

Frontline PHARMACISTS

Newsletter

Official Publication of IPA Kerala State branch

Quarterly Publication; Email ID: frontlinepharmacists@gmail.com

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EDITORIAL



Dear Healthcare Colleagues,

Greetings to the Frontline Pharmacist Bulletin, a platform committed to information exchange and advocacy for medication safety and efficacy. As healthcare professionals, we bear the vital responsibility of delivering accurate information to colleagues and patients. The bulletin covers topics like Adverse Drug Reactions, Cancer insights, Vaccination program importance, HIV, and a glimpse of Antimicrobial Resistance in pharmacy practices. Pharmacists approach cancer by managing medications, providing patient support, dispensing, counseling, addressing side effects, and ensuring adherence. Our focus on medication safety is crucial. The Bulletin's main goal is to provide relevant information for optimizing medication use and enhancing patient safety. We hope this edition proves valuable in your professional journey, and we welcome your feedback and suggestions for future editions.

I am pleased to forward the present issue for consideration. On behalf of the IPA Kerala State branch and editorial team, I would like to extend thanks to the professionals who have contributed to the "Frontline Pharmacists". Your valuable suggestion would help us to improve the quality of this publication.

Please write to "frontlinepharmacists@gmail.com"

Best regards
Dr. Kiron SS

INDEX

Page No

| | | |
|---|--|-----------|
| ADVERSE DRUG REACTION-RELATED HOSPITALISATION AMONG OLDER PATIENTS: THE PADR-EC SCORE | Dr. Nibu Parameswaran Nair, | 03 |
| CANCER THERAPY-An Overview | Dr.Siby Joseph | 05 |
| DRUGPROFILE LENACAPAVIR | Ms. Lekshmy Satheesh, Dr. Sini. S.G | 09 |
| TAPINAROF | Mr. Mohammed Fayaz, Dr. Sini. S.G | 11 |
| A Pharmacist's Reflection on Comprehensive Vaccination Training organized by FIP and IPA | G. Indu Kiran Dr. Manjula Devi. A.S | 12 |
| Role of Pharmacists in Combatting Antimicrobial Resistance | Dr Shamna M S | 14 |
| PRACTICE QUIZ | Ms Kavya S | 16 |
| IPA Kerala State Association News | | |

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ADVERSE DRUG REACTION-RELATED HOSPITALISATION AMONG OLDER PATIENTS: THE PADR-EC SCORE



Dr. Nibu Parameswaran Nair,

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The third Global Patient Safety Challenge, launched by the World Health Organisation in 2017, aimed to reduce serious preventable harm associated with medications by 50% in a five-year period¹. More than 70% of all adverse medication events are adverse drug reactions (ADRs), which make up a substantial portion of the overall burden of harm caused by medications. ADRs are “an unpleasant and unintended reaction to a medicinal product at doses normally used in humans.” ADRs impose a substantial financial and societal burden, leading to considerable morbidity, mortality, and healthcare expenditures. ADRs are more likely to happen to older people because they often have multiple comorbidities, cognitive and functional impairments, and take a lot of medications (polypharmacy). Older people who live in the community are more likely to need to be hospitalised because of an ADR. ADRs are linked to one in ten hospital admissions in people aged 65 years and older, complicate 11.5% of hospital admissions, and occur in one-third of patients within 12 months following hospital discharge. More than half of hospitalisations caused by ADRs could be avoided. Some individual risk factors for ADRs have been identified, but health professionals are not able to easily identify elderly outpatients who are at high risk of being hospitalised due to an ADR. In recent years, risk prediction models for ADRs in older patients have emerged. These models could help doctors and other health professionals make clinical and treatment decisions and make it easier to focus more resources on this high-risk group. To our knowledge, there isn't a risk

prediction tool that has been made specifically for use with older people who are at risk of hospitalisation secondary to an ADR. A tool that focuses on ADRs as a reason for hospitalisation could potentially be used to prevent patients from experiencing an ADR-related illness or death.

We developed and tested a simple, efficient, and practical prediction tool for ADR-related hospitalisation in patients aged ≥ 65 years using a prospective study. The tool is referred to as PADR-EC (Prediction of Hospitalisation due to Adverse Drug Reactions in Elderly Community Dwelling Patients), which is used to generate a score². The PADR-EC score is derived from five clinical variables: number of antihypertensives, dementia, renal failure, recent medication changes, and use of anticholinergic medications. Each of these clinical variables is assigned a score. The PADR-EC score is calculated based on the sum of the scores of individual variables. A PADR-EC score of 6 means that there is a higher chance that an elderly patient will be hospitalised because of an ADR. Patients who scored ≥ 6 will be more than three times more likely to need to go to the hospital because of an ADR than patients who scored < 6 . To the best of our knowledge, this is the first study to develop such a tool to assess ADR risk in the elderly.

The five clinical variables that make up the PADR-EC score are easy to apply and practical to assess in older patients. It may typically be challenging for primary care doctors or general practitioners to easily identify patients who are at risk of hospitalisation due to ADRs, partly due to significant time pressures in office-based

practice. The creation of this tool could help general practitioners identify older patients who are more likely to experience ADRs. The PADR-EC tool could be added to prescribing software, enabling primary care doctors to identify patients at risk of ADRs. Subject to the score, doctors may be able to take steps that mitigate the risk. Some of the preventative measures include undertaking medication reviews in high-risk patients, minimising the use of potentially inappropriate medications, ceasing high-risk medications that are least likely to be beneficial, and conducting comprehensive geriatric assessments. Other measures include deprescribing (withdrawing an inappropriate medication) and avoiding polypharmacy when drugs are no longer helpful or effective or when safer alternatives are available. It is also possible to use the PADR-EC tool before a patient is discharged from the hospital to identify older patients who are more likely to need to be readmitted for ADRs. Patients could be stratified at hospital discharge according to their risk of subsequent admission to an ADR, and appropriate medication management

services could be initiated accordingly post-discharge.

A feasibility study that looked at the risk of ADRs in older people showed that a clinical pharmacist could use the PADR-EC score with general practice patients aged 65 and older³. In this study, the general practitioners found the PADR-EC score to be helpful in making decisions. The study found that the PADR-EC score was used as a reminder to review existing medication lists, follow-up on pathology results that may impact drug treatment, and assess patients for common ADRs.

It can be concluded that the PADR-EC tool helps in identifying elderly patients who are likely to have major ADRs and is a key step towards avoiding ADR-related hospitalisations. The tool has the potential to assist healthcare practitioners in identifying elderly patients in need of additional measures to lower their risk of ADRs and subsequent hospitalisation. The PADR-EC score has the potential to be utilised as part of an intervention to reduce ADRs.

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CANCER THERAPY-An Overview



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Cancer is a common term used for all malignant tumors. The word cancer means crab, thus reflecting the true character of cancer since it sticks to the part stubbornly like a crab. It is a group of more than 100 diseases that are characterized by uncontrolled cellular growth, local tissue invasion and distant metastasis. It has a high morbidity and a very high mortality, being the second most common cause of death in the developed world. Worldwide it is estimated that about 20% of all deaths are cancer related.

Every year February 4th is considered as international awareness day about cancer. The theme for the current year is same as the previous two years-Close the care gap. As in developed countries, Cancer has high morbidity and mortality in India as well. In India around 1918 patients die everyday due to cancer. Pharmacists being an integral part of healthcare team has significant role to play from research and development wing through proper dosage design, handling, administration, educating the patients about the chemotherapy drugs and post marketing studies to ensure safe usage of the highly potent chemotherapy drugs.

