post-Pandemic edition of "Roadshows" as well as our somber farewell to

NAPPSA's veteran office administrator, Charlene Mayes.

The therapeutic updates featured "Pharmacotherapy for Overweight and Obesity" by David Rakel MD. "Cancer Vaccines: Preventive, Therapeutic, Personalized" by Gavin P. Dunn, M.D., Ph.D.

COVID-19 updates include, but not limited to: "Long COVID Symptoms, Management, and Where We're Headed". "A Guide to COVID-19 Tests by Sergio Pisto, PhD", "COVID-19 Vaccine Options", etc.

Our regulatory updates covered a wide range of areas including: "How Dietary Protein May Lower Risk for Hypertension". "New COVID-19 Test-to-Treat Program", Pharmacists vs. Physicians and the authorizations of two antiviral pills by the US FDA namely, Pfizer's Paxlovid and Merck's molnupiravir.

The International Desk featured "speech by the honorable minister for health, Dr. E. Osagie Ehanire and an article on "Improving Emergency Medical Services in Nigeria: the role of Paramedics" by Nelson Aluya (MBBS), Victor Oguaju (B.Sc) and Anayo Ukeje (PhD/DIC).

Another collector's item, this edition also include the regular features namely: Career Spotlights, The Blogger's Corner and Events Calendar.

My special thanks go to NAPPSA President, Dr Teresa Pounds, for supporting the editorial team. Big thanks to our IPP, Dr Anthony Ikeme for his commitment and continuing efforts in providing content, editing, design and production of the Digest. I appreciate Patrick Nwakama and all those who contributed content and provided editorial reviews of the Digest.

To NAPPSA Digest Readership, I say thank you for your continuing support. Relax and enjoy the unique content of this 1st edition of volume 2 put together by the expert team of NAPPSA editors and contributors.

Best regards,

Anayo Michael Ukeje

Anayo M Ukeje, PhD/DIC

Editor-in-chie



DISPOSABLE FACE MASK

**FIRST
Nigerian Made
PPE Distributed
in the USA**

**HIGHLY
BREATHABLE**

Place your orders Online
www.pharmamedicsinc.com

 **CONTACT US
TODAY**

Our Customer Service Team is
available to serve you
Monday - Friday
7:00am - 5:00pm EST

Phone: +1 215.380.9920
or +1 614.284.3687
Email: info@pharmamedicsinc.com





Harnessing NAPPSA Intellectual Capacity and Know-how

Revisiting the Foundations of our Organizational Strength

By: Anthony Ikeme, PhD

NAPPSA's capacity for knowledge brokerage is a core pillar of NAPPSA's strength and a great asset of inestimable value to the organization. Its relevance to the fulfilment of NAPPSA's core mission and objectives is so fundamental that it deserves an in depth analysis to properly map its various ramifications and distil out the key levers through which it can be leveraged to advance NAPPSA's growth and maximize her impact in the USA, Nigeria and around the world.

The starting point in this analysis is to revisit the stated information dissemination and knowledge brokerage objectives in the NAPPSA vision and formational documents. Article 1 of the NAPPSA Bylaws, titled Purpose, includes a section on "Information Exchange and Dissemination", which lists the following 3 sub-thematic purposes for the NAPPSA knowledge brokerage objectives:

1. Organize seminars, symposia and conferences to facilitate the exchange of knowledge.
2. Provide a neutral forum for discussion of national, regional and global aspects of drug research and development and registration.
3. Seek and propagate critical information in the medical, biological, pharmaceutical and

related healthcare-technology fields to optimize the discovery, development, regulation and utilization of pharmaceutical products.

These 3 sub-purposes provide a large pool within which new opportunities for harnessing NAPPSA's Intellectual Capacity and Know-how can be tapped for the execution of her knowledge brokerage objective. The rest of this article shall be devoted to fleshing out the progress that has been made by the NAPPSA organization in accomplishing this core objective and the associated sub-thematic purposes, and possibly set new goals for her knowledge brokerage objectives going into the future.

1. *Organize seminars, symposia and conferences to facilitate the exchange of knowledge.*

The initial success of NAPPSA as an organization was built around the execution of this key purpose, particularly through the NAPPSA Annual Scientific Conferences and Exhibition.

Starting from her founding days, NAPPSA invested heavily in the organization of Annual Scientific Conferences and Exhibitions, with the very first hosted in Houston Texas, in 2007. Till date NAPPSA has hosted a total of 15 Annual Conferences and is set to host the 16th in Tampa, FL, from September 22 to 25, 2022. NAPPSA conferences are designed to facilitate exchange of scientific knowledge and ideas, through podium presentations, roundtable discussions, and poster sessions and includes award of pharmacy continuing education credits for participants.

However, conferences form only one component of the charge, covered by this NAPPSA purpose statement. Recognition of this gap led to the great effort by NAPPSA leadership to launch new initiatives to fully implement the missing elements in the spirit of this key purpose. Table 1 shows the additional Information Exchange and Knowledge Dissemination platforms that was created in the past 2 years to enhance NAPPSA's capacity to educate, inform and share knowledge.

TABLE 1: Newly Launched Knowledge Dissemination Channels

	Knowledge Dissemination Platform	Date Launched	Responsible Committee
1	YP Campus Outreach	November, 2019	NAPPSA YP Committee
2	YP Hangouts	July, 2020	NAPPSA YP Committee
3	Mentorship Webinars	September, 2020	Mentorship Committee, YP Committee
4	Specialty Professional Webinars	January, 2021	NAPPSA B2B Committee, Education Committee
5	Interprofessional Webinars	June, 2021	NAPPSA, ANPA and NANNNA



Opportunities still exist to expand and grow NAPPSA's footprints in this information dissemination category. Collaborative opportunities with the Pharmaceutical Society of Nigeria (PSN), Nigerian Medical Association (NMA), National Association of Nigeria Nurses and Midwives (NANNM) and other healthcare professional organizations to facilitate exchange of knowledge and professional best practices between diaspora professionals and home-based professionals is one area to explore. This is a low hanging fruit that should be explored by NAPPSA especially after it completes her registration as a legal non-profit entity in Nigeria. The Diaspora Professionals Healthcare Initiative (DPHI) offers a template that can be modelled for our future engagement with these Nigerian-based professional organizations.

2. Provide a neutral forum for discussion of national, regional and global aspects of drug research and development and registration.

In addition to the detailed role it plays in fulfilling the first sub-thematic purpose in our knowledge brokerage objectives, NAPPSA Annual Conferences also plays a role in fulfilling elements of this sub-thematic purpose. Our Roundtables and Panel Discussion Sessions are good forums for discussion of national, regional and global aspects of drug research and development and registration. Great policy proposals resulting from such roundtables have been included in post-conference communiqués and policy proposals to Nigerian healthcare institutions such as NAFDAC, Ministry of Health and Ministry of Education.



Our Roundtables and Panel Discussion Sessions are good forums for discussion of national, regional and global aspects of drug research and development and registration.

The introduction of the main NAPPSA WhatsApp Forum in 2019 opened up another forum for free discussion of regional and global drug R&D issues. At the peak of the COVID-19, the NAPPSA platform was abuzz with analysis of the science, disease manifestation, diagnosis and treatment for COVID. The various candidate treatment protocols and the clinical trials to evaluate their efficacy for the treatment of COVID-19 were regular features in the discussions on the platform. Conversations on the platform are usually buttressed or triggered by the sharing of new scientific publications which serves to inform and enrich the discussion on the subject matter at hand. These discussions are very educational and informative and have allowed members to stay updated with the research, innovations and other developments in pharmacy and pharmaceutical science.

NAPPSA should encourage this sort of open dialogue and discussions as it serves to keep the NAPPSA community informed and updated on the goings on in drug research and development and registration.

3. Seek and propagate critical information in the medical, biological, pharmaceutical and related healthcare-technology fields to optimize the discovery, development, regulation and utilization of pharmaceutical and related.

Perhaps, the greatest and the most consequential progress in the Information Exchange and Dissemination sub-theme was accomplished under this category. Two major knowledge based innovations were launched under this sub-theme in the last 2 years, namely: NAPPSA Digest and American Journal of Pharmacotherapy and Pharmaceutical Sciences (AJPPS). The purpose and the vision behind these two publications deserves an in-depth review here for a full appreciation of their knowledge brokerage value.

- **NAPPSA Digest:** NAPPSA Digest is a world class News Magazine designed to serve as an outlet for the NAPPSA story as it unfolds. It is a key component of NAPPSA social media strategy as it shares stories that shines light on our various fields of practice. Shining light on our expertise creates trust, which can help improve our membership and volunteer recruitment efforts, nurture donor relationships, and garner new support within our community. As NAPPSA news and information hub, it serves as a tool for building relationships with our memberships, affiliates, friends, well-wishers, as well as donors. Its content engages, inspires, and activates our members to new



heights in their membership engagement and experience. As an organization founded to serve as a force for positive transformation within our community and beyond, NAPPSA Digest is a vital tool for our Information Dissemination objectives given its capacity to amplify our voice beyond the boundaries of our immediate community.

American Journal of Pharmacotherapy and Pharmaceutical Sciences (AJPPS):

We took it a notch higher with the launch of the American Journal of Pharmacotherapy and Pharmaceutical Sciences (AJPPS) in 2021. The first official call for papers for AJPPS was announced in the June 2021 Issue of the NAPPSA News Magazine and the first peer-reviewed manuscript was formally accepted on November 23, 2021. The first journal articles of the first volume of AJPPS were published in January 2022. This is a significant milestone in NAPPSA's quest to establish itself as a respected leader among pharmacy and pharmaceutical science organizations. AJPPS is envisioned to positively impact the pharmacy and pharmaceutical science profession in 3 ways, Firstly and as all peer reviewed journals, the journal's primary focus is to provide a platform for the publication of original articles that extend the boundaries of knowledge in the pharmacy and pharmaceutical science discipline and profession. Secondly, AJPPS stands among the very few journals that cover the

broadest spectrum of the Pharmacy and Pharmaceutical Science continuum. This is purposefully intended to mirror the essence of NAPPSA's founding mission and the structure of her inclusive membership. It also allows for crosscutting and interdisciplinary research endeavors and publications that spans pharmaceutical care, practice, clinical and beyond. Thirdly, AJPPS is envisioned to be dynamic and bidirectional in its impact. It will not only publish articles that seek to translate pharmaceutical science into practice, but it also welcomes publications that communicate practice needs to guide scientific inquiry.

But AJPPS is set to be much more than all we have described so far. By virtue of the circumstances of its founding, AJPPS is inevitably positioned to serve as a galvanizing force for filling some equity gaps in the Global Health and Pharma sector research enterprise. It is poised to 1) Serve as a Platform for the promotion of True North-South Research Partnership; 2) Earn the NAPPSA Global Community a Seat at the table and allows the community the opportunity to help shape the global research agenda and ensure that pharmaceutical science issues of critical importance to the community is not sidelined in the global research agenda.

