Vol.2- Issue. 02, April - June 2023

# Frontline PHARMACISTS

## Newsletter

## Official Publication of IPA Kerala State branch

Quarterly Publication; Email ID: frontlinepharmacists@gmail.com



## EDITORIAL

Dear Healthcare Colleagues,

Thank you for sharing the information about the Frontline Pharmacists , the Newsletter. Bulletin. It's great to see a publication dedicated to medication safety and efficacy, as well as keeping pharmacists up to date with the latest developments in pharmacy practice.

As pharmacists, we have a vital responsibility in patient care, and ensuring accurate and evidence based -informations are provided to the healthcare processionals and patients. This edition aims to keep you informed about the latest advancements in blood donation, cigarette smoking, hypertension, and Parkinsonism diseases.The role of a hematology pharmacist is focused on providing specialized pharmaceutical care to patients with hematological disorders, which involve disorders of the blood and blood-forming organs. The role of a hematology pharmacist encompasses medication management, drug information, therapeutic monitoring, adverse event management, interdisciplinary collaboration, and involvement in research. By leveraging their specialized knowledge, hematology pharmacists contribute significantly to optimizing patient care in the field of hematology. The role of a pharmacist in addressing cigarette smoking involves various aspects of patient care, education, and support in smoking cessation. By actively engaging with patients, providing education, offering personalized counselling, pharmacists can contribute significantly to helping individuals quit smoking and improve their overall health outcomes;. Pharmacists' expertise in medication management contributes to optimizing treatment outcomes and improving patients' quality of life. Additionally, it offers practical guidance to assist you in maximizing medication effectiveness and safety.

I appreciate the efforts of the IPA Kerala State branch and the editorial team in providing important information to the pharmacy community. Continuous education and dissemination of knowledge are crucial for optimizing medication use and ensuring patient safety. Your valuable suggestion would help us to improve the quality of this publication.

Please write to "frontlinepharmacists@gmail.com

Best regards
Dr. Kiron SS

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## Invited Article:

# Hospital Pharmacy: An Important Aspect

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The hospital pharmacy is the services provided by hospital pharmacists for patient care in hospital ,now it is not limited to mere dispensing of drugs at counter in a hospital but due to advancement of pharmacy education and pharmaceutical technology the Hospital Pharmacy is developed as one of the department of hospital covering distribution (dispensing-indoor & outdoor), procurement and inventory control of drugs, medical devices& surgical items, manufacture of drugs, quality assurance of drugs, pharmacovigilance, drug information center, central sterilization, nuclear pharmacy, clinical Pharmacy etc. under the supervision of legally qualified & competent pharmacist. Time to time it has been endorsed by several committees constituted by central Governments,State Governments and various agencies too i.e. Hathi Committee 1975, National Human Rights Commission1999, MCI requirement for Hospital Pharmacy in teaching Hospital and PCI Notifications for DIC and Clinical Pharmacist in hospital and various other committees. Thedepartment of hospital pharmacy covers following sections:

1. Drug Procurement
2. Drug Store Inventory Management,
3. Indoor Dispensing & Outdoor dispensing
4. Manufacture of few sterile and non sterile Medicines
5. Quality Assurance of Medicines
6. Patient Counselling.
7. Drug Information Centre
8. Pharmacovigilance
9. Nuclear Pharmacy
10. Central Sterilization
11. Clinical Pharmacy

There are several benefits on setting up of above all sections under Hospital Pharmacy department in a hospital, some of them are stated below:

- Selection of proper medicines and its proper procurement in hospital
- Rational use of medicines
- Proper Inventory Management of drugs and Medical Devices
- Continuous upgradation of knowledge of health personnel in hospital about medicines
- Patients' safety towards use of drugs
- Better efficacy and economic aspects of therapy to patients
- Patient Counseling by Pharmacists on medicines aspects and prevention of diseases
- Minimization of medication error
- Less hospitalization and short duration of stay of patient in hospital
- Ensuring uniform supply of quality drugsandmedical devices in hospital(preventing zero inventory and crisis)
- Manufacture, testing and supply of quality drugs at the hour of crisis, emergency, pandemic, calamityor anyshortage conditions.
- Reduction in the expenses of the cost of health care with better pharmacy services in the interest of mankind.