Risk factors for cancer includes exposure to some chemicals-Most chemical carcinogens are mutagens and damage the genes ultimately leading to mutations. Exposure to these chemicals seem to be the chief culprits in cancer development. Sometimes infections can lead to cancer-A number of viruses have been causatively linked to certain tumors.Eg: cervical cancer and human papilloma virus, burkitt's lymphoma and epstein-barr virus. Radiation is another risk factor-There are well demonstrated links between cancer and both ionising and ultraviolet radiations ,which are known to produce

genetic damage.Eg: radiation from nuclear industry,nuclearweapons,microwaves from mobile phones etc. Cancer development can be related to Immunological factors.One important potential factor in carcinogenesis is a loss of the body's ability to identify and eliminate cells that have become neoplastic. Sometimes chronic irritation secondary to trauma seems to initiate tumours, Although there is an associated infection. eg:oral cancers. Psychosocial factors probably do not play a significant part in carcinogenesis. Although it has been claimed that people who repress emotions rather than express them are more likely to develop cancer

Principles of tumor growth-The doubling time,or time required for the tumor to double in size, is very short. Tumors are most sensitive to the effects of chemotherapy when the tumor is small and the growth fraction is high. However,As the tumor grows, the doubling time is slowed. Wide variability exists in measured doubling times for different cancers. The doubling time of most solid tumors is about 2 to 3 months. However, some tumors have doubling times of only days (e.g., aggressive lymphomas) and others have even longer doubling times (e.g., some salivary gland tumours) It takes about 10⁹ cancer cells (1-g mass, 1 cm in diameter) for a tumor to be clinically detectable. Such a tumor has undergone about 30 doublings in cell number. It only takes 10 additional doublings for this 1-g mass to reach 1 kg in size. A tumor possessing 10¹² cancer cells (1-kg mass) is considered lethal. Thus a tumor is clinically undetectable for most of its life span. As anticancer drugs should combat this rapid growth,they have greater effect on rapidly dividing cells.

Seven Warning Signs of cancer in adults

- > Change in bowel or bladder habits
- > A sore that does not heal
- > Unusual bleeding or discharge
- > Thickening or lump in breast or elsewhere
- > Indigestion or difficulty in swallowing
- > Obvious change in wart or mole
- > Nagging cough or hoarseness

Eight Warning Signs of cancer in Children

- > Continued, unexplained weight loss
- > Headaches with vomiting in the morning
- > Increased swelling or persistent pain in bones or joints
- > Lump or mass in abdomen, neck, or elsewhere
- > Development of a whitish appearance in the pupil of the eye
- > Recurrent fevers not caused by infections
- > Excessive bruising or bleeding
- > Noticeable paleness or prolonged tiredness

The extent of spread of cancers can be assessed by 3 ways- clinical examination, investigations and pathologic examination. Staging means extent of spread of tumour within the patient. Two important staging systems currently followed are TNM staging (Union international centre for cancer, geneva) and AJC staging (American joint committee staging). TNM staging (T for primary tumour, N for nodal involvement, M for distant metastasis) T0 – T4 : In situ lesion to largest and most extensive primary tumour. N0 – N3 : No nodal involvement to widespread lymph node involvement. M0 – M2 : No metastasis to disseminated haematogenous metastases.

Cancer Chemotherapy

The general mechanism of chemotherapy drugs is either kill cancerous cells by damaging DNA, interfering with DNA synthesis, or inhibiting cell division. Some chemotherapy drugs have combination of these mechanisms. Chemotherapy drugs can be schedule dependent or dose dependent. Phase specific agents-affect during a specific phase only (schedule dependent agents) Phase non-specific agents- affects during any phase of cell division (dose dependent agents)

Factors that influence response to chemotherapy

- > In clinical settings tumour cells do not always decrease predictably with each successive course of chemotherapy
- > Cell population are heterogeneous & some are resistant to chemotherapy
- > Large tumors show plateau like growth curve so fraction of cells killed with each cycle is low
- > Chemotherapy can be administered in cycles to allow normal cells to recover from the toxic effects of chemotherapy
- > During recovery period tumour starts to replicate again.
- > Successful treatment requires administration of next cycle of chemotherapy before the tumor has grown to its previous size.

Combination chemotherapy-

Combination therapy provides broader coverage against resistant cell lines within the heterogeneous tumor mass. Basic principles for selecting agents to be included in combination therapy are -Only agents with demonstrable single agent activity against the specific type of tumor should be selected, All agents should have different Mechanism of action, Agents should not have overlapping toxicities so that the severity, duration of acute & chronic toxicities are minimized. All agents in the regimen should be used in their optimal dose & schedule.

Primary/ first line / induction chemotherapy- Agents with highest known activity against the tumor, 2nd line is administered after the tumor has become refractory to primary therapy / patients cannot tolerate primary therapy. After primary chemo patients may receive additional chemo in an attempt to further eradicate residual disease & improve their chances for long term survival (consolidation / maintenance therapy. Historically, used alone in the treatment of recurrent or advanced widespread disease. Now, in localized disease, post operatively or following radiotherapy to eradicate any undetected metastatic disease, or in patients have a high or intermittent risk of recurrence.

Adjuvant chemotherapy- It should immediately follow primary therapy as tumor size is minimal. It is considered standard of care for some stages of breast, lung and colorectal cancers. Histologic and cytogenetic characteristics of the primary tumor that are associated with high risk of relapse should be considered for deciding whether patient need adjuvant therapy or not.

Neo- adjuvant chemotherapy- Given before local therapy, in order to reduce tumor size and facilitate surgical removal. It is considered when cosmetic appearance is a concern. eg., Breast cancer, Esophageal cancers etc.

High dose chemotherapy- Patients -are treated with chemotherapy and hemopoietic growth factors which release the stem cells from bone marrow into the peripheral blood. These Peripheral Blood Stem Cells (PBSC) can be harvested from circulation and stored for subsequent reinfusion into the patient as a means of hemopoietic rescue following high dose chemotherapy.

Targeted agents- Knowledge about Mechanism by which cancer cells exhibit unregulated growth & immortality & ability to invade tissues & Metastasis lead to the development of Targeted drug therapy. Monoclonal Antibodies- directed @ specific receptors associated with cancer. They block ligands from binding to their targets. Selectively target receptors / their ligands known to potentiate cancer pathways. Confines toxicity to cancer cells only. EGFR, HER2, VEGF signalling pathways can be blocked by Mabs. Bivacizumab binds to VEGF ligand & blocks signalling for angiogenesis. Rituzimab lyses B cells by recruiting immune effectors against the CD20 antigen. Transtuzumab-inhibit proliferation of human tumor cells that express HER-2 proto-oncogene.

Tyrosine Kinase Inhibitors- Tyrosine kinase activation inhibition by competing with ATP for binding to the intracellular tyrosine kinase domain-Scinitinib, Sorafinib-acts as antagonists at several locations along the signaling pathways that promote angiogenesis.