The progress made under this sub-thematic purpose through these 2 publications is significant and has raised NAPPSA's profile as a pre-eminent professional organization amongst her

peers. This enhanced profile and brand means name recognition, open doors and access to more opportunities. NAPPSA leadership must leverage this elevated platform to continue the propagation of the NAPPSA vision and objectives.

Additional Knowledge Brokerage Frontier

A part of NAPPSA's knowledge brokerage asset which is not well defined in the by-law, but which has become a part of NAPPSA's daily reality and a powerful source of strength within the NAPPSA community is the personalized one-to-one knowledge transfer and mentorship. This can be observed through the various interpersonal relationships that exist in NAPPSA and through the organized professional sub-groups within NAPPSA.

- **One-on-One Interpersonal Knowledge Sharing:** This mode of knowledge sharing has become routine in NAPPSA as younger and less experienced professionals seek out and adopt experienced professionals as mentors. From their adopted mentors, they receive guidance about their career plans, interview preparation tips, job decision making, and other professional development decision making. This mode of information and knowledge sharing happens behind the scenes and is neither coordinated nor documented. The NAPPSA leadership must find a way to encourage and celebrate this mode of mentorship. The effort by the NAPPSA mentorship committee to systematize this mentorship



process through the “Lift As You Climb” initiative should be encouraged.

- **NAPPSA B-2-B Network:** The NAPPSA B-2-B is the first organized network within NAPPSA that has a knowledge brokerage functionality. It is a platform set up by and for Independent business owners for mutual mentorship, business skill transfer, exchange of ideas, and dissemination of best practices among Business owners in NAPPSA. Its value as an economic empowerment infrastructure for members is massive. It allows for new business owners to benefit from the collective experience and knowledge base within the business owners network as they make vital decisions during the business set up phase, namely: store location; primary distributor to use; secondary distributor to use; software provider to use, etc. There are instances of established business owners travelling down to help new business owners with evaluating store locations and shop construction. The B-2-B network is a formidable empowerment force for the NAPPSA community, and it is a system that must be studied and replicated for other sub-professional groups in NAPPSA.
- **Pharmaceutical Science Focus Group:** The Pharmaceutical Science Focus Group is the newest network in NAPPSA and is designed to play similar role for the Pharmaceutical Scientists as the NAPPSA B-2-B network plays for the Independent Pharmacy business owners. The



The Pharmaceutical Science Focus Group is the newest network in NAPPSA and is designed to play similar role for the Pharmaceutical Scientists as the NAPPSA B-2-B network plays for the Independent Pharmacy business owners.

group's charter has as its stated objective “To establish an enabling environment to increase the pharmaceutical science base of NAPPSA membership where pharmaceutical scientists would benefit from the Association's professional services and pursue career interests while leveraging NAPPSA brand, infrastructure, and network opportunities in line with NAPPSA's Vision and Mission.” When fully set up and functional, the pharmaceutical science community will provide peer-to-peer mentorship to the members and is poised to facilitate NAPPSA knowledge brokerage activities by 1) Catalyzing Collaborative Efforts Among Pharmaceutical Scientists; 2) Supporting the Career Advancement of NAPPSA Pharmaceutical Scientists; 3) Providing expertise for the transformation and rebuilding of the Nigerian Pharmaceutical Sector; 4) Leading the effort in promoting fundamental and applied research in

the pharmaceutical and biomedical sciences.

The value of these knowledge sharing platforms is of great significance and is bound to grow in impact as NAPPSA continues to grow. Beneficiaries of the mentorship available via these channels will be favorably disposed to become mentors themselves and will be more forthcoming in sharing their knowledge and experience.

CONCLUSION

NAPPSA's greatness and impact factor as an organization derives from the inherent intellectual capacity and the know-how that resides within the organization. This article maps the various ramifications of NAPPSA's knowledge brokerage capabilities and distilled out the key levers through which they can be leveraged to advance NAPPSA's growth and maximize her impact in the USA, Nigeria and around the world.

Every one of the information dissemination channels discussed in this article is relevant to the establishment of the NAPPSA knowledge brokerage leadership and maximization of her role as a global thought leader with a huge potential to help shape the pharmacy and pharmaceutical science profession. NAPPSA has made huge progress in the practical application of her stated knowledge sharing and brokerage objectives and have not only set the tone but now stands as a source of inspiration to other professional organizations to follow in their footsteps.



NAPPSA
ENDOWMENT FUND

WSFS bank

We Stand For Service®

NAPPSA ENDOWMENT NEWS

WSFS Financial Announces Merger with Bryn Mawr Bank



Elizabeth Baran Wagner
Senior Vice President
 Endowment Account Manager



Anthony Ikeme, PhD
Chair
 NAPPSA Endowment Board



James G. Everlof, CRC
Vice President
 Endowment, Financial Advisor

Bryn Mawr Bank Corporation, the host bank for the NAPPSA Endowment Fund has completed a merger with WSFS Financial Corporation following the signing of a definitive merger agreement by the two financial institutions last week.

Simultaneously, the Bryn Mawr Trust Company, a wholly owned subsidiary of Bryn Mawr Bank, will merge into WSFS Bank, a wholly owned subsidiary of WSFS Financial Corporation.

The transaction, valued at approximately \$976.4 million, combining the high performing, locally based financial services companies solidifies WSFS' position as the distinguished locally headquartered bank for the Greater Philadelphia and Delaware region.

“**The merger combines the high performing locally based financial services of the two companies**”

“This combination aligns with our strategic plan,” WSFS Chairman, President, and CEO Rodger Levenson, said. “Combining with Bryn Mawr allows us to accelerate our long-term strategic objectives, including scale to continue to invest in our delivery and talent transformations.”

As of Dec. 31, 2020, WSFS reported nearly \$20 billion in assets and approximately \$43 billion in Wealth

Management businesses. WSFS believes the merger will allow the financial institution to be the only bank in the region with distinct market-share advantages, including market knowledge, local decision-making, a full-service product suite, and a balance sheet to compete with larger regional and national banks.

“This combination also creates the premier wealth management and trust business in the region and the sixth largest bank-affiliated wealth management and trust business nationwide under \$100 billion in assets,” Levenson said. “Together, we are poised and positioned to continue to serve and outperform for all our constituents, and to deliver sustainable high performance for years to come.”



Under the merger agreement, Bryn Mawr stockholders will receive 0.90 of a share of WSFS common stock for each share of Bryn Mawr common stock. Based on the closing price of WSFS stock on March 9, the estimated per share value of Bryn Mawr common stock will be \$48.55.

“We strongly believe in the value creation by combining with WSFS and enhancing the strengths of our institutions,” Bryn Mawr President and CEO Frank Leto said. “This is a sound decision for Bryn Mawr, our stockholders, our clients and the communities we serve. We are combining with WSFS because it is an

established institution with deep roots in the region and the utmost focus on doing the right thing for our clients.”

After closing, Leto will join the Board of Directors of WSFS Financial and WSFS Bank along with two mutually agreed upon current directors of Bryn Mawr’s board.

The merger with Bryn Mawr marks WSFS’ ninth combination since 2010, including traditional banks and other non-fee businesses in southern Pennsylvania and Delaware, and the company has noted successful integrations with each one. Additionally, the institution’s focus on strong organic growth and purposeful

expansion into the Greater Philadelphia region has resulted in significant community and economic investments.

The Chair of the NAPPSA Endowment Oversight Board (EOB), Dr Anthony Ikeme confirmed that the merger did not change the core management of the NAPPSA Endowment Fund as the overall Account Manager, Elizabeth Wagner retains her position as a Senior Vice President and Director of Institutional Wealth Management in the new WSFS Bank. James G. Everlof has also been welcomed onboard to serve as the Financial Advisor working closely with the Account Manager.

SUPPORT NAPPSA ENDOWMENT FUND

- Participate in the NAPPSA Annual 5K Run/Walk
- Participate in the NAPPSA B-2-B Network
- Donate Directly to the NAPPSA Endowment Fund
- Identify and Invite Corporate Sponsors and Endowment Partners



DONATE



Call for Papers

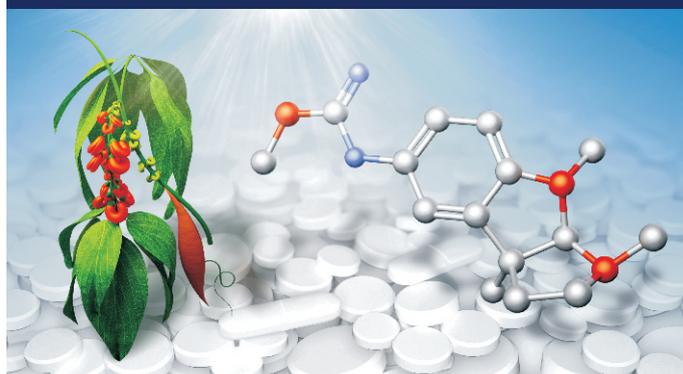
<https://ajpps.org>

Manuscript Submission

<https://editorialassist.com/ajpps>

American Journal of Pharmacotherapy and Pharmaceutical Sciences

The official Journal of the Nigerian Association of Pharmacists and
Pharmaceutical Scientists in the Americas



AJPPS

www.ajpps.org

 **ScientificScholar**[®]
Knowledge is power
Publisher of Scientific Journals

peer-review process that makes sure that manuscripts are scientifically accurate, relevant, novel, and important. Authors disclose all conflicts, affiliations, and financial associations such that the published content is not biased.

Benefits

An article published in the journal can be viewed without a fee by readers all over the world. The author also gets to retain copyright to the article and the figures. This allows authors to extend their exposure in the world of medical research and get worldwide recognition for their work.

How to Submit A Manuscript

The American Journal of Pharmacotherapy and Pharmaceutical Sciences (AJPPS) accepts all manuscripts online via

<https://editorialassist.com/#/login/ajpps>

Please refer to instructions to authors available at

<https://ajpps.org/for-authors/> for more information

Types of Articles

The American Journal of Pharmacotherapy and Pharmaceutical Sciences publishes manuscripts in the following categories

- Original research article
- Review article
- Case report
- Research method
- Short Communication
- Letter to the Editor
- Invited Editorial
- Commentaries

About the Journal

The American Journal of Pharmacotherapy and Pharmaceutical Sciences (AJPPS) is an open access peer-reviewed journal committed to publishing high-quality articles in the field of Pharmacotherapy, Public Health, Ethnomedicine, Toxicology, Food Science, Nutrition, Biomedical and Pharmaceutical Sciences.