Accordingly in hospital the Pharmacists are being appointed at various posts for providing above pharmacy services. In many hospital, Pharmacist, Pharmacy Officers, Chief Pharmacists, Dy. Director (Pharmacy) / Superintendent (Pharmacy) posts are offered considering job responsibility and qualifications i.e.D.Pharm, B.Pharm., M.Pharm., Pharma.D., and Ph.D.(Pharmacy)

Further for better pharmacy services, patient care and better medication management by pharmacists, Pharmacy Practices Regulation 2015 has been notified. Hence pharmacists have to comply the provisions of PPR, 2015- one of the most important part of it is Patient Counselling.

The pharmacists are required to do patient counselling related services as mentioned below.

- Drug, dose and duration of drugs
- Method of administration and Dose preparation if any
- Drug with drug or with food, interactions
- Immunization Schedule
- Prevention of Medication error at home
- Storage of medicines and to prevent accidental poisoning of children by medicines at home
- Prevention of diseases and patient's care in home to get proper therapeutic outcomes of medication and care mainly during TB, Malaria, dehydration, diabetic , Blood Pressure, diaheria etc.

Now a days Pharm.D. and M.Pharm. (Clinical Pharmacy) degree holders are available for providing better clinical pharmacy services in hospital. In 2020 Pharmacy Council of India has also notified for appointment of 'Drug Information Pharmacist' and 'clinical pharmacists' by starting 'Drug Information Centre. and 'Clinical Pharmacy section' in each hospital for better healthcare of patients.

It is remarkable to note that Hathi Committee in 1975 constituted by Government of India on drug policy has recommended to set up full-fledged hospital pharmacy under a M.Pharm degree holder in big hospital and B.Pharm. in small hospital having similar status of departmental head as of other dept head in that hospital to provide better pharmacy services to patients in hospital. In 1999 the NHRC has also endorsed it and recommended similar provisions for better healthcare of patient in hospital and for masses. For providing the above services the pharmacists must keep abreast with latest development, hence they should read all latest pharmacy journals, National Formulary of India, latest government notifications, books related to Good Pharmacy Practices in Hospital Pharmacy and pharmacy practices.

In view of the above, it is concluded that a full fledged hospital pharmacy should be set up in each hospital for better patient care and medication safety .

In nutshell it will provide pharmaceutical care for the patients which quality and cost effective medicines.

# World Health Days

## April 11 - World Parkinson's disease Day

### Parkinson 's disease: Aetiology, Symptoms and Management

**Dr. MP Narmadha**
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Parkinson's disease is a progressive disorder that is caused by degeneration of nerve cells in the part of the brain called the substantia nigra, which controls movement. These nerve cells die or become impaired, losing the ability to produce an important chemical called dopamine. Studies have shown that symptoms of Parkinson's develop in patients with an 80 percent or greater loss of dopamine-producing cells in the substantia nigra. Normally, dopamine operates in a delicate balance with other neurotransmitters to help coordinate the millions of nerve and muscle cells involved in movement. Without enough dopamine, this balance is disrupted, resulting in tremor (trembling in the hands, arms, legs and jaw); rigidity (stiffness of the limbs); slowness of movement; and impaired balance and coordination – the hallmark symptoms of Parkinson's.

Parkinson's disease (PD) is an age-related neurodegenerative disorder that affects approximately 1 million persons in the United States. It is characterized by resting tremor, rigidity, bradykinesia or slowness, gait disturbance, and postural instability. Parkinson's disease is the result of the loss of a number of neurotransmitters, most notably dopamine. Symptoms worsen over time as more and more of the cells affected by the disease are lost. The course of the disease is highly variable, with some patients exhibiting very few symptoms as they age and others whose symptoms progress rapidly.

#### The Role of Dopamine

Dopamine is secreted into the synapse from membrane storage vesicles in the presynaptic membrane. It crosses the synapse and binds to the postsynaptic membrane, where it activates dopamine receptors. Unused dopamine remaining in the synapse is absorbed back into the presynaptic cell; once back in the presynaptic cell, the excess dopamine is repackaged into storage vesicles and released once more into the synapse.

Within the synapse, as dopamine travels from one cell to another, it can be broken down and rendered inactive by two enzymes, MAO (monoamine oxidase) and COMT (catechol-O-methyl transferase). One therapeutic strategy introduces a MAO inhibitor into the synapse, which interrupts the action of the MAO enzyme and prevents the breakdown of dopamine. This allows more dopamine to remain in the synapse and increases the likelihood that it will bind to the postsynaptic membrane. As less and less dopamine is produced by the neurons affected by Parkinson's disease, far less dopamine is available to bind to the dopamine receptors on the post-synaptic membrane.