Biologic response modifiers- Drugs that boost or restore ability of immune system to fight cancer eg. Vaccine, Growth factors-Vaccines. Sipuleucel-T has recently been approved for patients with metastatic prostate cancer that is resistant to prior hormone therapy. Interferon -a recombinant cytokine. It has the following effects -Direct antiproliferative effect, Immunomodulatory effect. Differentiating effect on tumor cells. Antiangiogenic effect-Used in melanoma, Renal cell carcinoma. Interleukin-2 has Immunomodulatory action and Stimulates both B & T cell proliferation and differentiation

Administration of chemotherapy drugs- Most commonly by IV route as bolus, short infusion or continuous infusion. Some can be administered orally/IM/SC. Targeted agents either by IV / Oral. Regional/Local administration Allow high concentration at site of tumor with decreased systemic toxicity A potential disadvantage is micrometastasis at distant site may not be exposed to chemo drugs.

Dose Calculations- Chemotherapy can be dosed using flat or fixed dosing, the patient's weight [mg/kg] or the body surface area or using AUC. The most commonly used formulas are MOSTELLAR EQUATION and CALVERT FORMULA. Actual body weight is commonly used for calculating the dose in oncology. Use the patients actual body weight unless instructed otherwise. Adjust the dose if needed in patients with impaired creatinine clearance using COCKROFT GAULT EQUATION. Other treatment options for cancer includes Surgical Therapy Surgery helps in removing, debulking the cancer cells and helps in easing symptoms. Radiation Therapy high doses of radiation are used to shrink or kill the tumour cells. The radiation can cause DNA damaging that can affect the growth of cancer cells as the damage caused is far beyond repair. Stem Cell Transplant helps in replacing the lost bone marrow cells during chemotherapy or radiation therapy. Most effective in blood related cancers. Hormonal Therapy The cancers which use hormone to grow are inhibited by hormonal therapy. it either interferes with body

mechanisms of production of hormones or else the action of hormones in the body is inhibited.

Adverse responses to chemotherapy-

Myelosuppression is one of the most common toxicities. It may affect one or all cell lines, including erythrocytes, neutrophils, and platelets. Complications are anemia, neutropenia, and thrombocytopenia. Prophylactic administration of growth factors is a management option for the same. Myelosuppression can be agent-related, dosage-intensity-related, combined effect of different chemotherapy agents. Host factors, such as patient age, bone marrow reserve (leukemia), and the ability of the kidney and liver to eliminate chemo drugs. With most myelosuppressive agents, WBC and platelets begin to fall within 5-7 days. Reach a "nadir" within 7–10 days and recover within 14–26 days. Prevention of neutropenia requires a decrease in the dose of chemotherapy (which may result in the growth of tumors) and the prophylactic administration of colony stimulating factors (CSF). GI Toxicities: Nausea, vomiting, oral complications, esophagitis, mucositis, xerostomia, constipation, diarrhea, lower bowel disturbances, etc. Chemo drugs or their metabolites stimulate dopamine or serotonin receptors in GIT. CTZ or CNS acts as a vomiting center. Most patients require antiemetics before and after chemo therapy. Dermatologic toxicities include alopecia, nail changes, hyperpigmentation, foot syndrome, and dry skin. Extravasation-unintended infiltration leads to necrosis and permanent damage to the extravasated area. Immunoglobulin- E- mediated hypersensitivity reactions, e.g., Rituzimab and Transtuzumab. Other toxicities include encephalopathy, methotrexate, and peripheral neuropathy. -Vinca alkaloids Cardiomyopathy- anthracycline -induced cardiomyopathy- Doxorubicin, ActinomycinD Several chemo drugs show severe nephrotoxicity- cisplatin. Organ - specific toxicity Bleomycin - induced pulmonary fibrosis Seondary malignancy: myeloid leukemia, lymphoma, bladder cancer, potentially gonadotoxic. Spermatogenesis affected, Teratogenicity. Tumor lysis syndrome (TLS) may occur in

leukemia and lymphoma due to the spontaneous lysis of cells from treatment with chemotherapy. Intracellular products are released: uric acid, potassium, phosphate, renal failure, cardiac arrhythmia, etc. Prevented by IV hydration, alkalinizing urine, allopurinol, and febuxostat. Hypercalcemia Can occur in both hematological and solid tumor cases. Sometimes it may be a sign of malignancy due to increased osteoclastic bone resorption. Generally caused by the release of parathyroid hormone-related protein (PTHrP) by tumor cells. It can be managed by hydration with NS, calcium therapy (calcitonin, bisphosphonates), Assessment of response to chemotherapy: complete response; disappearance of all target lesions. Partial response: at least 30% decrease in the sum diameter of target tumors from baseline diameter Progressive disease: at least 20% increase in sum diameter or appearance of new lesions Stable disease is in between partial response and progressive disease. Disease-free survival: time from complete response until disease relapse or death Overall survival time from treatment until time of death. Chemotherapy drugs are classified based on their extravasation potential during administration. Vesicants cause pain, inflammation, and blistering of local skin, underlying flesh, and structures, leading to tissue death and necrosis. Vinca alkaloids, Paclitaxel, etc. Exfoliants cause inflammation and shedding of the skin but are less likely to cause tissue death. E.g., docetaxel, cisplatin, etc. Irritants: cause inflammation, irritation, or pain at the site of extravasation, but rarely cause tissue breakdown. Inflammittants: cause mild-moderate inflammation and flare in local tissues. Neutrals: inert or neutral compounds that do not cause inflammation or damage.

DRUG PROFILE

LENACAPAVIR



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Lenacapavir is the first of a new class of drugs called capsid inhibitors FDA-approved for treating HIV-1. Lenacapavir (Sunlenca®) is a long-acting capsid inhibitor of human immunodeficiency virus type 1 (HIV-1) being developed by Gilead Sciences Inc. It is available as an oral tablet and injectable solution, release formulation to allow biannual subcutaneous administration.

CLASS: HIV CAPSID INHIBITOR

Mechanism: Lenacapavir is a multistage, selective inhibitor of HIV-1 capsid function that directly binds to the interface between capsid protein (p24) subunits in hexamers. Surface plasmon resonance sensorgrams showed dose-dependent and saturable binding of lenacapavir to a cross-linked wild-type capsid hexamer with an equilibrium binding constant (KD) of 1.4 nM. Lenacapavir inhibits HIV-1 replication by interfering with multiple essential steps of the viral lifecycle, including capsid-mediated nuclear uptake of HIV-1 proviral DNA (by blocking nuclear import proteins binding to capsid), virus assembly and release (by interfering with Gag/Gag-Pol functioning, reducing production of capsid protein subunits), and capsid core formation (by disrupting the rate of capsid subunit association, leading to malformed capsids).

DOSAGE FORMS

Tablets: 300mg

Injection: 463.5 mg/1.5 mL (309 mg/mL) in single-dose vials.

Use: Lenacapavir, a human immune deficiency virus type 1 (HIV-1) capsid inhibitor, in combination with other antiretroviral(s), is indicated for the treatment of HIV-1 infection in heavily treatment-experienced adults with multidrug-resistant HIV-1 infection failing their current antiretroviral regimen due to resistance, intolerance, or safety considerations.

Pharmacokinetics: Lenacapavir is absorbed following oral administration, with peak plasma concentrations occurring approximately 4 hours after administration. Absolute bioavailability following oral administration of lenacapavir is low (approximately 6 to 10%). Lenacapavir is approximately 99.8% bound to plasma proteins. The half-life of the drug after oral administration is 10–12 days, and by subcutaneous administration, 8–12 weeks. Lenacapavir was metabolized via oxidation, N-dealkylation, hydrogenation, amide hydrolysis, glucuronidation, hexose conjugation, pentose conjugation, and glutathione conjugation, primarily via CYP3A4 and UGT1A1. Excretion is unchanged through feces.