Review Process

The American Journal of Pharmacotherapy and Pharmaceutical Sciences has a highly rigorous

NAPPSA B-2-B Network

The Post-Pandemic Edition of Roadshows
Gather Momentum





Chicago Roadshow

If You Want to Go Far,
Go Together



The very first NAPPSA B-2-B Roadshow since we paused in response to the COVID-19 Pandemic lockdown took place in Chicago on Saturday, December 11, 2021. It was a very emotional re-set to the NAPPSA Roadshow after an almost 2 years hiatus. The Chicago Roadshow was a new beginning in more ways than one. It marked the unveiling of a brand-new improved slide deck for delivering the B-2-B Message.

The B-2-B Roadshow drivers (Emma “E-Doggy” Ezirim and Dr Anthony Ikeme) painted an inspiring picture of the value to Independent Pharmacists of walking together.

The Chair of the NAPPSA Membership Committee, Dr Emelia Orubele, was an important featured speaker at this event and seized the opportunity to invite non-business owners in the audience to formally join NAPPSA.





Atlanta Roadshow

Building Together

The Template for Our Community Success



The Atlanta B-2-B Roadshow had a Presidential feel to it with a full court press of all the members of the presidential leadership team, including the NAPPSA Immediate Past President (IPP), Dr Anthony Ikeme and President-Elect, Emma E-Doggy Ezirim, with the NAPPSA President, Dr Teresa Pounds, serving as the chief-hostess for the event.

The well attended event has laid the foundation for a new phase of growth in the Atlanta area and the state of Georgia at large.





DMV Roadshow

Unleashing the Giant Within Leveraging Our Numbers for Collective Success

The DMV B-2-B Roadshow on Saturday, March 5, 2022 was a huge success. Aptly themed: “Unleashing the Giant Within: Leveraging Our Numbers for Collective Success”, this version of the roadshow painted a solid picture of the depth and vastness of the power in the collective might of the NAPPSA Independent Pharmacists.

Participants were reminded that Nigerian Pharmacists accounted for almost 10% of registered pharmacists in the state of Maryland which is an amazing feat given that Nigeria is only 1 out 195 countries in the world.

This means that Nigerian Pharmacists are in a great position to lead and help shape the evolution of the profession in



the state of Maryland and beyond. But this requires that Nigerian pharmacists work together as a team and provide mentorship to younger and emerging professionals. This is the opportunity

provided within the NAPPSA B-2-B Network and every minority independent Community Pharmacists is invited to take advantage of the opportunity.



NAPPSA Says
Goodbye

to our Veteran Office Administrator



Charlene Pack Mayes
1957-2021



FUNERAL SERVICE FOR CHARLENE

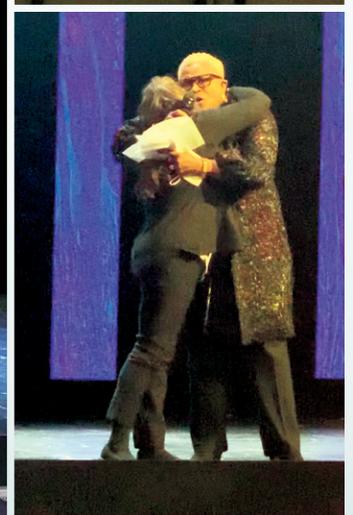
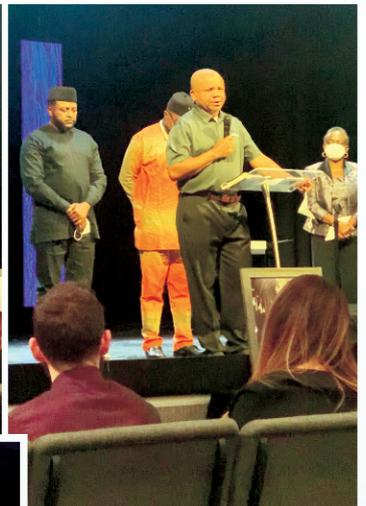
On January 14, 2022, the NAPPSA President, Dr Teresa Pounds led a strong team of NAPPSA leaders to the funeral of Ms Charlene Pack Mayes. Charlene served as the NAPPSA Office Admin and B-2-B Coordinator from October, 2011 till her demise on January 1, 2022. Members of the contingent include the NAPPSA Immediate Past President, Dr Anthony Ikeme, the

NAPPSA President Elect, Mr Emmanuel E-Doggy Ezirim, the founding President of NAPPSA, Mr Nnodum Iheme and the second President of NAPPSA Dr Funmi Ajayi.

Charlene was a beloved NAPPSA staff and the longest serving staff in the history of the organization. She is fondly remembered for her dedication to

NAPPSA and full embrace of the NAPPSA vision and ideals. She routinely volunteered to participate in the NAPPSA 5k Run and helped to raise funds for the NAPPSA Endowment Fund.

Thanks to the kind donations by NAPPSA members, a generous check of \$10,000 was given to the family to support them at this time



Pharmacotherapy for Overweight and Obesity

By: David Rakel MD

A systematic review and metaanalysis of 143 studies with 49,810 subjects using FDA-approved drugs for the treatment of obesity. The drugs included phentermine–topiramate, GLP-1 agonists, SGLT2 inhibitors, metformin, orlistat, naltrexone–bupropion, and pramlintide. The control these drugs were compared with consisted of lifestyle weight-loss measures. The drugs were evaluated for efficacy and tolerability.

The most effective drug at reducing weight was phentermine–topiramate, which reduced weight an average of -7.97%. Second were GLP-1 agonists at -5.76%. The drugs with the highest discontinuation rate due to side effects were naltrexone–bupropion (OR, 2.69), phentermine–topiramate (OR,

2.64), and GLP-1 agonists (OR, 2.17).

Three GLP-1 agonists were compared, and semaglutide (-11.41%) had the greatest effect compared with liraglutide (-4.68%) and exenatide (-3.72%). The weekly injected dose of semaglutide for obesity (2.4 mg) is much higher than the dose for diabetes (1 mg) and should be titrated up slowly.

Both phentermine and topiramate are available individually as generic options. The combination product, Qsymia, comes in four doses, with the highest being 15 mg phentermine and 92 mg topiramate. Phentermine alone comes in 15-, 30-, and 37.5-mg doses (approximately \$20 for 30 pills). This is an amphetamine, so follow blood pressure closely. Topiramate comes in 25-, 50-, and 100-mg doses.

(Approximately \$35 for 30 pills) It mainly reduces appetite but has CNS side effects, including fatigue, dizziness, and ataxia. Slow titration to enhance tolerability is advised.

As pills alone are limited in their ability to effectively treat obesity, consider a 3+1 package. The core weight-loss program includes a consultation with: 1) a nutritionist; 2) a behaviorist; and 3) a movement program. The +1 is the medication to help get started with the intention that it won't be needed long term once the core three are part of a healthy lifestyle.

In adults with overweight and obesity, phentermine–topiramate and GLP-1 receptor agonists proved the best drugs in reducing weight; of the GLP-1 agonists, semaglutide might be the most effective.

Cancer Vaccines: Preventive, Therapeutic, Personalized

Gavin P. Dunn, M.D., Ph.D.

Cancer vaccines are a form of immunotherapy that can help educate the immune system about what cancer cells “look like” so that it can recognize and eliminate them.

Vaccines have proven effective in preventing diseases caused by viruses and bacteria. Since the first vaccine was developed more than 200 years ago, they have prevented some of the twentieth century's deadliest diseases and have helped save hundreds of millions of lives globally.

In the case of diseases caused by viruses (e.g., measles, polio, and smallpox) and bacteria (e.g., diphtheria, tetanus, and tuberculosis), vaccines work by exposing people to a weakened or inactivated version of the threat. This enables their immune system to identify these threats according to their specific markers—known as “antigens”—and mount a response against them. These vaccines typically work best in the preventive setting, when an individual is given the vaccine before being infected by the bacteria or virus.

In the case of cancer, however, the situation is more complicated for several reasons (more below) and this has made it more difficult to develop vaccines to either prevent or treat cancer. In particular, unlike bacteria and viruses, which appear foreign to our immune system, cancer cells more closely resemble our normal, healthy cells. Furthermore, each individual's tumor is in some sense unique and has its own distinguishing antigens. As a result, more sophisticated approaches are necessary to develop effective cancer vaccines.

Preventive Cancer Vaccines

Viral infections are responsible for the development of several cancers and preventive vaccines play an important role in reducing risk. For instance, cervical cancer and head and neck cancer can be caused by human papilloma virus, or HPV, whereas liver cancer can be caused by hepatitis B virus or HBV. Several vaccines have been developed that can prevent HBV and

HPV infection and, as a result, protect against the formation of HBV- and HPV-related cancers. Four of these preventive cancer vaccines have been approved by the U.S. Food and Drug Administration (FDA).

Therapeutic Cancer Vaccines

Each individual's tumor is in some sense unique and has its own distinguishing antigens. As a result, more sophisticated cancer vaccine approaches are necessary.

Fortunately, doctors can now identify targets on patients' tumors that can help distinguish cancer cells from their normal cells. Sometimes these targets are normal proteins that are produced at abnormally high levels by cancer cells, such as prostatic acid phosphatase (PAP), which is often overexpressed by prostate cancer cells. Taking advantage of that insight, the sipuleucel-T vaccine was developed and received FDA approval in 2010 for the treatment of patients with advanced prostate cancer. Additionally, virus-derived proteins

expressed by virus-infected cancer cells offer another promising source of markers that can be targeted through vaccines.

Another exception is Bacillus Calmette-Guérin, or BCG, a tuberculosis vaccine that acts as a general immune stimulant. In 1990, BCG became the first immunotherapy of any type to be approved by the FDA and is still used for the treatment of early-stage bladder cancer.

Personalized Neoantigen Vaccines

In contrast to normal-yet-overexpressed proteins like PAP, tumors also display unique targets that arise as a result of mutations. These are referred to as neoantigens (“new antigens”) and they are expressed exclusively by tumor cells and not by any of a patient’s healthy cells. With neoantigen vaccines, therefore, it is conceivable that immune responses could be directed precisely against patients’ tumor cells while sparing their healthy cells from immune attack, thus possibly preventing side effects.

In addition to the previously mentioned vaccines, several types of neoantigen

vaccines are currently being evaluated, both alone and in combination with other treatments, in a variety of cancer types in clinical trials.