Lewy Bodies and Alpha-Synuclein: Lewy bodies are abnormal aggregates and inclusions of

protein that develop inside nerve cells in people with Parkinson's disease. The aggregations usually consist of insoluble fibrillary aggregates containing misfolded proteins. A large number of molecules have been identified in Lewy bodies but a protein called alpha-synuclein is the main component.

### Common early complaints:

- Resting tremor, writing smaller; harder to do buttons, slowness, "weakness", limb not working well, Stiff or achy limb, Stoop, shuffle-walk, "dragging" leg(s), Trouble getting out of chairs or turning in bed, Low or soft voice.
- Motor symptoms, postural Instability, and gait
- Tremor, rigidity, bradykinesia, and dyskinesia
- One of the first visible motor symptoms to emerge in PD is resting tremor of a limb that is supported and at rest. Tremor typically begins on one side of the body
- Rigidity is another common visible motor symptom associated with PD. It is a type of increased muscle tone generally defined as an increased resistance to passive movement of a joint more prominent in the flexor muscles of the trunk and limbs, causing a characteristic stooped posture..
- Bradykinesia, It is defined as slowed voluntary movement, rigidity also affects automatic movements such as arm and leg swing during gait.
- Among the major complications in PD is the presence of dyskinesia. Dyskinesias consist of abnormal movements (e.g., movement of the head, neck, limbs) that are debilitating, physically tiring, and embarrassing.
- Balance, Orientation, and Postural Control
- Poor balance and unstable posture are commonly observed motor symptoms in those with PD
- Gait Impairment
- As the disease progresses, people with PD typically exhibit shuffling gait with a forward-stooped posture and asymmetrical arm swing (festinating gait).
- Neuropsychiatric symptoms: Depression, anxiety, apathy, hallucinations, delusions, illusions, delirium (may be drug induced), cognitive impairment (dementia, MCI)
- Sleep disorders: REM sleep behaviour disorder, excessive daytime somnolence, narcolepsy type "sleep attack", Restless legs syndrome, periodic leg movements, insomnia,
- Fatigue : central fatigue, peripheral fatigue
- Sensory symptoms: pain, olfactory disturbance, Hyposmia (reduced ability to smell and detect odour), Functional anosmia, Visual disturbance
- Autonomic dysfunction: Bladder dysfunction (urgency, frequency, nocturia), Sexual dysfunction, orthostatic hypotension
- Gastrointestinal symptoms: Dribbling of saliva, dysphagia, agueusia (loss of taste), constipation, nausea, vomiting

### Medical Treatment

Medications work by stimulating the remaining cells in the substantia nigra to produce more dopamine (levodopa medications) or by inhibiting some of the acetylcholine that is produced (anticholinergic medications), therefore restoring the balance between the chemicals in the brain.

### Levodopa:

Levodopa works by crossing the blood-brain barrier, the elaborate meshwork of fine blood vessels and cells that filter blood reaching the brain, where it is converted into dopamine. For most patients, levodopa reduces the symptoms of slowness, stiffness and tremor. It is especially effective for patients that have a loss of spontaneous movement and muscle rigidity.

Levodopa is available as immediate release formula or a long-acting or "controlled-release" tablet. Controlled release may provide a longer duration of action by increasing the time it takes for the gastrointestinal tract to absorb the medication.

Side effects may include nausea, vomiting, dry mouth and dizziness. Dyskinesias (abnormal movements) may occur as the dose is increased. Carbidopa/ levodopa dosing

• Commonest preparation is regular 25/100mg.
• Typical daily l-dopa dose range: 300mg to 1500mg

### Dopamine Agonists:

• Bromocriptine, pergolide, pramipexole and ropinirole are medications that mimic the role of chemical messengers in the brain, causing the neurons to react as they would to dopamine. They can be prescribed alone or with levodopa and may be used in the early stages of the disease or administered to lengthen the duration of effectiveness of levodopa. Side effects may include drowsiness, nausea, vomiting, dry mouth, dizziness and feeling faint upon standing, they usually resolve over several days. In some patients, dopamine agonists may cause confusion, hallucinations or psychosis.

