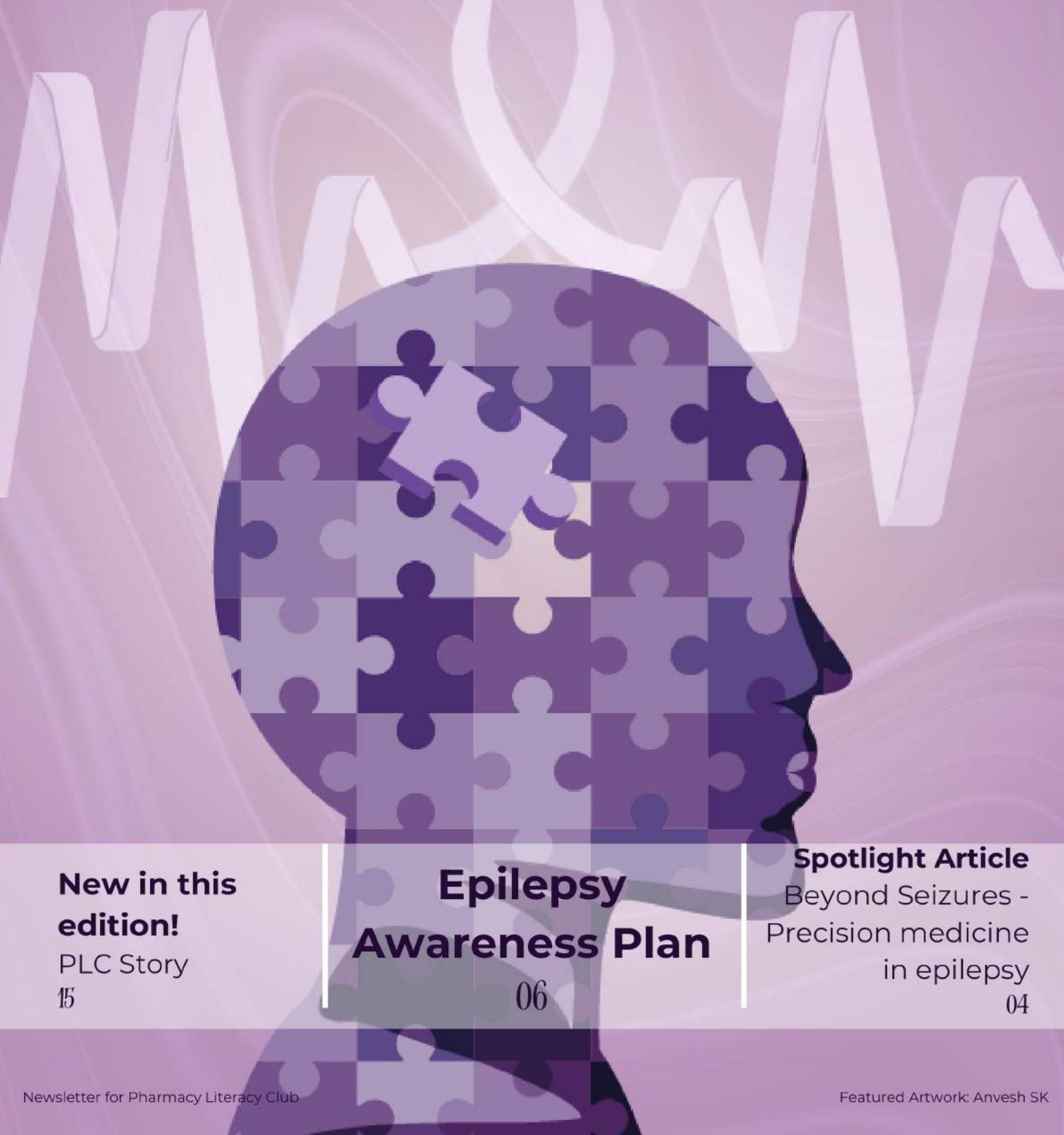




DigiDose

THE QUARTERLY DISPENSE



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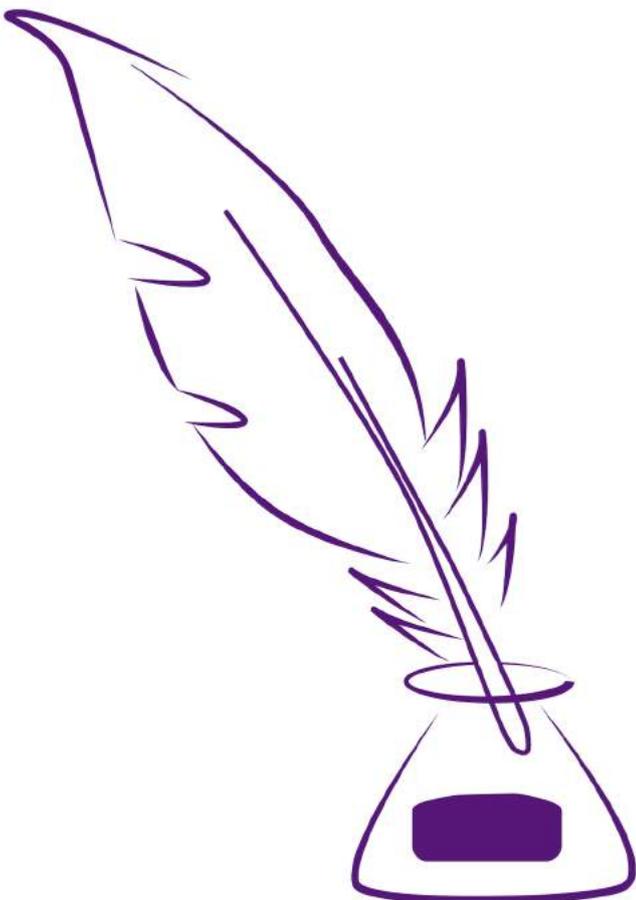
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Editor's Ink

In this edition of DigiDose, we take a short peek at the intricate landscape of epilepsy care, venturing into the domain of precision medicine. Our highlight article, "Beyond Seizures - Precision Medicine in Epilepsy," might catch your attention, with cutting edge information on new heights in epilepsy care. Taking a detour from the traditional text, we looked into embracing diverse mediums to enhance understanding and engagement. In this edition, we have tried to bring in new dimensions to conveying health related information : infographics and pictorial depictions. We believe that visual representations not only captivate the audience's attention but also helps the reader understand the science quicker, and retain it longer. These are experimental steps, towards making DigiDose more accessible and relatable, to you.

Thank you for your continued support and readership, as we strive to make accurate medical information more accessible to the public.

Sanal Simon
Chief-Editor



SPOT

LIGHT

Beyond Seizures - Precision medicine in epilepsy

- Riya Singh (2nd year BPharm)

Epilepsy is a disease of the brain that can cause an individual to lose consciousness and have uncontrolled violent movements.i.e., recurrent unprovoked seizures, which stand at the apex of diseases requiring personalized treatment. Epilepsy can be due to multiple factors like structural, genetic, infectious, metabolic, and immune, among others. It varies from oxygen loss to trauma during birth or even less weight at birth.

A disease with a broad spectrum of clinical effects cannot have a standard drug treatment. Hence, precision medicine in epilepsy plays the utmost importance and simply refers to a rational treatment strategy tailored to one person that reverses or modifies the disease pathophysiology.