PHARMACODYNAMICS:

Lenacapavir is an antiviral drug with an extended pharmacokinetic profile. Lenacapavir works against the HIV-1 virus by inhibiting viral replication; it interferes with a number of essential steps of the viral lifecycle, including viral uptake, assembly, and release. Single subcutaneous doses ≥ 100 mg in healthy volunteers resulted in plasma concentrations exceeding the 95% effective concentration (EC95) for ≥ 12 weeks, while doses ≥ 300 mg exceeded the EC95 for ≥ 24 weeks. In treatment-naive HIV-1-infected patients, a single subcutaneous dose of 20–450 mg resulted in a mean maximum log₁₀ transformed reduction in plasma HIV-1 RNA of 1.35–2.20 by the ninth day post-injection.

Adverse Effects:

Common adverse reactions (incidence greater than or equal to 3%, all grades) are nausea and injection site reactions. Immune reconstitution syndrome has been reported in patients treated with combination antiretroviral therapy.

CONTRAINDICATIONS:

Concomitant administration of Lenacapavir with strong CYP3A inducers is contraindicated due to decreased lenacapavir plasma concentrations, which may result in the loss of therapeutic effect and the development of resistance to Lenacapavir.

Drug interaction:

Lenacapavir is a moderate inhibitor of CYP3A. Due to the long half-life of lenacapavir following subcutaneous administration, lenacapavir may increase the exposure of drugs primarily metabolized by CYP3A initiated within 9 months after the last subcutaneous dose of lenacapavir, which may increase the potential risk of adverse reactions. Combined P-gp, UGT1A1,

and strong CYP3A inhibitors may significantly increase plasma concentrations of lenacapavir.

Warnings:

Immune reconstitution syndrome: May necessitate further evaluation and treatment. May increase exposure and the risk of adverse reactions to drugs primarily metabolized by CYP3A initiated within 9 months after the last subcutaneous dose of lenacapavir. Injection site reactions may occur, and nodules and indurations may be persistent.

Patient counseling:

Lenacapavir may interact with certain drugs; therefore, advise patients to report to their healthcare provider the use of any other prescription or non-prescription medication or herbal products. If Lenacapavir is discontinued, advise patients that Lenacapavir may remain in the body and affect certain other drugs for up to 9 months after receiving their last injection. Advise patients to inform their healthcare provider immediately of any symptoms of infection, as in some patients with advanced HIV infection (AIDS), signs and symptoms of inflammation from previous infections may occur soon after anti-HIV treatment is started. Inform patients that injection site reactions (ISRs), such as swelling, pain, erythema, nodule, induration, pruritus, extravasation, or mass, may occur. Nodules and infections at the injection site may take longer to resolve than other ISRs and may be persistent. Instruct patients when to contact their healthcare provider about these reactions. Instruct individuals with HIV-1 infection not to breastfeed because HIV-1 can be passed to the baby in breast milk.

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TAPINAROF



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Tapinarof, also known as benvitimod and sold under the brand name Vtama, is a medication used for the treatment of plaque psoriasis. The medication is applied to the skin. Besides its use in medicine, tapinarof is a naturally occurring compound found in bacterial symbionts of nematodes that has antibiotic properties. It is an aryl hydrocarbon receptor (AHR) agonist that induces antioxidant, immunomodulatory, and epidermal differentiation regulation pathways. This approval makes VTAMA® Cream the first and only FDA-approved non-steroid topical medication for adults living with plaque psoriasis. The product will be available at the beginning of June 2022.

Mechanism of Action

Tapinarof is a therapeutic aryl hydrocarbon receptor-modulating agent (TAMA) that binds to and activates the aryl hydrocarbon receptor (AhR). AhR is a ligand-dependent transcription factor that regulates gene expression in a variety of cell types, including macrophages, T-cells, antigen-presenting cells, fibroblasts, and keratinocytes. Upon binding to its ligand, AhR heterodimerizes with AhR nuclear translocator (ARNT) to form a complex with a high affinity for DNA binding. The AhR-ligand/ARNT complex can then bind to specific DNA recognition sites to transcribe AhR-responsive genes. Additionally, AhR also exerts its effect through other transcription factors, such as the Basic nuclear factor erythroid 2-related factor 2 (Nrf2), a downstream product of AhR-induced transcription that has

antioxidant properties. It is possible that the anti-inflammatory effect of tapinarof as an AhR agonist might be due to Nrf2. Although Nrf2 is a known downstream effector of AhR, not all AhR agonists activate this pathway. For instance, 2,3,7,8-tetrachlorodibenzo-p-dioxin, an AhR agonist, does not show any antioxidant activity after AhR activation. Therefore, it is hypothesized that the dual AhR/Nrf2 action of tapinarof is essential to the effect of tapinarof in treating psoriasis.

Pharmacokinetics

No accumulation was observed with repeat topical applications. Plasma concentrations of tapinarof were below the quantifiable limits (BQL) of the assay (the lower limit of quantification was 50 pg/mL) in 68% of the pharmacokinetic samples. The volume of distribution of tapinarof was estimated at 1270 to 1500 mL/kg. The human plasma protein binding of tapinarof is approximately 99% in vitro. Tapinarof is metabolized in the liver by multiple pathways, including oxidation, glucuronidation, and sulfation in vitro. CYP1A2 and CYP3A4 appear to be the major enzymes involved in the hepatic metabolism of tapinarof, while CYP2C9, CYP2C19, and CYP2D6 play a minor role.

Adverse Reactions

There are certain drug reactions that occurred during clinical trials; they are listed as Folliculitis, Nasopharyngitis, Contact Dermatitis, Headache, Pruritis, Influenza, and Less common side effects like itching, scaling,

severe redness, soreness, or swelling of the skin, unusual tiredness or weakness, shivering, sneezing, and a sore throat are caused.

Drug Interaction Studies

In Vitro Studies Cytochrome P450 (CYP) Enzymes: Tapinarof is not an inhibitor of CYP2B6, CYP2C8, CYP2C9, CYP2C19, CRP2D6, or CYP3A4/5.

Dosage Forms and Strength

Cream-1%: Each gram of VTAMA cream contains 10 mg of Tapinarofina white-to-offwhite cream.

Patient counseling information

Apply VTAMA cream once daily to psoriasis skin lesions only and avoid unaffected areas of skin. Wash hands after application unless VTAMA cream is for treatment of the hands. Advise patients that VTAMA cream is for external use only.

References:

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2. <https://www.dermavant.com/u-s-fda-approves-our-novel-topical-treatment-for-adults-with-plaque-psoriasis/>
3. <https://reference.medscape.com/drug/vtama-tapinarof-topical-4000243>

Storage and Handling

Storage and Handling: Store at 20°C to 5°C (68°F to 77°F), with excursions permitted between 15°C and 30°C (59°F and 86°F). Do not freeze; protect from exposure to excessive heat. Keep out of reach of children.

Conclusion: Tapinarof cream 1% once daily was safe, well tolerated, and durably efficacious in patients with mild to severe psoriasis for up to 1 year, with a 40.9% complete disease clearance rate, a 4-month remittive effect, and no tachyphylaxis. Tapinarof may represent a novel nonsteroidal topical therapy that addresses the limitations of current therapies.