### COMT Inhibitors

Entacapone and tolcapone are medications that are used to treat fluctuations in response to levodopa. COMT is an enzyme that metabolizes levodopa in the bloodstream. By blocking COMT, more levodopa can penetrate the brain and, in doing so, increase the effectiveness of treatment. Tolcapone is indicated only for patients whose symptoms are not adequately controlled by other medications, because of potentially serious toxic effects on the liver. Patients taking tolcapone must have their blood drawn periodically to monitor liver function.

### Selegiline

This medication slows down the activity of the enzyme monoamine oxidase B (MAO-B), , delaying the breakdown of naturally occurring dopamine and dopamine formed from levodopa. When taken in conjunction with levodopa, selegiline may enhance and prolong the effectiveness of levodopa.

Side effects may include heartburn, nausea, dry mouth and dizziness. Confusion, nightmares, hallucinations and headache occur less often and should be reported to the doctor.

### Anticholinergic medications:

Trihexyphenidyl, benztropine mesylate, biperiden hydrochloride and procyclidine work by blocking acetylcholine, a chemical in the brain whose effects become more pronounced when dopamine levels drop. These medications are most useful in the treatment of tremor and muscle rigidity, as well as in reducing medication-induced parkinsonism. They are generally not recommended for extended use in older patients because of complications and serious side effects.

Side effects may include dry mouth, blurred vision, sedation, delirium, hallucinations, constipation and urinary retention. Confusion and hallucinations may also occur.

### Amantadine

This is an antiviral medication that also helps reduce symptoms of Parkinson's (unrelated to its antiviral components) and is often used in the early stages of the disease. It is sometimes used with an anticholinergic medication or levodopa. It may be effective in treating the jerky motions associated with Parkinson's.

### Counselling points:

The lifestyle changes those make to ease Parkinson's symptoms are:
Exercise: It helps improve muscle strength, balance, coordination, flexibility, and tremor. Eat a healthy, balanced diet: This is not only good for your general health but also helps in some of the non-movement related symptoms of Parkinson's, such as constipation. Preventing falls and maintaining balance, Improve the quality of your sleep.

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# May 17 - World Hypertension Day

## Role of Pharmacist in the Management of Hypertension

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Hypertension is a major cause of cardiovascular disease and deaths worldwide especially in low- and middle-income countries including India. A common definition of hypertension is based on an average systolic BP (SBP) ≥140 mmHg, diastolic BP (DBP) ≥90 mmHg, or self-reported use of antihypertensive medication. Using this definition, it has been estimated that ≈1.4 billion adults have hypertension, worldwide. Despite the availability of safe, well-tolerated, and cost-effective blood pressure (BP)-lowering therapies, <14% of adults with hypertension have BP controlled to a systolic/diastolic BP <140/90 mmHg.

According to a study published in British medical journal -Prevalence of risk factors of non-communicable diseases in Kerala, India: results of a cross-sectional study -The overall prevalence of raised BP was 30.4% Raised BP was higher in men (34.6%) compared with women (28%).A study conducted in young adults 20-39 years old shown that among the young adults, 11.2% had hypertension and 33.3% had prehypertension (Systolic BP 120-129mmHg). Hypertension was nearly three times more prevalent among men than women.

In an attempt to reduce hypertension prevalence and improve its treatment and control, evidence-based clinical guidelines were developed. These guidelines focused on setting a holistic approach for hypertension management that encompasses screening strategies, blood pressure target goals, treatment modalities and lifestyle modifications.

However, despite these guidelines and available therapies, only 1 in 5 hypertensive adults (21%) have their blood pressure adequately controlled, with the lowest control rates observed in developing countries. These low control rates were attributed to a suboptimal prescription of therapies, lack of disease state awareness, treatment inaccessibility, treatment non-adherence, and inadequate monitoring and follow-up. Uncontrolled hypertension can cause significant complications, such as but not limited to, congestive heart failure, myocardial infarction, angina, left ventricular hypertrophy, arrhythmias, stroke, and kidney failure.

The majority of individuals who discontinued medications said they did so because their BP had returned to normal and thus did not require further treatment. However, stopping treatment is not supported by the Indian care guidelines nor international hypertension care guidelines which indicate that once initiated, the vast majority of individuals with hypertension will need to remain on daily medication for substantial lengths of time or possibly their entire lives.