The current precision medicine for epilepsy focuses on reducing the frequency of seizures but fails to recognize the actual process of epilepsy, hence remaining imprecise. The present clinical practical scenario fails to understand that epilepsy is" beyond seizures". Each individual possessing a unique genetic makeup and other physiological aspects would have different causes and processes of seizures in epilepsy. A survey of molecular genetic diagnosis was conducted to understand the genetic aspect and its effect on epilepsy in six tertiary epilepsy centers, including children and adults, via a standardized questionnaire about therapeutic, clinical, and genetic data; the survey reached a considerable conclusion. Out of 273 patients with epilepsy, clinical treatment changes based on genetic findings were carried out in 32% of the patients. Furthermore, precision medicine treatment was conducted for 56 patients, and every 10 out of 33 patients experienced a remarkable difference. This conclusion resulted from the current precision medicine treatment, which is not as highly advanced as it is now. Considering modifications and development in this treatment, the percentage of patients with positive results would be higher.

There is not only one survey to support this statement. In other diseases like CANCER, patients with a family history presented a particular lifestyle pattern when closely observed and understood.

It clearly shows that even epilepsy, especially with a broad spectrum of root causes, is not only subjected to the diagnosis and then drug treatment but goes much beyond that. Until 10 years ago, the only genes directly implicated in epilepsy were those encoding ion channels, where causative mutations were found in large pedigrees. Recently, exome sequencing has led to an explosion in epilepsy genes primarily identified via “trios” (the exomes of both parents and an affected child are sequenced) with much success. This evidence justifies the need for research and the scope of precisely tailoring individualized management to each patient’s needs. In India, national epilepsy day is celebrated on November 17th to spread awareness, but surprisingly, there are no such significant grants yet on the aspect of precision medicine to treat epilepsy. The youth remain unaware of the depth and effect of epilepsy or the boundaries beyond seizures that epilepsy reaches, hence creating a plethora of opportunities for students to dive into this side of clinical treatments and shed some light as well.

In today’s world, where advancements occur in every field, even today, the cure for epilepsy is bleak. Presently, there are about 50 million epilepsy patients globally, with one-sixth of the total in India, surviving in a world where epilepsy is just defined as a disease with uncontrolled and recurring seizures. 13th February, International Epilepsy Day, is not to validate those survivors; instead, it is to drive a light of zeal in other human beings to dive into its various aspects, conduct research, and create awareness. While there are noticeable improvements in epilepsy treatment, a framework is needed for precision medicine, with proof that treatment is addressing the physiological aspects of the patient’s body.

The motto of International Epilepsy Day itself is inspiring enough to understand that epilepsy is beyond seizures, the motto being

“Anyone with a brain can have a seizure, and anyone with a brain can help those with epilepsy”.

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Epilepsy

Epilepsy is a neurological disorder that causes recurring and unprovoked seizures. It is one of the most commonly occurring neurological disorders globally

Make a **“safe area”** around the seizing patient - move any furniture with sharp edges away and clear the surrounding area as much as possible to keep the person from injuring themselves. If in a public place/ road with traffic, move the person to a less busy space



Ease the person to the **floor** and if it is available, onto a **soft** surface. Put something soft, like a folded piece of cloth, under their head.



Turn the person **onto their side** to allow them to breathe better. **Loosen** any tight or restrictive items of clothing (ties, belts, etc.) and remove any sort of eyewear.



Stay with the person till the seizure is over. Once the patient is alert and regains full consciousness, explain what happened in as simple terms as possible



Stay calm throughout the episode and ensure that everyone else in your immediate surroundings remains calm



Check if the person has a medical bracelet or other emergency information on them.



Do Not (Source: CDC)

- Attempt to hold the patient down/restrict their movement in any manner. This can cause injuries both to you and the patient.
- Put anything into the mouth or on their teeth.
- This can cause injuries to the jaw and mouth and possibly restrict their breathing.
- Attempt CPR or mouth-to-mouth breathing.
- The patient will start breathing normally after the seizure is over.
- Offer the patient any food or drink until they are fully conscious and oriented.
- Splash/dump cold water on the patient to “snap them out of it”. It is not effective.