Cancer Vaccine Treatment Options

There are currently four vaccines that are approved by the FDA that can help prevent cancer, in addition to two FDA-approved vaccines for the treatment of cancer:

Preventive Cancer Vaccines

- **Cervarix®**: a vaccine approved for use in preventing infection by the two strains of HPV that cause most cervical cancers, HPV types 16 and 18; can help prevent the development of HPV-related anal, cervical, head and neck, penile, vulvar, and vaginal cancers.
- **Gardasil®**: a vaccine that protects against infection by HPV types 16, 18, 6, and 11; can help prevent the development of HPV-related anal, cervical, head and neck, penile, vulvar, and vaginal cancers.

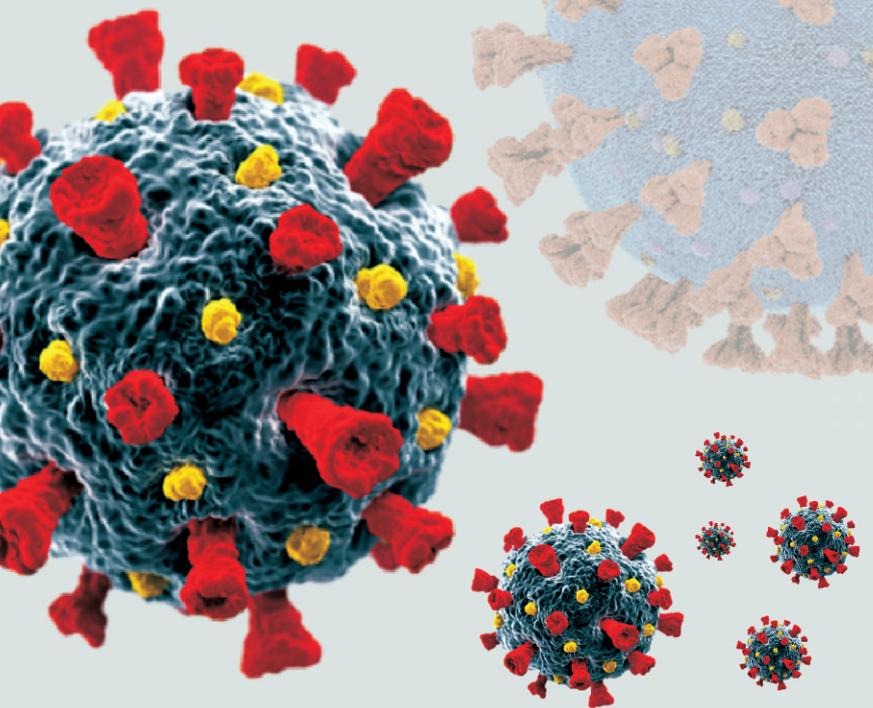
- **Gardasil-9®**: a vaccine approved for the prevention of infection by HPV types 16, 18, 31, 33, 45, 52, and 58, and for the prevention of genital warts caused by HPV types 6 or 11; can help prevent the development of HPV-related anal, cervical, head and neck, penile, throat, vulvar, and vaginal cancers.

- **Hepatitis B (HBV) vaccine (HEPLISAV-B®)**: a preventive vaccine that protects against infection by the hepatitis B virus; can help prevent the development of HBV-related liver cancer

Therapeutic Cancer Vaccines

- **Bacillus Calmette-Guérin (BCG)**: a vaccine that uses weakened bacteria to stimulate the immune system; approved for patients with early-stage bladder cancer
- **Sipuleucel-T (Provenge®)**: a vaccine composed of patients’ own stimulated dendritic cells; approved for prostate cancer





Long COVID Symptoms, Management, and Where We're Headed



Long COVID continues to be a moving target - continuously evolving and still surprising doctors and patients who have sometimes incapacitating long-term symptoms. Little about the disorder seems predictable at this point. People can have long COVID after asymptomatic, mild, or severe COVID-19, for example. And when a person gets long COVID - also known as long-haul COVID - symptoms can vary widely.

What do you do when you're seeing a patient with long COVID for the first time?

The first exam varies because there are so many different ways long COVID presents itself, says Benjamin Abramoff, MD at Penn Medicine in Philadelphia. Assessing their previous and current care also helps to direct their ongoing management, says Zijian Chen, MD, medical director of the Center for Post-COVID Care at Mount Sinai Health System in New York City.

Can vaccination help people with long COVID?

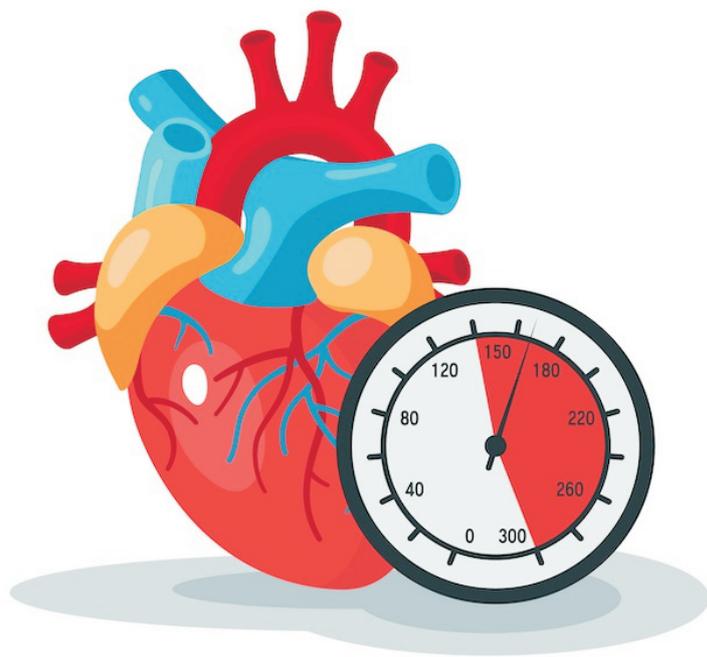
Anything that we can do to help prevent people from being critically ill or being hospitalized with COVID-19 is helpful to prevent long COVID, says Abramoff, who is also director of the long COVID clinic at the University of Pennsylvania.

"So that's something I always discuss with patients. In some research, sometimes patients do feel better after the vaccine," he says.

What kind of therapies do you find helpful for your patients?

Rehabilitation is a key part of recovery from long COVID, Abramoff says. "It is very important to have make this very patient-specific." "We have patients that are working. They're already going to the gym in some cases but don't feel like they have the same endurance," he says. "And then we have patients who are so crippled by their fatigue that they can't get out of bed." An exercise program can help people who have long COVID. "There's a big role for therapy services in the recovery of these patients," says John Baratta, MD, at the University of North Carolina. But the limited number of long COVID clinics can mean some people are unable to get to therapists trained on the needs of patients with lingering COVID symptoms. Educating community physical and occupational therapists is one solution

Dietary Protein May Lower Risk for Hypertension



Protein consumed in moderate amounts from various sources linked to lower risk for developing hypertension

Consumption of protein at appropriate levels and from a variety of sources is associated with a reduced risk for new-onset hypertension, according to a study published online 2022 March 10 in *Hypertension*. Chun Zhou and colleagues examined associations of the variety and quantity of protein intake from eight major food sources with new-onset hypertension among 12,177 individuals. Dietary intake was measured, and the variety score of protein sources was defined as the number of protein sources consumed at the appropriate level.

The researchers identified U-shaped associations of percentages energy from total, unprocessed, or processed red meat-derived, whole grain-derived, and poultry-derived proteins with new-onset hypertension during a median follow-up of 6.1 years. A reverse J-shaped association was seen for fish-derived proteins; L-shaped associations were seen for egg-derived and legume-derived proteins; and a reverse L-shaped association was seen for refined

grain-derived protein with new-onset hypertension. For each protein, a window of consumption (appropriate level) was identified for which a lower risk for hypertension was seen. Individuals with a higher variety score of protein sources had a significantly lower risk for new-onset hypertension (hazard ratio, 0.74 per score increment).

"These findings encourage the consumption of a balanced diet and emphasized the particularly important role of moderate quantity of proteins from diverse food sources for the primary prevention of hypertension," the authors write.

Clarithromycin-Based Treatment for *H. pylori* Infections

Most practitioners appear oblivious to the fact that empiric therapy with clarithromycin is no longer effective for treating *Helicobacter*. Not only that, but triple therapy is also no longer effective with clarithromycin, metronidazole, and levofloxacin. So, what does one do? While most were asleep *H. pylori* culture and susceptibility has been available from the Mayo Clinic Laboratories, LabCorp, Quest, AURP, and Medical

Specialists Inc. Mayo also offers stool testing for clarithromycin resistance. American Molecular Laboratories offers next-generation sequencing for all six commonly used antibiotics using either fresh or formalin-fixed gastric biopsies or a stool sample. Imagine susceptibility results in 5 days or less from a stool sample with no need for endoscopy!

Prefer to start with an empiric therapy? You have two choices as resistance is still rare for tetracycline and rifabutin. The choices are thus: 14-day bismuth quadruple therapy or rifabutin triple therapy, which are available as packaged therapies, Pylera and Talecia, respectively. Alternately, if neither package therapies are covered by the patient's insurance, you can prescribe either using generics. Generic bismuth quadruple therapy is preferred over Pylera because Pylera is packaged for only 10 days despite 14-day therapy being recommended. In some cases, the pharmacy will dispense Pylera for 14 days and it is worthwhile to check. Talecia consists of high-dose amoxicillin and high-dose PPI plus a low dose of rifabutin. This can be approximated generically with amoxicillin 1 gram three times daily, esomeprazole or rabeprazole 40 mg twice daily plus rifabutin 300 mg twice daily, all for 14 days.

Compulsive obtaining of test-of-cure results using the urea breath test or stool antigen after therapy is critical to inform regarding which therapies are effective in your region. These results should be also compiled and shared with colleagues as should the results of susceptibility testing. All successful antimicrobial therapy relies on local susceptibility patterns, which should no longer be a mystery now that susceptibility testing is both available and rapid. Importantly, clarithromycin, metronidazole, and fluoroquinolone triple therapies can still be used effectively when use is restricted only as susceptibility-based therapies.



A Guide to COVID-19 Tests

Sergio Pistoï, PhD

The reverse-transcription polymerase chain reaction (RT-PCR) test has been the gold standard for the diagnosis of COVID-19 throughout the pandemic. This highly sensitive molecular test amplifies specific segments of the transcribed viral DNA collected in a sample. Specialized labs can usually provide results in 12 to 24 hours.

In contrast, rapid point-of-care antigen tests for COVID-19, which have been on the market since the middle of 2020 and can be performed anywhere, can return results in minutes by way of a test strip housed in a cassette of these lateral-flow immunochromatographic assays that detects viral proteins.

Rapid tests are about 1000 times less sensitive than molecular tests, but

sensitivity is not the only consideration when deciding which test is most appropriate. Cost, availability, accessibility, and how quickly the results are needed should also be considered.