Individuals may not initiate or adhere to treatment if they are not fully aware of the negative consequences of uncontrolled hypertension. Alternatively, individuals may understand the

importance of BP control, but not know that taking medications daily is the most effective way of controlling BP. So patient education focusing on holistic approach focusing on four key points are important in hypertension management namely-Regular monitoring of blood pressure, taking medications as prescribed by the physician, Dietary considerations and life style modifications.

Pharmacists being the first point of contact for health related issues in community pharmacies and last point of contact in Hospital settings can definitely take a key role to educate the patients about basics of hypertension, consequences of untreated or elevated blood pressure, holistic approach to manage hypertension highlighting importance of adherence to the medications, Due to heavy patient load physicians may not get enough time to explain all these things even if patient consult physicians periodically. It is the responsible job of pharmacists to educate the patients about hypertension and enhance adherence to the holistic approach to manage hypertension especially antihypertensive medications.

## Case scenario 1

A 60 year old male patient is suffering from Hypertension. He had a history of Myocardial infarction 2 years back.His medications include two antihypertensive Tab.Ramipril 2.5 mg ODTab.Metopralol 25mg OD. He performs regular exercise and adhere to the treatment and dietary considerations as per the advice by his Physician.His BP remains normal for the last 4 measurements of 1 month gap.Now he wants to stop the antihypertensive agents as he is regularly doing exercise and following the dietary recommendations and his BP remains normal during multiple measurements.

In this case patient knows the importance of holistic approach to treat Hypertension. But he was not knowing the importance of these two medications for hypertension management as well as prevention of cardiovascular complications. He had a history myocardial Infarction so there is a chance for arrhythmia formation and sometimes it can be life threatening. In order to avoid such incidences he was prescribed with a beta blocker. So this beta blocker helps him to maintain his blood pressure under control and prevent incidence of arrhythmia. Ramipril also helps to prevent cardiac remodeling one of the pathophysiological changes that occur after myocardial infarction in addition to his blood pressure management. So we should advice the patient to continue both the medications even if his BP is under control because of the effect of these two drugs and the patient is expected to get additional protective effect as he had a history of Myocardial Infarction.

When Beta blockers are initiated in a Hypertensive patient we should enquire the patient whether he or she has any asthma history or any other respiratory issues. If he/she has respiratory issues we should instruct the patient to go back to the physician and tell the physician about this as it may worsen his/her respiratory problems including asthma. If the patient has a history of Raynaud's syndrome or feeling cold extremities especially hands then it may be due to Beta blocker so the patient should be directed back to the physician otherwise the disease condition may worsen. If the patient is diabetic and on any Insulin preparations or insulin secretion increasing drugs like sulfonyl urea then we should inform the patient that Hypoglycemic symptoms like tachycardia and excessive sweating may be masked so special care need to be taken to avoid hypoglycemia. Sudden stoppage of betablockers after taking for a month or more may lead to reflex hypertension so we should advice patients to not to stop beta blockers abruptly.

Angiotensin converting enzyme inhibitors like Ramipril can cause hyperkalemia so we should check whether patient is on any other drug like spironolactone which can cause hyperkalemia. We Keralites usually depend on tender coconut water for refreshment but when the patient is

ACE inhibitors like ramipril we should advice the patients to avoid tender coconut water as it is a rich source of potassium and may lead to hyperkalemia. ACE inhibitors can aggravate asthma or COPD so when it is prescribed for the first time, we should ask the patient whether he or she has any history of asthma or COPD. If there is a history of the same then we should advice the patient to inform this to the treating physician before initiating the treatment.

## Case scenario 2

A 54 year old lady is suffering from hypertension and antihypertensive medication Tab.Amlodipine 5mg OD and Tab.Hydrochlorothiazide 12,5mg OD.Patient is complaining about pedal oedemaso she stopped the medication abruptly as she got some information from internet regarding amlodipine induced pedal oedema. What advice should we give to this patient?
As the patient knows that pedal oedema is due to Amlodipine, we should advise her importance of antihypertensive medications to avoid complications like heart attack, stroke, kidney failure etc. Amlodipine is a drug showing diurnal variation in its action so if it is administered at night instead of morning then we can avoid this side effect and continue the treatment as advised by the physician. Another calcium channel blocker usually prescribed is Nifedipine which usually don't cause pedal oedema but it should be administered in the retard form in order to avoid sudden fall in BP and reflex tachycardia.