When to call emergency services? (Source: CDC)

- If the seizure lasts longer than 5 minutes.
- If the person has never had a seizure before or doesn't have the relevant medical ID with them.
- If the person experiences difficulty breathing or struggles to regain consciousness after the seizure
- If a second seizure occurs soon after the first one
- If the seizure occurs while the patient is in water
- If the patient has any other health condition: diabetes, heart conditions or the patient is pregnant
- If the patient injures themselves during the seizure



The Game Changing Potential of XEN1101 in Focal Epilepsy Management

- *Shania Nandi (1st year BPharm)*

Focal epilepsy is a neurological condition that causes recurring seizures in one hemisphere of the brain.

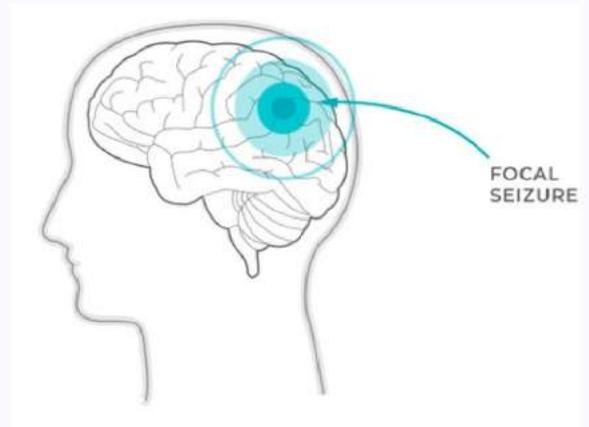
If the seizure intensifies, the electrical impulses may spread from one brain region to another and eventually to the other hemisphere, causing focal to bilateral tonic-clonic seizures.

Usually, focal seizures are treated by anti-seizure medications, lifestyle modifications, and invasive surgeries. However, there is always a need for new seizure medications that reduce adverse side effects and improve patients' quality of life.

To quote Dr. Jacqueline A. French, "Many patients today are living with the debilitating impacts of focal seizures, even while taking multiple anti-seizure medications, so there is a substantial need for new, efficacious, and well-tolerated therapies."

Xenon Pharmaceuticals Inc., a biopharmaceutical company based in Canada, has been developing XEN1101, a differentiated Kv7 potassium channel opener for treating epilepsy and other potential neurological disorders. It works to forestall seizures by boosting the outflow of potassium from nerves and preventing nerve firing.

On October 4th, 2021, Xenon announced positive results from the Phase 2b clinical trial of XEN1101. A randomized, double-blind, placebo-controlled, multicentre study was conducted to test the efficacy and safety of XEN1101 administered as a once-daily adjunctive treatment in adult patients with focal epilepsy. The study included 325 men and women with epilepsy. Some of the patients were still on background anti-seizure medication throughout the study, and others had tried and stopped an average of 6 medications that failed to treat their seizures before entering the study. The patients were randomly given an oral capsule of variable dose or an inert placebo tablet similar to the drug.



SOURCE: xenon-pharma.com

Patients who added XEN1101 to their current anti-seizure treatment saw a drop of 33-53% in monthly seizures, and those who were given a placebo had an average 18% drop. Also, there were no adverse side effects such as heart problems, skin or eye discoloration, or allergic reactions, which had been seen in other potassium channel openers to treat seizures.

The drug was well tolerated by most patients, who only reported seeing side effects similar to other anti-seizure medications and agreed to continue the regimen. Another benefit of the drug was that it takes more than a week to break down, so the drug levels remain constant in the brain. This prevents dramatic spikes and dips, which may cause adverse side effects.

"These promising results offer hope for those who have struggled for decades to control their symptoms," says Dr. French.

On June 21st, 2022, Xenon announced an end-of-Phase 2 meeting with the USFDA, followed by approval for a Phase 3 clinical trial to be initiated in the second half of 2022. Xenon will also explore the role of this drug in the treatment of primary generalized tonic-clonic seizures and major depressive disorder. Phase 3 trials are ongoing, and patient enrolments will likely be finished in the second half of 2024.