A Pharmacist's Reflection on Comprehensive Vaccination Training organized by FIP and IPA



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A well-designed immunization training program was organized by the Indian Pharmaceutical Association (IPA) in collaboration with the International Pharmaceutical Federation (FIP)

from 4th to 7th of December 2023 at the Baptist hospital, Bangalore. The training was held in two batches and it was a great opportunity to be a member of the second batch. The program

helped pharmacists acquire the necessary knowledge and skills and increase confidence in their ability to contribute to the success of vaccination efforts. This vaccination training program was the first of its kind in India and is critical to ensuring pharmacists have sufficient knowledge to administer vaccines safely and effectively. A comprehensive curriculum, initially delivered online, provided a deep understanding of the basics of immunology and the principles of vaccination. The prevalence, transmission, and impact of various vaccine-preventable diseases and the diverse types of vaccines such as flu, HPV, MMR, DPT, Covid vaccine etc. were covered in detail in 15 modules. Adverse Events After Immunization (AEFI) guidelines and various aspects of India's National Immunization Program were also highlighted. These modules were accessible online and each module also included an online assessment. Successful completion of the online module was mandatory to participate in the in-person training. The practical training included hands-on training on vaccine administration techniques, including appropriate injection methods and site selection. Simulation exercises using arm pads allowed trainees to practice in a controlled environment. The importance of safety measures, proper hygiene, infection control and aseptic technique to prevent adverse events during vaccine administration was emphasized. Importance of patient education and counselling to ensure informed consent, monitoring patients on adverse effects after immunization were also

discussed. As a part of the training, a final assessment was carried out to evaluate the knowledge and skills acquired by pharmacists during the training. A "Train the Trainer" program was also integrated to provide trainees with the skills and knowledge necessary to effectively train others. Upon successful completion of the program, pharmacists were provided with the certification. However, supervised training by the experts in patient care settings for a longer duration may be essential to further develop competency and skill necessary to provide vaccinations. Additionally, the provision of vaccinations is subject to the regulations of the relevant health authorities in each country. Therefore, Indian regulatory authorities play an important role in defining the legal framework for vaccine administration by pharmacists in India. The FIP-IPA training program on vaccination is of great importance to equip future pharmacists as vaccinators, as it is of vital importance for a country like India that is actively aiming to improve the Universal Health Coverage across the country. The authors extend their appreciation to their institution and management for promoting professional development by encouraging and supporting their participation in the training. The authors gratefully acknowledge the FIP and IPA for imparting knowledge through the training program and this will form the basis of safe and effective vaccination practices by the pharmacists in future and ensure successful prevention of vaccine-preventable diseases.



The organizers of the IPA-FIP Vaccination Training at Baptist Hospital, Bangalore

ROLE OF PHARMACISTS IN COMBATTING ANTIMICROBIAL RESISTANCE



Dr Shamna MS

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Every Pharmacist is an expert and custodian of drugs and plays a pivotal role in combating the antimicrobial resistance. Pharmacists must be aware and are responsible to give awareness to other healthcare professionals and public about how drug resistance happens at molecular level. Every year in the US at least 2.8 million people become infected with an antimicrobial resistant infection and more than 35000 people die. Antimicrobial resistance jeopardizes advancements in the system of modern health care that we have come to rely on, such as organ transplants, joint replacements and cancer therapy. These procedures have a significant risk of infection, and patients won't be able to receive them if effective antibiotics are not available. Smart use of antibiotics is the best care that can be given to patients. The Global Antimicrobial Resistance and Use Surveillance System (GLASS), launched by the WHO on 22 October 2015 is the global collaborative initiative to standardize AMR surveillance.

Antibiotic stewardship programs: Antibiotic stewardship is the effort to find out and improve how antibiotics are prescribed by clinicians and used by patients. Improving antibiotic prescribing and use is crucial to effectively treat infections, protect patients from harms caused by unnecessary antibiotic use, and to combat antibiotic resistance. Educational resources, continuing education (CE) and training opportunities, and resources for state and local health departments on antibiotic stewardship is a good option to prevent antimicrobial resistance.

World Antimicrobial Resistance Awareness Week Celebration: WAAW is celebrated from 18-24 November every year. The theme for WAAW 2023

was "Preventing antimicrobial resistance together". Antimicrobial Resistance (AMR) is a threat to humans, animals, plants and the environment. We, the Pharmacists can participate by wearing blue during the World Antimicrobial Resistance Awareness Week (18-24 Nov); using the Go Blue virtual background on events, using social media covers, using #AntimicrobialResistance hashtag and promoting across social media expressing why you are "Going Blue".



Figure1: A part of Blue day campaign conducted IPA-SF in Govt Medical College Kottayam in connection with preventing antimicrobial resistance

Patient counselling points about antibiotics:

- > Take antibiotics ONLY if you need them.
- > Antibiotics ONLY treat certain infections caused by bacteria
- > Antibiotics DO NOT work on viruses
- > Antibiotics also ARE NOT needed for some common bacterial infections
- > Taking antibiotics when they're not needed won't help you, and their side effects can still cause harm. Your doctor can decide the best treatment for you when you're sick. Never pressure your

doctor to prescribe an antibiotic.

> Take antibiotics exactly as prescribed if you need them.

> Talk with your doctor if you develop any side effects or allergic reactions while taking an antibiotic.

> Ask your doctor or pharmacist about ways to feel better if an antibiotic isn't needed.

> Do your best to stay healthy and keep others healthy.

There are steps you can take to avoid getting yourself and others sick, including:

- Clean your hands.
- Cover your mouth and nose when coughing or sneezing.
- Stay home when you're sick.
- Avoid touching your eyes, nose, and mouth with unwashed or unhygienic hands.
- Avoid close contact with people who have upper respiratory infections.
- Get recommended vaccines

Reason for antimicrobial resistance includes overuse and misuse of antibiotics including self-medication, environmental pollutions, inappropriate veterinary use, cattle feeds and clinical misuse etc.

Conclusion:

Educating the pharmacists on the risks of antibiotic resistance and emphasis on their role in helping to reduce the prevalence of resistance is an essential issue. Pharmacists have to accept these challenges to ensure that antibiotics are used appropriately even during the self-medication. (Antimicrobial Resistance) AMR is a natural phenomenon, the development and spread of superbugs are being accelerated by the misuse of antimicrobials, rendering infections more challenging to treat effectively. The AMR is an alarming reality and a global threat, so we need immediate intervention, otherwise it could result in up to 10 million deaths a year by 2050. To effectively tackle AMR, all sectors must use antimicrobials prudently and appropriately, take preventive steps to decrease the incidence of infections and follow good practices in disposal of antimicrobial contaminated waste.

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Practice Quiz



Ms Kavya S

Assistant Professor, Dept .of Pharmacy Practice,
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Thiruvananthapuram.