In the European Union (EU), COVID-19 rapid tests designed for use by healthcare professionals are classified as general in vitro diagnostic devices and must bear the Conformité Européenne (CE) mark, which means that the manufacturer declares that the product meets the safety, health, and environmental protection requirements of the EU. These tests can be obtained only by certain groups, usually healthcare workers.

Tests designed for use by the public are classified as self-testing devices and, in

addition to the CE mark, the manufacturer must obtain a declaration of conformity from an organization designated by an EU country, known as a notified body, that confirms that the product meets all requirements. The CE marking on these tests is accompanied by the identification number of the notified body. Self-testing kits are available to everyone.

Each rapid kit comes with a technical data sheet that explains how the sensitivity and specificity of the rapid antigen test relate to the RT-PCR gold standard. For example, a rapid test with a sensitivity threshold of 80% means that antigen results agree with RT-PCR results in 80 of 100 cases.

Comparisons of the various rapid tests are complicated by the fact that there is

no single standard with which to assess the tests. Moreover, conformity assessments performed in the clinical setting almost always use samples from symptomatic patients, who tend to have higher viral loads, whereas in everyday practice, patients can be asymptomatic and viral loads can be highly variable. This is one of the main reasons that actual performance results can be significantly lower than those indicated on technical data sheets. So it is important to consider the variability in patients' viral loads to correctly assess the performance of rapid antigen tests and how useful they are for everyday practice, and then make a comparison against the test's sensitivity threshold. By doing this, we can establish if an antigen test is delivering a valid, useful result.

In the absence of a reference standard (which can replace the need to grow live pathogens) as an indicator of the viral load of the various samples, the cycle-threshold value is used. The cycle-threshold value is an RT-PCR parameter that corresponds to the number of amplification cycles necessary to detect a positive signal.

The cycle-threshold value is inversely proportional to the viral load in the sample; that is, the lower the number of cycles needed to detect the signal, the higher the amount of virus likely in the sample.

Currently, the general view is that a cycle-threshold value of around 30 corresponds to the minimum viral load that a person would have to have to be considered contagious. So, the sensitivity of antigen tests with cycle-threshold values of 25 to 30 (compared with the sensitivity of RT-PCR tests) provides an idea of how useful the tests can be for identifying people who are contagious. The cycle-threshold value is reported in the technical data sheets

that come with many of the tests, which adds value, as well as in many independent assessment studies.

Because high-quality antigen tests have a sensitivity threshold around this range, they are useful for identifying people whose viral loads suggest that they are contagious.

The usefulness of rapid antigen tests as COVID-19 testing shifts from a tool for diagnosis and case detection to one of surveillance was emphasized in a recent review (https://doi.org/10.1016/S0140-6736(21)02346-1). This is done, for example, through strategies that involve repeat testing on a regular basis to overcome issues that arise from the lower sensitivity of the rapid tests.

When evaluating and using the different types of tests, time is just as relevant a factor as performance, the review emphasizes. For example, because molecular tests are extremely sensitive, in theory they can detect positive results 48 hours before a patient's viral load reaches the threshold of infectiousness, giving the person time to take appropriate precautions. However, results typically come back 24 to 48 hours after the sample is taken, which means the patient could already have infected other people. In contrast, rapid antigen tests will deliver a positive result only

when the patient's viral load is high. And although this test is not as sensitive as a molecular test, it does deliver a result in a very short amount of time.

It is not easy to figure out which rapid antigen test to choose when new products are constantly entering the market and there are no common standards that make it possible to do side-by-side comparisons. It is hoped that things will become easier after the EU regulatory review in May. In the meantime, the performance measures detailed in the technical data sheets can be considered when choosing an antigen test. But findings from independent comparative studies, as well as any other technical guidance out there, should also be part of the decision-making process.

COVID-19 Vaccine Options

Over the years, several vaccine platforms have been developed to treat diseases. Among them, four primary types, listed below, are currently approved, in the process of being approved, or are in use as effective therapy against developing an active or severe case of COVID-19.

There are approximately 184 COVID-19 vaccines in preclinical trials, 35 vaccines in phase 1 study, 34 vaccines in phase 2 study, 28 in phase 3 trials, and 17 vaccines in use (as of July 2021). These numbers continuously expanding with the increase in demand for vaccines.

Nucleic acid vaccines	Viral vector vaccines	Whole virus vaccines	Protein subunit
<ul style="list-style-type: none"> • Uses genetic material – either RNA or DNA – to provide cells with the instructions to make the antigen • Vaccines include: Pfizer-BioNTech, Moderna 	<ul style="list-style-type: none"> • Uses a harmless virus to give the cells genetic instructions to produce antigens • Vaccines include: AstraZeneca, Sputnik V, Covaxin 	<ul style="list-style-type: none"> • Uses whole viruses (live attenuated or inactivated) to trigger an immune response • Vaccines include: Sinopharm, Sinovac 	<ul style="list-style-type: none"> • Uses pieces of the pathogen – often fragments of protein – to trigger an immune response • Vaccines include: Novavax



**We Accept
Most Insurance**

Caresource
Medicaid
Medicare
Molina
Worker's Comp
etc



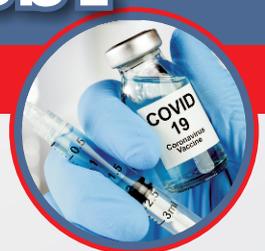
**THE LOCAL PHARMACY
YOUR FAMILY CAN TRUST**

NOW PROVIDING COVID-19 VACCINE

CENTRAL POINT PHARMACY

699-L Harrisburg Pike Columbus Ohio 43223

Ph. (614) 272-7000 | Fax. (614) 272-7011





New COVID-19 Test-to-Treat Program: Pharmacists vs. Physicians

The Biden administration's new test-to-treat program seems superficially simple – “if you feel like you may have COVID-19, go to a pharmacy, get tested, and, if positive, get treated with an antiviral medication on the spot” -but is not all that simple to groups representing physicians and pharmacists. The need for speed is a major reason why the government chose to work with retail clinics that are more accessible than most primary care offices but the American Medical Association (AMA), the National Community Pharmacists Association (NCPA), and the American Pharmacists Association (APhA) have publicly criticized the administration's approach. The AMA is concerned that the program leaves doctors on the margins and may put patients at risk if there are adverse effects from the medications. Pharmacists' groups, on the other hand, say the program is too restrictive.

The pharmacists' groups are concerned that the program is limited only to pharmacies with clinics on site, thus restricting the number of pharmacies qualified to participate. Fourteen pharmacy groups, including the NCPA and the APhA, have also sent a letter to the Biden administration urging it to remove barriers to pharmacies ordering the medications. The groups also want permission as “clinically trained medication experts” to prescribe the

drugs and ensure their safe use.

The AMA has questioned with the prescribing component, saying that “the pharmacy-based clinic component of the test-to-treat plan flouts patient safety and risks significant negative health outcomes.” In the AMA's view, prescribing Paxlovid without a patient's physician being present poses a risk for adverse drug interactions, as neither the nurse practitioners in retail clinics nor the pharmacists who dispense the drug have full knowledge of a patient's medical history. The AMA shortly released another statement saying it was reassured by comments from administration officials “that patient who have access to a regular source of care should contact their physician shortly after testing positive for COVID-19 to assess their treatment options.”

Having patients call their doctors after testing positive for COVID in a pharmacy “strikes me as unnecessary in the vast majority of cases, and it will delay treatment,” Robert Wachter, MD of the department of medicine at the University of California San Francisco. “In this case, it seems like the AMA is taking a very traditional doctor-only approach. And the world has changed. It's much more of a team sport than an individual sport, the way it was years ago.” Wachter said he has the utmost respect

for pharmacists' ability to screen prescriptions for adverse drug interactions. “We're required to do medication reconciliation when patients see us,” he says. “And in many hospitals, we delegate that to pharmacists. They're at least as good at it if not better than physicians are.” While it's essential to know what other medications a patient is taking, he noted, pharmacies have computer records of all the prescriptions they've filled for patients. In addition, pharmacies have access to complete medication histories through Surescripts, the company that enables electronic prescribing transactions between prescribers and pharmacies.

Over 1000 pharmacy clinics across the United States have registered to participate in the initiative and ordering of the drugs has begun in many of these clinics. Besides retail clinics in chain pharmacies, the antivirals will also be available in community health centers, long-term-care facilities, and Veterans Health Administration clinics, according to US Department of Health and Human Services.

The two antiviral pills authorized by the US Food and Drug Administration include Pfizer's Paxlovid, for people 12 and older, and Merck's molnupiravir, for adults. Either drug has to be taken within 5 days after symptoms appear to be effective in preventing serious illness.

Dietary Protein May Lower Risk for Hypertension

Protein consumed in moderate amounts from various sources linked to lower risk for developing hypertension

Consumption of protein at appropriate levels and from a variety of sources is associated with a reduced risk for new-onset hypertension, according to a study published online March 10 in *Hypertension*.

Chun Zhou et al examined associations of the variety and quantity of protein intake from eight major food sources with new-onset hypertension among 12,177

individuals. Dietary intake was measured, and the variety score of protein sources was defined as the number of protein sources consumed at the appropriate level.

The researchers identified U-shaped associations of percentages energy from total, unprocessed, or processed red meat-derived, whole grain-derived, and poultry-derived proteins with new-onset hypertension during a median follow-up of 6.1 years. A reverse J-shaped association was seen for fish-derived proteins; L-shaped associations were seen for egg-derived and legume-derived proteins; and a reverse L-shaped association

was seen for refined grain-derived protein with new-onset hypertension. For each protein, a window of consumption (appropriate level) was identified for which a lower risk for hypertension was seen. Individuals with a higher variety score of protein sources had a significantly lower risk for new-onset hypertension (hazard ratio, 0.74 per score increment).

These findings encourage the consumption of a balanced diet and emphasized the particularly important role of moderate quantity of proteins from diverse food sources for the primary prevention of hypertension



SPEECH BY THE HON MINISTER FOR HEALTH AT THE FLAGOFF OF THE NIGERIAN DIASPORA STRATEGIC CAPACITY BUILDING AND KNOWLEDGE TRANSFER PROGRAMME

Dr. E. Osagie Ehanire

HON. MINISTER, FEDERAL MINISTRY OF HEALTH



SPEECH

PROTOCOL

The Federal Government of Nigeria recognises the value of the enormous potential of the Nigerian Diaspora to contribute to the growth and prosperity of Nigeria through constructive engagement, investment and collaboration in many sectors of national life, including the economy and particularly in human capacity development. This diaspora engagement is of great interest in the health sector, due to the imperative to continually improve healthcare services by injecting new knowledge and cutting-edge technology, in line with global best practices.