So far, the results have been promising and have raised hopes among epilepsy patients. The drug will certainly pave the way for the future of epilepsy care and treatment, sparking a revolution in the utilization of antiepileptic drugs being used in wayward therapeutic regimens.

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1

A statement about the usage of the new drug launched by Eli Lilly, Tirzepatide for cosmetic weight reduction was released

The company advised the users of their new drug in a public notice, where they made it clear that their product was designed to treat fatal conditions where obesity was a serious health complication. The drug should be avoided for cosmetic purposes. This was done in light of recent events in pop culture like the use of semaglutide by Kim Kardashian to fit into Marilyn Monroe's dress. This is seen as a misuse of the medicine and it would have lasting impressions on the minds of younger children.



2



Bioelectric medications- what is it

This technology involves using devices that can stimulate or excite specific nerves for therapeutic benefit. This is a type of technology that has been used to treat conditions from diabetes, Alzheimer's, and even Parkinson's. One of the most recent examples of this device is a device that helps to slow down nerve degeneration as well. The technology

INSISIC

4

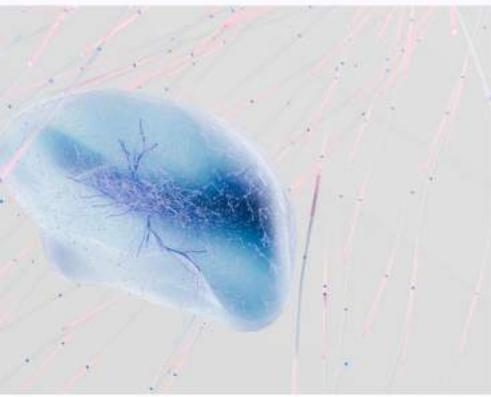
Bidding adieu to antibiotics: Introducing polymers that can kill bacteria



Michaudel Laboratory in collaboration with Texas A&M University has succeeded in synthesizing a new polymer by designing a positively charged molecule that can be stitched many times to create a larger molecule consisting of the same charged design, using AquaMet as a key catalyst. It has shown promising results on testing against E. coli and Methicillin-resistant Staphylococcus aureus (MRSA). The next step is to evaluate the polymer selectivity towards bacterial cell and human cell before progressing to in vivo assays, and also evaluate toxicity against human cells.



5



and why we should know?



ces that are implanted into the brain so that they ves and their pathways. This is done to gain some neuromodulation where many common diseases, n asthma can be treated to an extent. An example o treat trauma-induced brain disorders that cause y is called DBS or Deep Brain Stimulation.

The beginning of the end: Meftal makers issues alert against Meftal use.

An alert issued by Indian Pharmacopeia Commission (IPC) against mefenamic acid use following preliminary analysis from Pharmacovigilance Programme of India (PvPI) database which revealed the possibility of a rare adverse drug reactions with eosinophilia and systemic symptom (DRESS) syndrome. Following this, Blue Cross released a statement advising doctors and patients to monitor possibility of adverse effects to drug. This poses a significant blow as the drug boasts a booming worldwide sale spanning more than four decades and benefitting many patients over the years.



3

GHITS



Breaking Bacteria: New Antibiotic Developed against Drug Resistant CRAB

A team of researchers from Roche Innovation Center Basel, Switzerland and Harvard University have developed a class of antibiotic against the extremely drug resistant bacterium, Carbapenem-resistant Acinetobacter baumannii (CRAB). The prototype antibiotic, zosurabalpin, was shown to be effective in both laboratory and mouse models. CRAB contains lipopolysaccharide (LPS) in its outer membrane due to which it shows such high resistance to multiple antibiotics. The new drug shows a capacity to bypass the existing resistance mechanisms and show its efficacy.