CANCER, AIDS/HIV, ANTIMICROBIAL RESISTANCE & PNEUMONIA

1. Cancer of lymphocytes is called?
 - a) Sarcoma
 - b) Melanoma
 - c) Myeloma
 - d) Carcinoma
2. Which one of the following is used in the treatment of thyroid cancer?
 - a) U-238
 - b) I-131
 - c) C-14
 - d) rA- 240
3. The genes involved in the conversion of proto-oncogenes into oncogenes causing cancer?
 - a) Metastasis genes
 - b) Angiogenesis genes
 - c) Transposons
 - d) Tumour suppressor genes
4. What is the origin of cancerous cell?
 - a) Monoclonal
 - b) Polyclonal
 - c) Stem cells
 - d) Mesodermal cells
5. Which mutation causes Burkitt's lymphoma?
 - a) Point mutation
 - b) Frame shift mutation
 - c) Chromosomal translocation
 - d) None of the above

6. Which of the following is not a type of lactam antimicrobial?
- Penicillins
 - Glycopeptides
 - Cephalosporins
 - Monobactams
7. The nucleoside analogue commonly used as a reverse transcriptase inhibitor in the treatment of HIV?
- Acyclovir
 - Ribavirin
 - Adenine- arabinoside
 - Azidothymidine
8. Antimalarial drug that increases ROS level in target cells?
- Artemisinin
 - Amphotericin b
 - Praziquantel
 - Pleconaril
9. Antimicrobials which inhibit DNA gyrase?
- Polymyxin B
 - Clindamycin
 - Nalidixic acid
 - Rifampin
10. HIV attacks a certain kind of cell in the immune system. Which is it?
- Red blood cells
 - White blood cells called T cells
 - Platelets
 - Epithelial cells
11. What is the CD4 T-cell count at which AIDS is considered to have developed?
- Below 1000 cells/mm³
 - Below 500 cells/mm³
 - Below 200 cells/mm³
 - Below 50 cells/mm³
12. HIV is a -----?
- Lentivirus
 - Capri poxvirus
 - Galli virus
 - Papillomavirus
13. SIV is the abbreviation of?
- SiluridaeImmunodeficiency Virus
 - Simian Immunodeficiency Virus
 - SynodontidaeImmunodeficiency Virus
 - None of the above

14. An individual with HIV, opportunistic infections are-----?
- a) More frequent
 - b) Less frequent
 - c) Non existent
 - d) None of the above
15. The commonest organism associated with occult bacteraemia is?
- a) Streptococcus pneumoniae
 - b) Hemophilus influenzae
 - c) Staphylococcus aureus
 - d) E coli

**Please refer the answer key on page number 26*

IPA KERALA STATE - ASSOCIATION NEWS

Medication Therapy Managements (MTM) in Centralized Retail Pharmacy (Webinar)

The Hospital Pharmacy Forum organized a refresher course for the benefit of working pharmacists and pharmacist students on 1st October 2023. Dr. John Jacob of the University of Florida, USA, talked about medication therapy management (MTM) in centralized, centralized pharmacies. Dr. Jeny Samuel, Associate Professor of Pharmacy Practice, St. Joseph's College of Pharmacy, Cherthala, was the master of ceremonies and outlined the significance of the topic. Dr. Kiron S.S., Professor of Pharmacy Practice, College of Pharmaceutical Sciences, Govt. Medical College, Kannur, welcomed the gathering, and Mrs. Manju C.S., Associate Professor of Pharmacy Practice, College of Pharmaceutical Sciences, Govt. Medical College, Kozhikode, introduced the invited speaker and moderated the session.

Dr. John Jacob, MTM and Clinical Review Pharmacist, Walgreens Boots Alliances &



Director, Jacob, and Joseph Consultants gave a nice overview of the role of pharmacists in clinical review medication management in retail pharmacies. He emphasized the increased role of pharmacists in patient counseling and medication reconciliation at the discharge of patients. There was an active discussion, and the resource person interacted with the audience to clarify their doubts. E-certificates were given to all participants. Dr. Anriya Annie Tom, Associate Professor of Pharmacy Practice, Nirmala College of Pharmacy, Muvattupuzha, proposed a vote of thanks.

Nature Camp in the Thattekkad Bird Sanctuary

A nature camp was conducted for 3 days (October 27–29, 2023) in the Thattekkad Bird Sanctuary with the support of the Forest Department. There were 37 IPASF students from 7 pharmacy colleges (Lisie College of Pharmacy, Amrita School of Pharmacy, Nirmala College of Pharmacy, Muvattupuzha, Nirmala College of Health Sciences, Chalakkudy National College of Pharmacy, Kozhikode, St. James College of Pharmaceutical Sciences, Chalakkudy, and Mookambika College of Pharmaceutical Sciences and Research, Muvattupuzha) and 6 faculty members. Mr. MP George, Dr. John Joseph, and Dr. K Krishnakumar led the camp and gave necessary guidance and support for the students. All participants enjoyed the camp, a different experience very close to wildlife — away from routine life. Since students were from different colleges, they could make new friendships and be

together. The participants were given free boarding and food from the Forest Department. The wildlife wardens' were very friendly and supportive.

The note from one of the participants is testimony from the Nature Camp.

"My visit to Thattekkad Bird Sanctuary was a journey into the heart of nature, where the cacophony of urban life was replaced by the symphony of the wild. From the vibrant migratory birds that graced the sanctuary to the gentle giants that roamed its forests, every aspect of the sanctuary left an indelible mark on my soul. The dedication of the sanctuary's guides, the enchanting butterfly garden, the heartwarming work of the Wildlife Rehabilitation Center, and the enlightening lectures on migratory birds all served as a testament to the importance of preserving such natural spaces.

In the embrace of nature, I found solace, inspiration, and a profound sense of connection to the world around me. Thatteked Bird Sanctuary is not just a destination for birdwatchers and nature enthusiasts; it is a sanctuary for the soul, a place where one can leave behind the worries and stresses of everyday life and return home feeling truly rejuvenated. As I bid farewell to Thatteked, I carried with me a deeper understanding of the intricate web of life that exists in the sanctuary.

I left with a renewed commitment to protect and cherish the natural world, ensuring that sanctuaries like Thatteked continue to thrive and provide a haven for migratory birds, wildlife, and wandering souls seeking solace in nature's embrace. My heartfelt gratitude goes to the Indian Pharmaceutical Association for facilitating this enriching and transformative experience.'



Nature camp: Participants posing on a hill top – in relaxant manner



Photo session of participants with an official from the Forest Department after certificate awarding

The participants of the following three colleges bagged the cash prize for the best 3 best travelogues submitted

First Prize - Amrita School of Pharmacy (Rs 1500)

Second Prize - Nirmala College of Health Sciences (Rs 1000) T

Third Prize - Lisie College of Pharmacy (Rs 750)

National Pharmacy Week celebrations: Mar Dioscous College of Pharmacy, Thiruvananthapuram



The 62nd National Pharmacy Week Celebration was organized jointly by Mar Dioscorus College of Pharmacy Thiruvananthapuram and the IPA Kerala State Branch on November 21, 2023, at the college. The national seminar on patient safety and students' NPW competitions were organized.

Dr. Preeja G. Pillai, principal, welcomed the gathering for the inaugural session. Dr. E. Sreekumar, Director, Institute of Advanced Virology, Thiruvananthapuram, was the chief guest and inaugurated the NPW celebration. In his inaugural address, he highlighted the significance of the safety of vaccines and biologicals and the role played by healthcare professionals in medication safety. H.G Dr. Gabriel Mar Gregorios Metropolitan, Manager, MarDioscorus College of Pharmacy, graced the inaugural ceremony as the Guest of Honor. Dr. P. Jayasekhar presided over the meeting. The NPW message was delivered by Sri. SS Ventikakrishan, former drug controller of Kerala State.

The Benevolence Address was delivered

by the Very Rev. Joseph Samuel Karukayil CorEpiscopa, and Prof. Rachel Mahtew, Vice Principal, proposed a vote of thanks.