1. It is in this light that the Federal Ministry of Health sees Diaspora health professionals as crucial partners to share the total body of knowledge and expertise acquired in the course of working in advanced countries, with their home country. We are fortunate and envied by other countries for the good number of highly regarded experts we have in foreign countries, who have made a good name for themselves and also made us proud with their sterling academic and creative achievements. I congratulate you all and wish you well in your endeavors.

2. Nigeria is among Lower Middle Income Countries (LMICs) of the world hoping to leapfrog in absorbing modern technology and advance to Upper

Middle Income Country (UMIC) status, in a shorter time than it took present-day advanced countries. With responsibility for such a large population as ours, we must make up for lost time and the errors and omissions of the past, to solve the looming problems of today and tomorrow. The pace of discovery of new knowledge and advancement in modern technology in the Developed Countries, shows that developmental gap with Developing countries to be increasing, which can only be addressed if shortcuts are applied with mutually beneficial transfer of learning and skills to Home countries, by those of us, who have access to them. We therefore aim to adapt these skills and knowledge to solve problems and benefit existing medical practice by activating networks and relationships with our diaspora brethren, just as many other countries have done and are doing. Israel, India, South Korea and Ireland are examples of countries who have most efficiently used their Diaspora connections to scale up services in their home countries. Since knowledge is always increasing, this is a continuous process and ensuring long-term engagement is crucial for sustainability and for highest impact of this endeavours. The connections we create must be durable to strengthen the relationships between diaspora healthcare professionals and their home-based counterparts and to facilitate development and strengthen health service access, quality and delivery in Nigeria.

3. The Federal Ministry of Health has been engaging with the Nigerian healthcare community in the diaspora for many years. To solidify this relationship and in line with President Buhari's call to "prioritize knowledge and skills repatriation", the Ministry of Health entered a collaboration agreement with Diaspora Health Professional Associations in the United States of America, Canada, Great Britain, Germany and South Africa through a Memorandum of Understanding in line with the National Diaspora Policy to provide comprehensive and supporting framework to facilitate diaspora engagement in national development.

4. The relationship crystalised into the Nigerian Healthcare Professionals in Diaspora engaging in various related activities and initiatives to contribute to the growth of Nigeria's health sector. The activities range from self-sponsored medical missions to towns and villages, to conducting health education, training, public health interventions and advocacy; all of it, of their freewill and in a spirit to "give back" and support development in the homeland.

5. Our desire is to structure and institutionalize this relationship to make best use of your time and goodwill. We are testing one such initiative today, as we gather to flag off: a Diaspora Strategic Capacity Building and

Knowledge Sharing Programme that arose from that directive of Mr. President to the Ministry of Health to engage our diaspora health professionals in transfer of skills and knowledge to home-based health care professionals. This programme is a culmination of the collective efforts of stakeholders, who have deliberating on the programme implementation.

6. This programme is primarily about transfer of knowledge, skills and best practices, to build capacity and expertise of health care professionals in Tertiary Health Institutions, to improve quality of care, to result in better health outcomes in our health institutions. In the course of the exchange, I am sure each of you will also have learned something new from your colleagues back home. We have very valuable human resources in our brothers and sisters in the diaspora, exposed to the latest in medical technology and expertise. Our medical, pharmacy, nursing and other specialists at our institutions are ready for the theoretical and practical parts of knowledge, skills and global best practices. This is only the beginning of an initiative with great potential to expand and diversify, using lessons learned in our engagements. We must use efficient ways of getting the most out of the time-limited missions, by also "training the trainers" to demonstrate new skills in training institutions.

7. The training and knowledge sharing lectures will be delivered across health professional disciplines and topics to cut across specialties including Paediatrics, Obstetrics & Gynaecology, Surgery and Internal Medicine. The hands-on practical aspect of this program will commence in due course, and will include in-person visits to Nigeria. Apart from technical side, we shall introduce facility management sessions to help bring new insight to address gaps in efficient service delivery. All areas of health education can be improved in this way, as this programme is designed

to support advanced medical training and knowledge sharing.

8. I wish to thank all the Diaspora Health Professional Associations including the Association of Nigerian Physicians in the Americas (ANPA), Medical Association of Nigerians Across Great Britain (MANsAG), National Association of Nigerian Pharmacists and Pharmaceutical Scientists in the Americas (NAPPSA), National Association of Nigerian Nurses in North America (NANNNA), Nigerian Nurses Charitable Association (NNCA-UK), Nigerian Medical Association-Germany (NMA-Germany), Canadian Association of Nigerian Physicians and Dentists (CANPAD) and the Nigerian Doctors' Forum, South Africa (NDF-SA) for their steadfastness and patriotism to the course of developing the Health Sector, and in seeing to the actualisation of this pivotal program. I must point out that Diaspora resource persons of Health Associations will facilitate these training sessions pro Bono, at no cost. We shall work to institute a budget for this in due course.

9. I also wish to appreciate the efforts of Prof. Martin Aghaji of University of Nigeria Teaching Hospital, a cardio-thoracic surgeon who has worked in the planning committee to develop the training module and serve as consultant to this program. I acknowledge Chief Medical Directors, management and staff of three Teaching hospitals where this program is being piloted: National Hospital, Abuja; University of Nigeria Teaching Hospital Enugu; and the University of Benin Teaching Hospital.

10. Special mention must be made of the leadership of the Committee of Chief Executives of the Federal Tertiary Health Institutions under Prof. Auwal M. Abubakar and the Nigerians in Diaspora Commission for their tremendous support.

11. Last but not the least, is the just



retired Director Special Projects, PPP/Diaspora, Dr. Omobolanale Olowu, mni who put in her best to see to bring this programme to fruition, as the last major achievement in her service with Federal Ministry of Health.

12. And now Colleagues, Ladies and gentlemen, it is my privilege to flag this programme off, as I enjoin our home-based doctors, nurses and pharmacists to participate in the lectures and take advantage of the opportunity to develop yourselves and build capacity in your respective fields to deliver global-standard health care to the citizens of our great country.

Thank you for your attention.

Improving Emergency Medical Services in Nigeria: THE ROLE OF THE PARAMEDICS

By: Nelson Aluya MBBS, Victor Oguaju B.Sc and Anayo Ukeje PhD/DIC



Emergency Medical Services (EMS) is a system that provides emergency medical care to subjects with urgent pre-hospital treatment and stabilization needs arising from sudden serious illness and injuries requiring transport to definitive care setting. In healthcare systems where they are available, they are activated by members of the public, medical facilities and other emergency service authorities via an emergency telephone number that links them to a control facility. Once they are activated by an incident that causes serious illness or injury, the control center quickly

dispatches a suitable resource for the emergency that will provide immediate care for the patient involved and bring the patient to definitive care setting for medical attention if required.

Historically emergency care in the field has been rendered in different forms, the order of knights of the hospital of saint John of Jerusalem known as the Knights Hospitaller was a medieval and early modern Catholic military order from Jerusalem in 1291 through to Saint Petersburg in 1801 known for rendering

assistance to wounded soldiers in the battlefield [1].

The Ambulance Volantes designed by Dominique Jean Laurey debuted ambulance use in the battle of spines between the French and Prussians which was used to treat and transport wounded soldiers using the four wheeled Norman system of horse litters [2].

The tenets of ambulance providing instant care shaped hospitals' policies in modern emergency medical planning initiated during the London Cholera outbreak 1832. In 1887 the St John Ambulance Brigade in London was established to provide first aid and ambulance services [3]. Subsequently, the use of more equipped ambulances by the New York service was initiated by Bellevue hospital [4].

Modern EMS was initially developed during Napoleon's time to aid injured soldiers. Few major changes occurred in EMS until the 1960s. Between 1960 and 1973, several medical, historical, and social forces converged, leading to the development of a more structured EMS system in the United States [5].

In 2001 the Lagos State Government started its first attempt in implementation of structured EMS using the foreign firm. Shortly after this, in 2002, Rivers State Government started the second government owned EMS under the consultancy of "Emergency Response Services Group", May 31, 2017 [6]

The development of cardiopulmonary

resuscitation (CPR), advanced pharmaceuticals and defibrillation as the standard form of care for out-of-hospital emergency management continued the advances in the development of emergency medical services.

Accidental Death and Disability (AD&D), the Neglected Disease of Modern Society was a popular report which criticized the quality of emergency medical services in the United States and persuaded the Government who in response created better standards of operation in the statewide emergency medical service and ambulance system[7].

To preserve life, prevent further injury and promote recovery are the principles of first aid demonstrated by the star of life with each arm representing respectively early detection, reporting, response, good field and in-transit care and transfer to definitive care setting which emergency medical services are instituted to fulfill [8].

Consistent with the United Nations Sustainable Development Goals and the "Global Decade of Action for Road Safety (2011-2020) and SDG 3.6", the strategy is to reduce the number of global deaths and injuries from road traffic accidents by 50% by the year 2030. Key to achieving this goal is the competency of the personnel administering emergency medical service [9].

The 72nd World Health Assembly resolution on emergency and trauma care[10] categorizes the job description of emergency medical service providers to include; Basic Life Support (BLS) which includes the first responders as the Emergency Medical Technicians (EMTs) who provide immediate life-saving care as advance first-aid, oxygen administration, cardiopulmonary resuscitation and automated external

defibrillator, considered as a bare minimum for emergency service workers and requires intense courses and training in field skills with certification which is subject to biennial renewal. The Paramedics /Advance Life Support (ALS) with skill proficiency including cannulation, intubation, ultrasound, cardiac monitoring, thoracostomy and performing surgical cricothyrotomy. There are also specialty certifications for flight and wilderness paramedics.

There are popularly two approaches to provision of EMS which are the Franco-German and Anglo-American models [11]. The Franco-German model common in France, Spain and Brazil is referred to as physician-led stay and treat model, whereby doctors respond directly to all major emergencies and initiate treatment at scene to stabilize the patient and if need be, transfer the patient to hospital.

The Anglo-American model also referred to as paramedics-led scoop and run model work with ambulance systems staffed with emergency technicians, paramedics, and physicians in required cases, who provide oversight for the crew which include telemedicine control and report to a receiving hospital emergency unit. The golden hour theory is the strategy for pre-hospital trauma care in North America. This is based on subjects' best chances of survival is in a definitive care facility following severe cases of life penetrating trauma.

A presentation of the National Emergency Medical Services and Ambulance System by system program manager revealed that maternal, neonatal, infant, domestic and road accidents with no EMS constitutes up to 50% of morbidity and mortality rate in Nigeria [12].