6

One Shot at a Time: Oxford Commences First Human Trials for Nipah Vaccine

The Oxford vaccine group at Oxford University, UK have launched the first set of human trials for the ChAdOx1 NipahB vaccine, which is meant for the prevention of the deadly Nipah virus. The trials are set to utilise 51 healthy individuals from ages 18 to 55 and it utilises the ChAdOx1 platform that was used for the Covid-19 vaccine. Nipah virus is a deadly disease prevalent in most Asian countries like Malaysia, Singapore and India. Despite the first outbreak being around 25 years ago, there are yet no approved preventative vaccines or treatments. This trial marks the beginning of a new era in the fight against Nipah.

PharmaViz

On the occasion of the Diamond Jubilee Celebrations of Manipal College of Pharmaceutical Sciences (MCOPS), Pharmacy Literacy Club (PLC), Centre for Public Health Pharmacy, Department of Pharmacy Practice, MCOPS in association with Community Development Committee, MCOPS organized PharmaViz- passionate debates, competitive quizzing, erudite presentations in a colourful array spread across two days, 17th – 18th December 2023.



17th December 2023, a guest talks by a pharma industry expert on “SkillCraft: Navigating Interviews, Cracking Questions, and Building the Future You.” Followed by a National level online debate on NMC’s new regulations regarding the usage of generics in prescriptions. And Graphical online E-poster Presentation on the topic, “Emerging Innovations and Technologies in Pharma research”. 18th December 2023: Quiz on pharmacotherapy, pharmacology, and clinical practice. The events also include a blood donation camp and community pharmacy visits as a part of Pharmacists’ Day-out activities to educate rational use of antibiotics.

Ananya's Blood Donation Adventure

The bell rings, and students flock outside their classes, ready to go home. Two friends, Ananya and Sneha, are also exiting their class when Sneha points at the bulletin board, where she spots a sign and exclaims, "Ananya! Look, a blood donation drive is happening at our college tomorrow."

Ananya, looking oddly at her excited friend, inquires, "Yes, and why is that such exciting news, Sneha? You're a student of pharmacy. Don't you know what a noble thing it is to be able to donate blood? It might even help save someone's life!", Sneha says, "You'll donate with me right? We can go together". "I don't know, maybe later." Ananya looks away, embarrassed. "Ananya, I know for a fact you are not busy tomorrow; we're roommates. Wait a minute.... are you scared?" Sneha giggles as Ananya rolls her eyes and tries to slink away. "So what? Needles are scary, you know, and you never know; what if I get a disease from an infected needle, or what if they don't prick me correctly and my arm gets paralyzed? See, there are many perfectly reasonable explanations for my fear", Ananya replies. Sneha looks at her friend in annoyance, "Come on, even if you're unsure and don't believe me, how about we go tomorrow and find out from the volunteers at the drive?" "Hmmm, ok I guess" Ananya replies, still apprehensive at the possibility of having a needle stuck in her arm.

The next day, the two friends reach the drive, and they see a truck with some volunteers bustling around between a few donors lying on beds where their blood is being drawn. They also see a sign with a refrigerator where all the blood is being collected in bags and labeled with all the necessary details like blood group, time of collection, expiry date, batch number, etc. "Oh my god! That's so much blood", Ananya says, covering her eyes. "Yes, and that same blood is inside of you, so why are you so scared?" says one of the volunteers, smiling as she walks towards the new arrivals. "Hello, are you guys here to donate?" she asks. "As a matter of fact, yes, we are, right Ananya?" Sneha asks, looking towards her frightened friend with a grin, "Actually, my friend here wanted to know more about the process and whether she is eligible to donate."

“Well, I can help you with that. Come with me”, the volunteer girl says. She pointed in the direction of an area where a queue of donors was present and explained, “See, in this form, you need to fill in details such as whether or not you are above the age of 18, if you’ve had any tattoos in the past year, whether you weigh more than 50kgs, even patients who have been on antibiotics in the past 3 years are not eligible for donation.” Next, you will have to come to this area where qualified medical personnel will conduct a blood test to determine your blood group and the possibility of HIV or any other infection”.