A symposium on the theme of NPW 2023, "Join Pharmacists to Ensure Patient Safety," was held. Dr. BipinGopal, Deputy Director of Health Services, Kerala State, presented the medical perspective of patient safety, and Mr. KG Anil Kumar, Director, Safty First Medical Service, Abudhabi, outlined the role of pharmacists in medication safety. Dr.Asha S. Kumar, Director of the State Institute of Medical Education and Technology, Thiruvananthapuram, presented the nursing perspective on patient safety. The students' competitions were held in the afternoon. Mr. Shisi A., Mrs. Rekha. Mrs. Elizabeth M. Abraham A., Mrs. Ansu Sarah Dr. Aravind A., Mr. Aji. Mr. Jayaraja LR and Mr. G. Vigesh Kumar monitored the conduct of the students' competitions. The winners were given cash prizes and certificates of appreciation.

National Pharmacy Week Celebration: St. James College of Pharmaceutical Science, Chalakkudy



Sri. Saneesh Kumar Joseph, MLA Chalakkudy inaugurating the valedictory ceremony on 30th November 2023

St. James College of Pharmaceutical Sciences organized NPW students' competitions on 21st November 2023 and the winners were given cash prizes and certificates. College organized a Pharma exhibition in the Municipality convention hall from 28-30th November 2023 which was attended by the public and students. There were seminars topic related to the theme of NPW.

National Pharmacy Week celebration & Certificate Awarding Ceremony of Orientation to Pharma Industry : Amrita School of Pharmacy Kochi

National Pharmacy Week is observed in the third week of November every year to recognize and acknowledge the vital role played by pharmacists in the healthcare setting. The theme of this year's celebrations was Join Pharmacists to Ensure Patient Safety. The National Pharmacy Week Celebrations 2023 of Amrita School of Pharmacy rose to a crescendo with a final day Certificate Awarding Ceremony for Orientation to Pharma Industry (OPI) 2023 and Welcoming the New Students to

the Indian Pharmaceutical Association-Student Forum (IPA-SF) Amrita Student Chapter. The program was jointly organized with the IPA Kerala State Branch on November 23, 2023.

The chief guest for the day was Sri. E.A. Subramanian, Managing Director, Kerala State Drugs and Pharmaceutical Ltd., and the guest of honor was Sri. Geo Jose, Industries Extension Officer, Department of Industries and Commerce, Government of Kerala. The other distinguished

guests included Dr. P. Jayasekhar, President, Indian Pharmaceutical Association-Kerala State Branch; Sri. Santhosh K. Mathew, Assistant Drugs Controller, Ernakulam Zone; Sri. P.K. Harikumar, Convener, Industry Forum, IPA & Former Senior Manager KSDPL, Alappuzha; Ms. Jooly Kurien, Associate Professor of Pharmaceutics, Lisie College of Pharmacy, Kochi; Mr. M.P. George, Vice President, IPA Kerala State Branch; and Dr. John Joseph, Hon. Secretary, IPA Kerala State Branch.

The program commenced with the welcome address by Dr. Sabitha M., Principal, Amrita School of Pharmacy, where she welcomed all the esteemed guests for the day and accompanied them to the dais. During her address, she also emphasized the importance of ensuring patient safety and how careful and competent a pharmacy professional should become in providing quality services to the patient.

Sri. E.A. Subramanian, Managing Director, Kerala State Drugs and Pharmaceutical Ltd., stated in his inaugural address that during the last three or four decades, the focus has been shifted from hospital pharmacy to industrial pharmacy, right from research and development, drug discovery, drug formulation, manufacturing, quality control, testing and analysis of the drug products, regulatory affairs, business development, and marketing. In the coming years, there will be more job opportunities in the pharma industry.

The presidential address was delivered by Dr. P. Jayasekhar, President, of the Indian Pharmaceutical Association-Kerala State Branch. He pointed out the pivotal role played by the Indian pharmaceutical industry in the manufacture of quality generic medicines and vaccines at an affordable cost. He also elaborated on the role of an educational institution in transforming students into competent pharmacists and responsible citizens.

Sri. P. K. Harikumar, Convener, Industry Forum, IPA, and former senior manager of KSDPL, Alappuzha, gave an overview of the orientation to the pharmaceutical industry. "In Kerala, during



earlier times, it was very difficult to get training in the pharma industry. Today, with the efforts of IPA, students are fortunate to interact with industry experts. These experts can exchange their views and pieces of advice with the new generation, which are very much accepted and appreciated by the participants," he said.

The Guest of Honor of the program was Mr. Geo Jose, Industries Extension Officer, Department of Industries and Commerce, Government of Kerala. In his address, he raised awareness about the various incentive schemes, finance, and marketing assistance offered by the government to start a new enterprise in the pharmacy sector.

The National Pharmacy Week message was delivered by Sri. Santhosh K. Mathew, Assistant Drugs Controller, Ernakulam Zone. A report on the National Pharmacy Week celebration in Kerala by IPA was presented by Dr. John Joseph, Secretary, of IPA Kerala State Branch. This was followed by certificate distribution for OPI training and the winners of several competitions held as part of National Pharmacy Week 2023. OPI commenced with a webinar series followed by one-month hands-on training. The certificate of training with credit points and the merit certificate for the five best performers were distributed.

Excellent and rewarding feedback was given by the students on the OPI training, expressing their appreciation and gratitude for the professional commitment of the IPA Kerala State Branch

for their commendable initiative. An induction of IPA-SF new members was conducted by Dr. Srieja C. Nair, Assistant Professor and faculty advisor of the IPA-SF Amrita Student Chapter, Amrita School of Pharmacy; Ms. Jooly Kurien, Associate Professor of Pharmaceutics, Lisie College of Pharmacy, Kochi; and Mr. M.P. George, Vice President, IPA Kerala State Branch.

Two skit performances on the topics “Join Pharmacists to Ensure Patient Safety” and drug abuse were performed by Pharm.D. 4th and 5th-year students of Amrita School of Pharmacy, respectively. This was followed by the vote of thanks and, later on, the induction of first-year students to IPA-SF, and a session on emotional quotients was conducted by Mr. M.P. George. During the session, the IPA-SF Amrita Chapter students who underwent the leadership training program

of the IPA Kerala State Branch took classes on Prevention of Drug Abuse and Snakebite Awareness: Discerning the Myths and Facts.

As a part of National Pharmacy Week Celebrations 2023, the third-year, fourth-year, and fifth-year Pharm. D students, interns, and M.Pharm. students displayed posters in the Atrium of Amrita Hospital, Kochi, on November 22, 2023. The topics of the poster presentations were allopathic drug interactions with other systems of medicine, infection prevention, safe practices after surgery, elderly patient care, the pharmacist in rational drug use (OTC), errors in confusing drugs (LASA), antibiotic resistance, infection control, and patient safety in using blood thinners. The skit on the topic “Join Pharmacists to Ensure Patient Safety” was also performed by the students of fourth-year Pharm.D. in the atrium.

New Horizons of Pharmaceutical industry “National Conference : National College of Pharmacy, Kozhikode “



Inaugural ceremony of the National Conference at Kozhikode

A day National conference was organized by the National College of Pharmacy jointly with IPA Kerala state branch on the topic of New Horizons of the Pharmaceutical industry

Dr. Ranjit Barshikar, CEO QbD International and United Nations Advisor Geneva, Dr. DBA Narayana CSO Ayurveda Trust & Chair EC Nutra FSSAI Bangalore, and Dr. Lakshimeesha.