Moreso, the situation analysis of the

guidelines for the operation of National Ambulance Services in Nigeria [13] stated that there is no formal legal framework for coordination and regulation of ambulance services in Nigeria. Furthermore, the absence of policy framework to guide ambulance service providers has led to many disparate non-coordinated ambulance services operated by government agencies like Federal Road Safety Commission, National Emergency Management Agency, Nigerian Police Force, Nigeria Security and Civil Defense Corp as well as private and voluntary organizations with no national standard of care. Some of their personnel are often without requisite paramedic training. Similarly, most first responders seen at emergency scenes are not trained to manage emergencies.

However, efforts are being made to institute efficient EMS in Nigeria. The National Emergency Medical Treatment Committee (NEMTC) was approved by the 61st National Council on Health in 2018 as a statutory body for the administration of EMS in Nigeria. NEMTC has setup the National Emergency Medical Service and Ambulance System (NEMSAS) as the program implementing unit for EMS gateway domiciled in the office of the Honorable Minister of Health.

The NEMSAS vision statement and operationalization emphasized the creation of integrated and efficient ambulance system to provide interim medical services to patients and transport them to the nearest and appropriate medical treatment center consistent with the March 2016 Policy on Emergency Medical Services in Nigeria as articulated in the Guidelines for the Operation of National Ambulance Services in Nigeria (NASS).[12][13][14].

The NASS is a system for the coordination and provision of emergency medical care and



transportation of the sick or injured persons who need immediate medical care. It stipulates that the ambulance is called by members of the public through the toll-free emergency phone number 112 to initiate the process of the ambulance service care. The process of producing the paramedics cadre is ongoing with the national paramedics' curriculum being used in training paramedics in UBTH and emergency services training centers.

It further explained the standard design and specifications, sanitation, and hygiene for ambulances. Importantly it stated the competencies for EMS professionals to include the Basic Life Support, the Advance Life Support and Mobile Intensive Care Unit service trainings.

The administration of NASS as stated by the guideline comprises the Managing Director (MD) who shall be responsible

as the chief executive officer of the organization, the medical director, the operations manager, medical command physician and the paramedics.

The lines of responsibility of stakeholders include the federal ministry of health who provides the framework, general guidelines and reviews for policy direction relating to personnel, curriculum and responsibilities of each tier of government. The state ministry of health helps step down the integrated emergency ambulance system to operational state level.

The funding comes from the 5% of Basic Health Care Provision Fund through to National Health Insurance Scheme administered by the committee appointed by the National Council on Health.

In view of the foregoing, it's clear that Nigerian health authorities have

already proposed frameworks for Emergency Medical Services, however, there are lacunas as what instituted parastatal should outrightly oversee emergency medical service in Nigeria and this discussion is ongoing.

A review of the EMS in developed and developing countries like the US, UK, Singapore and South Africa suggests a system managed effectively as a government parastatal with partnership of non-profit and private organizations.

As stated in the guideline for NASS, the absence of a coordinated ambulance service in Nigeria will result in unnecessary loss lives, which are preventable. It is imperative that an effective, functional national paramedics system be set up to achieve health care goals that meet with international standards to minimize deaths/injuries by road and save lives in Nigeria

References:

1. Medicinenet. *First Aid: From Witchdoctors & Religious Knights to Modern Doctors* [Internet]. MedicineNet. MedicineNet; 2018. Available from: https://www.medicinenet.com/first_aid_witchdoctors_and_religious_knights/views.htm

2. *Flying Ambulance* [Internet]. web.archive.org. 2008 [cited 2022 Mar 3]. Available from: https://web.archive.org/web/20080514091424/http://www.napoleonic-literature.com/Flying_Ambulance.htm

3. *The 1832 Cholera Epidemic in New York State*: [Internet]. web.archive.org. [cited 2022 Mar 3]. Available from: https://web.archive.org/web/20080622015258/http://www.earlyamerica.com/review/2000_fall/1832_cholera.html

4. *Industrial Revolution* [Internet]. web.archive.org. 2007. Available from: <https://web.archive.org/web/20070626032454/http://www.sja.org.uk/sja/about-us/our-history/industrial-revolution.aspx>

5. <https://www.ncbi.nlm.nih.gov/articles/PMC147050>

6. *Improving Care & Response in Nigeria – Journal of Emergency Medical Services (JEMS)*

[https://www.jems.com/.../Ambulances & Vehicle Ops](https://www.jems.com/.../Ambulances%20&%20Vehicle%20Ops)

7. Read “Accidental Death and Disability: The Neglected Disease of Modern Society” at NAP.edu [Internet]. www.nap.edu. [cited 2022 Mar 3]. Available from: <https://www.nap.edu/read/9978/chapter/4#6>,

8. *Star of Life DOT HS 808 721* [Internet]. www.ems.gov. Available from: <https://www.ems.gov/vgn-ext-templating/ems/sol/pages/designorigin.htm>

9. *Goals, targets and indicators | The Human Rights Guide to the Sustainable Development Goals* [Internet]. sdg.humanrights.dk. Available from: <https://sdg.humanrights.dk/en/goals-and-targets>

10. *Global Emergency and Trauma Care Initiative* [Internet]. www.who.int. [cited 2022 Mar 3]. Available from: <https://www.who.int/news/item/27-05-2019-72nd-world-health-assembly-adopts-resolution-on-emergency-and-trauma-care>

11. Al-Shaqsi S. *Models of International Emergency Medical*



Service (EMS) Systems. Oman Medical Journal [Internet]. 2010 Oct; Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3191661/>

12. Saidu Ahmed Dumbulwa. *THE NATIONAL EMERGENCY MEDICAL SERVICES AND AMBULANCE SYSTEM (NEMSAS)*. Ngfrepositoryorgng [Internet]. 2014 [cited 2022 Mar 3]; Available from: <https://ngfrepository.org.ng:8443/jspui/handle/123456789/4193>

13. *Redirect Notice* [Internet]. www.google.com. [cited 2022 Mar 3]. Available from: https://www.google.com/url?sa=t&source=web&rct=j&url=https://www.health.gov.ng/doc/Guideline%2520for%2520Integrated%2520EASS.pdf&ved=2ahUKEwis7_Xfzqr2AhUR8rsIHZpUBNYQFnoECAMQAQ&usg=AOvVaw2qr86Kgk5HnF9kd7ueHOo

14. *Redirect Notice* [Internet]. www.google.com. [cited 2022 Mar 3]. Available from: https://www.google.com/url?sa=t&source=web&rct=j&url=https://www.health.gov.ng/doc/EMS%2520Policy%2520.pdf&ved=2ahUKEwis7_Xfzqr2AhUR8rsIHZpUBNYQFnoECAgQAQ&usg=AOvVaw0U6WREYD_xgY2vj4N3wmi2

A FOCUS ON PHARMACEUTICAL SCIENCES

The number of directions a career in pharmaceutical science can take is nearly limitless. Developing new medicines or improving the way they are delivered. Investigating crimes and providing regulatory guidance. Enhancing the durability of paint. All these roads begin in the same place. The range of careers open to pharmaceutical science graduates is growing ever more diverse. And not all of them involve working in a lab.

Pharmaceutical Scientists have exceptional theoretical knowledge, but they also possess the sort of practical skills that mean they can tackle the challenges of industry straight away.

What Pharmaceutical Scientists Do

While pharmacists are directly involved in patient care and work with existing drugs, it's pharmaceutical scientists who create new drugs, therapies, and approaches to maximize benefit established therapies. The pharmaceutical sciences draw on a wide range of disciplines to discover, test, and manufacture new drugs and therapies, as well as evaluate their effectiveness and safety.

Pharmaceutical scientists can find employment at pharmaceutical and biotechnology companies, universities, regulatory agencies such as the Food and Drug Administration, and national laboratories such as the National Institutes of Health.

Fields that pharmaceutical scientists work in include:

analysis and pharmaceutical quality, biotechnology, clinical pharmacology and translational research, drug design and discovery, formulation design and development and pharmacoengineering, pharmacokinetics, pharmacodynamics and drug metabolism, physical pharmacy and biopharmaceutics, regulatory sciences, and social and behavioral pharmacy, pharmacoepidemiology, and pharmaceutical outcomes.

Job Outlook and Compensation

Pharmaceutical scientists are employed by any number of institutions, from large drug manufacturing and biotech companies and contract research organizations (CROs) to academic institutions and governmental agencies. Many work in laboratories as part of a large team of scientists and technicians developing new drug therapies. Others teach and work in offices near universities or hospitals, supervising clinical drug trials, or in manufacturing centers, overseeing the large-scale production of medications.

Pharmaceutical scientists use sophisticated computers and equipment, work with microscopic compounds and conduct scientific experiments. They must be extremely detailed and precise. They also need to be patient, because it can take a team of pharmaceutical scientists many years to

bring a new drug to market.

Pharmaceutical scientists just starting their careers earn an average salary of \$85,000. With experience and increasing responsibility, their compensation can grow significantly.

The job outlook of pharmaceutical scientists is expected to grow by 6% over the next decade, according to projections from the US Bureau of Labor Statistics. As more scientists make discoveries about the human health, they need more pharmaceutical scientists to create drugs and medications to cure these new disorders, conditions and illnesses to improve human lives.

Becoming A Pharmaceutical Scientists

Pharmaceutical scientists typically focus on a specific phase of the drug-development cycle — discovery, optimization, pre-clinical testing, manufacturing, or evaluation. If you're interested in a career in pharmaceutical research, you should pursue a degree in pharmaceutical sciences, pharmacy, biology, chemistry, medicine, engineering, epidemiology or other related fields. Many pharmaceutical scientists begin working in the field after college and then go on to complete advanced degrees in more specialized subjects. Pharmaceutical companies often pay for talented workers to complete graduate and post-graduate degrees, such as Master of Science (M.S.), Master of Public Health (MPH), Doctor of Medicine (M.D.), Doctor of Pharmacy (Pharm.D.) or Doctor of Philosophy (Ph.D.), to help them qualify for advancement.

Comprehensive Medication Reviews

By: Ucheoma Nwizu, PharmD, BCACP



JO is an 88 year old lady I spoke to yesterday. Our conversation started with me introducing myself and the reason for my call. Uche the pharmacist, calling to.....

Then she said to me'I have to tell you. I am Dr Josie Omnibus (real name withheld). I am a retired dentist'

'Thank you so much for telling me that'. I responded genuinely grateful for that piece of information. I knew it would totally impact the way I spoke to her. Most health professionals prefer to be talked to as colleagues even when they are patients.

So I started asking her questions about her medicines...each one of them. One after the other. Each question led to a long conversation about her medicine and how she felt about them. I have come to learn a about medication experience. Each person experiences their medications differently and teasing that out may uncover reasons for poor adherence.

We talked about her blood pressure pills and if she should still take medications for cholesterol. We discussed what her blood pressure goals should be, what to do about her declining kidney function and how that impacts the recommended doses for her other medications.