“Patients who have diseases like cancer or hepatitis won’t be eligible either, right?” added Sneha, “You’re 100% right, and do you know why?”, asks the girl, “Well we learned that HIV and hepatitis are infectious diseases that can be transmitted by blood.

Also, a tattoo would increase the risk of an infection being transmitted via needle”, answered Sneha, “See! Needles do cause infections; that’s why this is a bad idea”, Ananya exclaimed.

“Oh, you don’t have to worry about that. Our nurses are specially trained, and the needles we use are sterile, but your concern is valid, so you did the right thing by asking.

You should always ensure that the blood donation drive you are donating to is reliable. After the blood is collected, it is separated into its components and further tested for infections. Anticoagulants are added to ensure the blood doesn’t clot.

Now that you are well assured of your safety and know this is for a good cause, would you be willing to donate, Ananya?

Don’t worry, they’ll only take around 470ml, and you know what? They give cookies and juice to all those who participate.” Ananya's eyes widened.

“They do?” she asked excitedly.

Sneha laughs, rolling her eyes, “All this effort and the cookies convinced her”.



Hall of Fame

Best Oral Paper Presentation at NAMSCON 2023

Mr. Levin Thomas, Research Scholaro has been awarded the best Oral Paper Presentation Entitled "A Systematic Review of NAT2-Genotype/SNP based Isoniazid Population Pharmacokinetics Models & Original Research Insights into Genetics Characterization of NAT2 among TB Patients" in National Health Conference & Medical Expo, at Ramaiah Medical College, Bengaluru, on 6th to 8th October, 2023.

Second prize in Poster presentation

Dr. Sreedharan, Associate Professor has secured Second prize in Poster presentation entitled "Community Pharmacy Health Screening Services: Pharmacist Knowledge, Attitudes, Practice Barriers" in the 14th Manipal Cardiology Update, organized by KMC Manipal, in association with IAE Karnataka on 03 December, 2023.

ICMR grant for Dr. Sreedharan N



Dr. Sreedharan Nair, Associate Professor received ICMR grant for the study entitled 'Impact of Educational Interventions on Pesticide Practice Among Farmers of Karnataka: A Multicentric Randomized Controlled Trial' (Grant Amount: ₹ 5,58,615).

NSS Day Celebration

The NSS (National Service Scheme) Day Celebration 2023 at Manipal College of Pharmaceutical Sciences was a remarkable event held on September 23, 2023, to commemorate the foundation of NSS and celebrate the spirit of volunteerism. Dr. Balakrishna Maddodi, NSS Program Officer from MIT, was the keynote speaker at the celebration. He highlighted the significance of NSS member activities and programs, inspiring us to contribute to community development. The event included the inauguration of two vital initiatives, E-Waste Management and Safe Disposal of Expired Medicines, aligning with Swachh Bharat Abhiyan. Dr. Krishnamurthy Bhat, Vice Principal, honored our esteemed guest. Teaching and non-teaching staff and 61 dedicated student volunteers participated actively, underscoring our commitment to social responsibility and environmental sustainability.



Guest Talk

Alumni Guest Talk by Sajjad Fazal, Public Health Specialist, Canada
Dr. Sajjad Fazal, Program Manager, Ontario Health, Toronto, Canada, delivered a guest talk on “Public Health Opportunities for Pharmacists in Canada” on the 22nd November 2023 (Wednesday) from 11:30 am-12:30 pm at Seminar Room, Dept. of Pharmacy Practice, 4th Floor, MCODS, via New OPD Block, Kasturba Hospital, Manipal. He is an alumnus of MCOPS and studied PharmD from 2009 to 2015. During the talk, Dr. Fazal said, “Pharmacy graduates can play a tremendous role in public health, especially if they hold a degree in public health.”