Assistant General Manager, R&D Remidex Pharma Pvt Ltd Bangalore were the distinguished speakers. Dr. Sujith Varma Principal National College of Pharmacy Kozhikode welcomed the gathering. Dr.P. Jayasekhar President IPA Kerala state branch chaired the inaugural session. Dr. Ranjit Barshikar inaugurated the conference. Mr. Shaji M Varghese Assistant

Drugs Controller, Kozhikode delivered a keynote address highlighting the significance of newer advancements in the pharm industry in India. Mrs. Manjuc CS Associate Professor of Pharmacy, Govt College of Pharmaceutical

Science, Proposed vote of thanks. The induction of IPA students Froum was also made in the evening. Dr. Akash Marathakam Vice Principal coordinated the invited talks and proposed a vote of thanks in the valedictory ceremony.

National Pharmacy Week celebration, JDT Islam College of Pharmacy Kozhikode

The NPW celebration and students' competitions in the North Zone were conducted at JDT Islam College of Pharmacy, Kozhikode, on November 27, 2023. There were students and faculty from nearby colleges. Dr. Anjana John, principal of JDT Islam College of Pharmacy, gave the welcome speech in the inaugural session. Dr. HamsaThyyla, Vice President of the JDT Islam Orphanage Committee presided over the meeting. Mr. Shaji M. Varghese, Assistant Drugs Controller, was the Chief Guest and inaugurated the NPW celebration of the North Zone. Mrs. Manju CS, Associate Professor of Pharmacy, Govt. Medical College, read the NPW messages.

The Chief Guest presented the "Pharma Excellence Award 2023" in Pharmacy Practice to Mr. Ummer Koothumugham. Dr. Sumitha, principal of JDT Islam Nursing College, and Dr. Sajeevan,

principal of JDT Islam College of Physiotherapy, felicitated the occasion. Mr. Muhammad Rizwan, IPASF Representative, proposed a vote of thanks. The invited talks on patient safety were conducted thereafter. Dr. Suresh Kumar VK., medical administrator at NS Hospital Kollan, gave a nice presentation on "Building an Organizational Safety Culture." Mr. Rajesh Thalapparambah Senior Managre Pharmacy Operation Meitra Hospital Kozhikode outlined medication safety and transition of care. Prof. Ponnamma KN, Retd. Principal, Govt. Nursing College Kozhikode, gave an interesting talk on "Safety Nets in Healthcare."

The north zone students' competitions were conducted in the afternoon, and the winners were given certificates of appreciation and cash prizes.



Mr Ummer Koothumugham is being honored with Pharma Excellence Award 2023 by the Chief Guest, Mr. Shaji M Varghese



Welcome address by
Dr. Anjana John Principal,
JDT Islam College of
Pharmacy, Kozhikode

NPW Celebration and Induction of IPASF at Nirmala College of Health Science

National Pharmacy Week Celebration was organized jointly by the Nirmala College of Pharmacy, Chalakkudy, and IPA on 27th November 2023. Dr. Sutherson L Principal, Nirmala College of Health Science, welcomed the gathering. Mr MP George Vice President IPA was the Chief Guest. Dr. Asish, Scientist

at Vaidyrathinam Research Centre gave a talk on the quality control of pharmaceuticals. After the seminar, the IPASF student chapter was inaugurated by the Chief Guest who gave a talk on Emotional quotient.



Answer key for the Practice Quiz

1. C, 2. B, 3. D, 4. A, 5. C, 6. B, 7. D, 8. A, 9. C, 10. B, 11. C, 12. A, 13. B, 14. A, 15. A.

The Winners of Students' Competitions of 62 National Pharmacy Week celebration

The winners of State level and Zone level competitions were given Certificates of Appreciation and Cash prizes (Rs 3000 for First prize, Rs 2000 for Second prize and Rs 1000 for Third prize)

State level competitions

| Prize | Name | College |
|--|---|--|
| Video making Pharma Song (on the theme) | | |
| I II III | Ms. Sruthy Premalal Ms. Feba George Ms. Sauparnika Soman | St James CPS, Chalakkudy Amrita School of Pharmacy Govt. CPS Kannur |
| Video making Role Play on Patient Safety | | |
| I II II | Ms. Priyanka Nair & Ms. Gopika Chandramohan Ms. Amrutha Ann Joseph & Ms. Sheba Els Sam Ms. Sandra Rose Mathew & Ms. Ms.Risana VU | Amrita School of Pharmacy, Kochi St Joseph CP, Cherthala Govt. CPS, Kannur |

Zone Level Competitions

Central zone (21/11/2023)

| Prize | Name | College |
|-------------------------------------|--|--|
| Elocution competition | | |
| 1st Prize 2nd Prize 3rd Prize | Ms. Milin Biju Kochattu Ms. Veneza Maria Martin Ms. Blessy Babu | St. James CPS, Chalakudy Amrita School of Pharmacy, Kochi Nirmala College of HS, Chalakudy |
| Poster making competition | | |
| 1st Prize 2nd Prize 3rd Prize | Ms. Manisha Benny & Aleena Wilson Ms. S. Adhithiya & Gayathri Rama Varma Ms. Sneha Mole B & Shilpa C | St. James CPS, Chalakudy Amrita School of Pharmacy, Kochi Mookambika CPSR, Muvattupuzha |
| Quiz competitions | | |
| 1st Prize 2nd Prize 3rd Prize | Ms. Amina T E & Ashly Jojo Ms. Mohammed Riyas M & Rajalakshmi.S Ms. Aiqa Saleem & Indhulekha D | Lisie College of Pharmacy, Ernakulam Amrita School of Pharmacy, Kochi Amrita School of Pharmacy, Kochi |

South Zone (21/11/2023)

| Prize | Name | College |
|-------------------------------------|--|---|
| Elocution Competitions | | |
| 1st Prize: 2nd Prize | Athira B Raj Mahima Krishnan | Mar Dioscorus College of Pharmacy Mar Dioscorus College of Pharmacy |
| Poster making competitions | | |
| 1st Prize 2nd Prize 3rd Prize | Fathima Jabbar & Aswin I J Mahima Krishnan & Devika M Amritha & Aswani B S | Sreekrishna College of Pharmacy Mar Dioscorus College of Pharmacy Sreekrishna College of Pharmacy |
| Quiz competitions | | |
| 1st Prize 2nd Prize 3rd Prize | Adharsh MS & Prasara Prathap Akhila M & Vignesh Mahadevan Harikrishnan V Nair & Gauthem K Pillai | CPS, Govt. Medical College CPS, Govt. Medical College Ezhuthachan College of Pharmacy |

North Zone (27/11/2023)

| Prize | Name | College |
|-------------------------------------|---|--|
| Elocution | | |
| 1st Prize 2nd Prize 3rd Prize | HibaThehsin Sana Jabin.K Riya Safar L Umadevi.S | Moulana College Of Pharmacy DevakiAmma College of Pharmacy National College Of Pharmacy & JDT Islam College of Pharmacy |
| Poster Making | | |
| 1st Prize 2nd Prize 3rd Prize | Sruthi Suresh & Sona Baiju Anakha.V & Alna Joy Nalina S Kaimal & Neelima Anil | National College of Pharmacy National College of Pharmacy National College of Pharmacy |
| Quiz | | |
| 1st Prize 2nd Prize 3rd Prize | Muhammed Ajmal V C & RifaSherin Shadiya.A & Shahana Shamsy.T.K Fith A Thesni & Harikrishnan | JDT Islam College of Pharmacy Moulana College of Pharmacy JDT Islam College of Pharmacy |

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