Halfway through the conversation she said....'but you haven't asked me about all my medications.'

'Oh " ...I said. I am not done yet. I go by systems. We just finished talking about medications for your cardiovascular and musculoskeletal systems. We would now talk about medications you use for gastrointestinal tract.

"Excellent ' she said and I could almost feel her smiling through the phone receiver. It was obvious she had never received this kind of service in the past.

She has mild cognitive impairment but is insistent on self-managing her medications so we discussed her system. She didn't have a pill box but she organized her pills around her daily

activities. Placing each bottle at locations where she would be at different times of the day. Some medication bottles on her dining table, night stand all. This is not what I would ordinarily recommend but it is working for her so far and I felt if i changed this, it would throw her off so we kept it the same. We agreed we would revisit this on 6 months.

We went on to estimate her total dietary calcium intake and because it was low, i recommend supplementation. She has osteoporosis and would need the building bricks that calcium provides.

We talked about urinary incontinence and I could tell that was happening and had become a source of embarrassment. She didn't want any medications for this. We discussed kegel exercises which is the first line of treatment for urinary incontinence. I advised her to stop taking the sleep aid. It worsens her memory loss and incontinence. I promised her I would talk to her doctor about changing her blood pressure medicines. The one she was taking was making her urimate a lot and making her incontinence worse.

We talked and talked going over all systems. At the end of the conversation she said...' I am so glad I talked to you' I bowed my head and smiled. That is high praise coming from a retired dentist.

In the end, I had 5 recommendations for doctors to change in her treatment. All 5 recommendations were accepted and implemented.

Comprehensive medication reviews are very important especially in our elderly. Anytime i do them for my parents or patients, I discover medication related problems. Sometimes I prevent death, often I improve quality of life.



The development of the First Vaccine

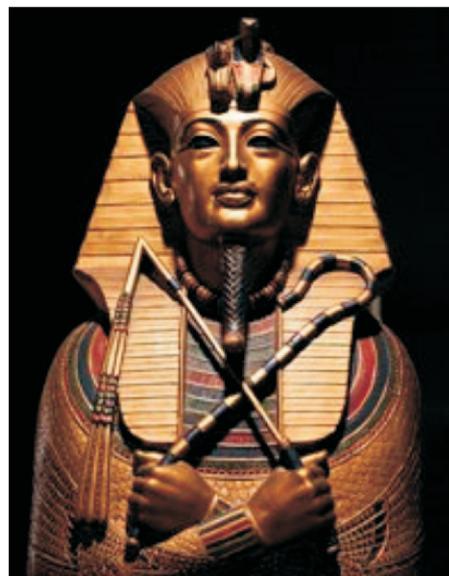
The word vaccine may bring to one's mind the notion of "protection from disease" and rightfully so, as some death causing diseases have been eradicated and others prevented, and the ambitious prospects of vaccines targeting cancer and AIDS inspire hope for a disease-free world. Currently vaccines exist for multiple diseases and the development of new vaccines, while a long process requiring testing and validation, is very straightforward once the target pathogen is isolated and characterized. But just a few centuries ago this was not the case.

How does immunity work?

The process through which our immune system distinguishes pathogens starts with the "recognition" step. Every cell in our body has receptors on its surface. Bacteria and microbes have receptors as well; these "tags" are the elements that specialized cells in our immune system recognize as foreign. The immune system then creates antibodies, a process which takes about a week on average, which neutralizes the antigen. These antibodies are specific to the antigen in question and remain in the body for the individual's life. That is why once vaccination occurs, or a person experiences the disease, he or she will most likely never experience it again. A common misconception is that some of the diseases we are vaccinated against

are nonexistent in the modern world. However, it is possible that we would become exposed to them during our lifetime, but never experience the full blown symptoms due to our immune system's "memory," in the form of antibodies, that combat the pathogen very early into its infection.

History of Vaccination



The history of vaccination begins with the history of smallpox, a disease that plagued mankind since 10,000 BC. Lesions, resembling those characteristic to this disease have been found on the faces of mummies from the 18th and 20th Egyptian dynasties (1570–1085

BC). As trading was a very necessary part of the life of ancient people, smallpox spread, with cases being reported as early as 1122 BC in China and described in ancient Sanskrit texts of India.

In Europe, smallpox was a frequent epidemic between the 5th and 7th centuries affecting a great number of the population and halting development. Coincidentally the first stages of the decline of the Roman Empire occurred during a large scale epidemic—which killed 7 million people. Smallpox was introduced to North America with the conquest of this territory by the Spanish and the Portuguese. This disease spread rapidly playing a role in the demise of the Aztecs and Incas. All levels of society were affected in some degree—in 11th century Europe—400,000 died annually, and one third of survivors were blinded by the disease.

The disease was characterized by "speckled" skin lesions that left extensive scarring with a high fatality rate of 20–60%. Those who survived the disease had disfiguring scars and risked losing their sight. The fatality rate was greatest in children—reaching 80–98%. Some names for the disease were variola (first introduced by Bishop Marius of Avenches) derived from the Latin word meaning stained; or "small pockets"—a term used to distinguish this disease from syphilis—considered the "great pocket" in 18th century England.

The eradication of small pox started with a few medical observations, for example, it was common knowledge that those surviving the disease became immune to it. A variety of herbal remedies were also used and survivors were called upon to nurse those who were sick.

Inoculation (or variolation) was the next step. This was a process which involved grafting liquid from the lesions of an infected person (with a lancet) and subcutaneous introduction of that material into a healthy individual. This method was successful, but carried the

risk of developing into a fully blown infection or resulting in the transmission of other diseases such as syphilis, through the transmission of blood matter. Variolation first became a practice in Africa, India and China. It was later introduced to Europe with the arrival of travelers from Istanbul, such as Emmanue Timoni and Giacomo Pilarino, both of whom sent word to the Royal Society of London describing the techniques they had witnessed in Istanbul. However, governing medical authorities remained skeptical.

Lady Mary Worley Montague was ultimately the person responsible for the advocacy of variolation methods in England. After suffering the devastating disease herself, she ordered an embassy surgeon to perform the procedure on her 5-year-old son, and later in the presence of the royal court, on her 4-year-old daughter. A medical trial of sorts followed; 6 prisoners in New Gate were inoculated on August 9, 1721. All 6 survived, became immune to the disease, and were granted amnesty for their participation. The experiment was then repeated successfully on orphaned children, and used to treat the Prince of Wales' two daughters.

Despite a 2–3% fatality rate associated with infection during the inoculation procedure itself, inoculation spread and became popular among all income levels. Variolation also became a practice in the new world, despite the unwelcoming reaction with which it was initially received. Two pioneers of this method were Reverend Cotton Mather and Doctor Zabdiel Boylston – they were the first ones to use statistics to show a mortality rate of only 2% of those infected by variolation as compared to 15% in those who contracted the disease naturally, during the 1721 Boston epidemic.

In 1757, Edward Jenner, an 8-year-old boy with a curiosity for medicine, was inoculated as well. He developed a mild case of small pox and became immune. His curiosity led him to become an apprentice in the apothecary of a surgeon; there he heard a milk maid say,



“I shall never have smallpox for I have had cowpox. I shall never have an ugly pockmarked face.” Jenner went on to acquire more medical knowledge, becoming a very well respected surgeon and biologist. Although his medical career took him onto numerous paths of medical marvel and discovery, Jenner never forgot the tales of milkmaids protected from smallpox. Jenner concluded that cowpox not only protected one from smallpox, but could also be transmitted from one person to another, as a deliberate method of protection.

In 1796, Jenner found a milkmaid with “fresh” cowpox lesions; he used the liquid from those lesions to inoculate an 8-year-old boy. The boy developed mild fever, but quickly recovered 10 days after the procedure. Afterwards, Jenner inoculated the same boy with smallpox material, the boy did not develop any disease—thus Jenner concluded that protection was now complete. He tried to publish his findings, and coined the term as Vaccination (from the word vacca—Latin for cow).

Ultimately Jenner's persistence made vaccination popular; he made no attempts to enrich himself through his discovery. Variolation was prohibited in England in 1840. Jenner spent his scientific career either being ridiculed or rewarded for his discoveries. At home in his “Temple of Vaccinia” (a large one-room hut in the



garden), he would vaccinate the poor for free. Jenner died in 1823 from a stroke, following his wife, daughter and son, whom all died from tuberculosis.

While Jenner's efforts in bringing vaccination to the attention of the public deserves a great deal of credit, one cannot forget Benjamin Jesty, whom in 1744, determined to protect his family, used a cowpox infected lancet to transfer the material to his wife and two boys. They remained immune despite repeated exposure to smallpox.

The eradication of smallpox was accomplished in 1977, following a campaign under The World Health Organization. Ultimately, it is important to gauge the accomplishments of Jenner, given the fact that the scientists of that era did not have a complete understanding of the human immune system, viruses or bacteria. Therefore, it is safe to say that curiosity, keen observation, and relentless perseverance—all such impressive human qualities, made the development of the first vaccine possible, long before the mechanisms involved in its effectiveness were understood.

Adapted from Veronica Rotari – Riordan Clinic

EVENT CALENDAR 2022

May 7, 2022

NAPPSA Business-2-Business Roadshow
New York, NY

May 15, 2022

NAPPSA Business-2-Business Roadshow
Dallas, TX

September 18-22, 2022

80th FIP World Congress of Pharmacy and
Pharmaceutical Sciences
Seville, Spain

SEPTEMBER 22-25, 2022

16th Annual NAPPSA Scientific Conference and
Exposition
Renaissance Tampa International Plaza Hotel, Tampa,
Florida

OCTOBER 31 - NOVEMBER 5, 2022

95th Annual Conference of PSN
Jos (Tin City) Plateau State



VOLUNTEER WITH NAPPSA

Run/Walk for NAPPSA Fundraising

Your participation will help raise funds for the NAPPSA Endowment Fund. NAPPSA's Endowment Fund enhances NAPPSA's capacity to continue her wide portfolio of good works in the USA and Africa.

Be a Mentor

NAPPSA is looking for willing mentors to help groom the next generation of leaders in the fields of pharmacy and pharmaceutical science professions.

Serve in a Committee

Most of NAPPSA's work and activities are driven through the various NAPPSA committees. NAPPSA is always looking for members with ideas and passion about NAPPSA's growth to volunteer their time and knowledge at the Committee level.

Develop a Webinar

Do you have a webinar Idea? Then reach out to the program committee at program@napps.org. Webinars offer a great opportunity to deliver the latest information on the various aspects of NAPPSA's vision and member educational needs without the need for travel or time away from home and office.

Contact Us

Want to volunteer in any of the above? Send an email to napps@napps.org or call the NAPPSA office at (919) 230-1488





NAPPSA, Inc.