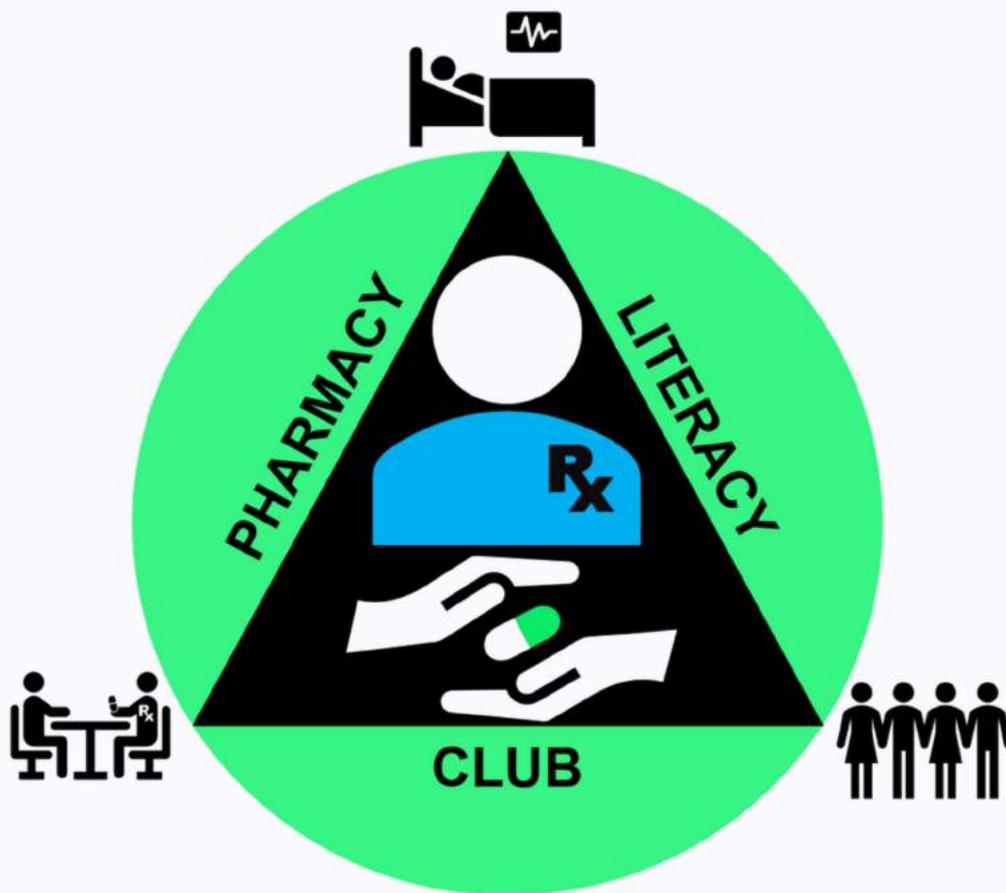
He shared his professional experience as a public health specialist and motivated students with vast opportunities for public health jobs in Canada. The event was organized by the Pharmacy Literacy Club (PLC), Centre for Public Health Pharmacy, Dept. of Pharmacy Practice, MCOPS, on the momentous occasion of the 62nd National Pharmacy Week 2023 celebration and 125th Birth Anniversary of our visionary founder Dr. T.M.A. Pai.



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UPCOMING EVENTS

- ISPOR 2024 on May 5-8, 2024 at Atlanta, GA, USA.
- 2024 ISPE Annual Meeting on August 24-28 at Berlin, Germany
- ISoP 2024 Annual Meeting on October 1-5 Montreal, Canada



Pharmacovigilance Programme of India (PvPI)

National Coordination Centre,
Indian Pharmacopoeia Commission, Ghaziabad



The Department of Pharmacy Practice, Manipal College of Pharmaceutical Sciences is an ADR Monitoring Centre (AMC) under Pharmacovigilance Programme of India (PvPI), Indian Pharmacopoeia Commission - National Coordination Centre (NCC), under Ministry of Health & Family Welfare (MoHFW), Government of India.

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