Hydrochlorothiazide being a diuretic it is better to take in the morning otherwise it may lead to nocturnal diuresis and disturbance in sleep of patient, especially elderly patients. It is preferred to Loop diuretics like furosemide or furosemide as the hydrochlorothiazide can cause sustained antihypertensive action compared to loop diuretics.

## Case scenario 3

A 42 year old patient with a history of chronic kidney disease is prescribed with Tab,Prazosin 5mg and Cap .Clonidine 100mcg three times daily. What advice should we give to this patient?'

Prazosin being an alpha blocker can cause dilatation of blood vessels and so there is a chance of sudden fall in BP when change position suddenly from bed to standing position. It may lead to fall down of the patient suddenly especially the elderly patients. We should advice the patients to avoid sudden change in position in order to avoid this complication.

Clonidine can cause mood changes and difficulty in concentration so we should advice the patients to avoid driving vehicles or operating machinery which require alertness. If the patient feels extreme tiredness with dry mouth then we should advice the patient to consult the physician as the extreme tiredness may be due to clonidine.

## Case scenario 4

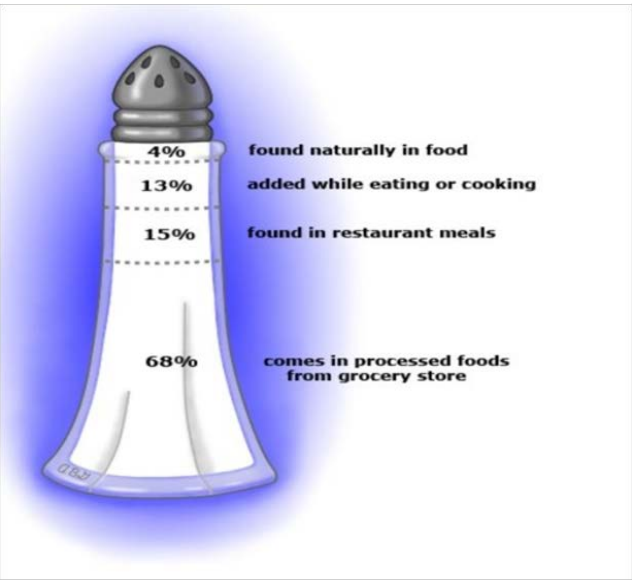
A 34-year-old pregnant lady is suffering from Hypertension. Doctor prescribed her Tab Methyl dopa 250mg BD. As the patient has a concern about safety of medications during pregnancy, she is not taking the medications as advised by the physician. What advice should we give to this patient?

Hypertension during pregnancy can lead to severe complications including death of the baby or even mother if it is not properly managed. Though clinical trial data about safety of antihypertensive medications during pregnancy is lacking, Methyldopa is found to be safe during pregnancy based on experience in hypertension management during pregnancy. We should advice the patient not to stop Methyldopa at any cost as uncontrolled blood pressure elevation during pregnancy can threaten the life of baby or even the mother.

Life style choices to reduce blood pressure:
Lose weight (if overweight).
Choose a diet rich in fruits, vegetables, and low-fat dairy products, and low in meats, sweets, and refined grains.

Avoid Energy drinks — Energy drinks have a high content of sugar and/or caffeine or other stimulants and can aggravate weight, heart rhythm, and blood pressure problems, and should be avoided.
Eat less salt (sodium).
Quit smoking( if smoker)
Do something active for at least 30 minutes a day on most days of the week.
Life style changes -Start low, and go slow in order to prevent sudden weakness.

The most important thing to cut down on sodium is to eat less processed foods including dry fish and Pickles.




| | |
|---|---|
| Salt/sodium-free | Less than 5 mg of sodium per serving |
| Very low sodium | 35 mg or less of sodium per serving |
| Low sodium | 140 mg or less of sodium per serving |
| Reduced sodium | At least 25% less sodium than the regular product |
| Light or lite in sodium | At least 50% less sodium than the regular product |
| No salt added or unsalted | No salt is added during processing, but these products may not be salt/sodium-free unless stated |

Although it is difficult initially to cut back on the amount of sodium in the diet, most people find that their taste adjusts quickly to reduced sodium. Salt is an acquired taste, and taste can be retrained in 10 to 14 days if people stick with the lower-sodium diet.
Carry out at least 30 minutes of exercise 5 days in a week but there should not be a gap of more than 24 hours. Avoid stress in work place by devoting some time everyday for stress relief including hearing music, prayer etc.
We should assure the patients that they can lead normal life with hypertension provided they follow four key points of holistic management of hypertension- Periodic measurement of BP, Adherence to the medications, Life style modifications and dietary considerations.

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## May 31 - World No Tobacco Day

## Tackling Tobacco Smoking: Scope of Pharmacist

**Dr. Dennis Thomas**
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Smoking is a global health challenge affecting both developed anddeveloping countries. Tobacco kills up to half of its users. According to the World Health Organization (WHO), more than8 million people die prematurely each year from tobacco-related conditions. In 2020, more than 22% of the global population (~1.7 billion) used tobacco. Of that, 80% were living in low- and middle-income countries. Tobacco use costs the global economy more than 500 billion each year.1Global Adult Tobacco Survey found that 35% of the population (48% of males and 20% of females)in India used tobacco in one or the other form in 2010.2

The health effects of smoking are well known,1,3 and the benefits of quitting smoking are well documented. Even later in life, quitting smoking has significant short- and long-term health benefits. Given the high prevalence of smoking in many countries like India, even a modest reduction in smoking prevalence could have substantial health and economic benefits.4,5The WHO Framework Convention on Tobacco

Control (WHO FCTC) provides a framework for implementing tobacco control activities at national, regional and international levels. One of the basic principles of the WHO FCTC is that everyone should be informed about the health effects, addictiveness and fatal risks of tobacco use.

The role of pharmacists in chronic disease management is evolving. From the role of compounder and dispenser of medicines, the pharmacist's role has now expanded to encompass a wide range of clinical and pharmaceutical care services.6 Many developed countries such as Australia, USA and UK have recognised the roles of pharmacists in the multidisciplinary provision of healthcare.7,8Community pharmacists have regular face-to-face interactions with a large number of people, both sick and healthy providing an excellent opportunity for pharmacists to contribute to health promotion activities such as smoking cessation.

Community pharmacists are in an ideal position to provide smoking cessation support due to the following;

• Their expertise in drug therapy, accessibility to the public and presence at the point of purchase of nicotine replacement therapy (NRT).9,1011
• They are knowledgeable about the mechanisms of tobacco addiction, nicotine withdrawal, NRT and other pharmacotherapies, and the impact of quitting on current medications (e.g., theophylline clearance) and medical conditions.9
• They are trusted healthcare providers who are accessible, have interactions with a large, diverse patient population, and generally offer education and advice without any direct or additional cost to individuals.
• Unlike most other health professionals, consultation with a pharmacist does not require an appointment or consultation fee in most countries.
• Pharmacist interventions for smoking cessation are feasible and effective.12
• Pharmacists have a positive attitude and knowledge for providing smoking cessation support.13 Moreover, many smokers believe that pharmacist-assisted cessation is an appealing approach to quitting smoking.14

Even though evidence suggests pharmacists' willingness, capability and potential to provide smoking cessation services, they are underutilised. Primary barriers to engaging with smoking cessation support include lack of time/ training/counselling skills, workload, inability to identify smokers, low patient demand and lack of reimbursement.13 Pharmacists who received additional training in smoking cessation are more likely to provide cessation counselling.13 Hence it is important to include smoking cessation interventions (both pharmacological and non-pharmacological) in the academic curriculum of pharmacists.
In summary, initiatives to promote smoking cessation activities in the community in India are warranted, and adequately trained pharmacists are in an ideal position to contribute to such initiatives.

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## June 14 - World Blood Donor Day

# An Overview of Regulation of Blood Centres & Criteria for Blood Donation

**M R Pradeep. M.Pharm**
Former Deputy Drugs Controller, Kerala.state

Blood is considered as a drug with effect from 22-01-1993 and it includes whole Human blood drawn from a donor and mixed with an anticoagulant. Institutions engaged in blood transfusion shall obtain a valid Blood centre licence for collection, storage and usage of Blood for treatment.

The Drugs Control Department is regulating the Blood Centres. There must be a valid licence for the collection, processing, testing, storage & banking of Whole Human Blood & its components in a Blood centre. As per the Drugs and Cosmetics (Second Amendment) Rules 2020, effective from 11th of March 2020, some minor changes were made in regulating the Blood Centres, which are previously known as Blood banks.

Blood centre is now an authorized premises in an organization or institution as the case may be, for carrying out all or any of the operations including collection, apheresis , processing, storage and distribution of blood drawn from donors or received from another licensed Blood Centre and for preparation, storage and distribution of blood components.

The licences are to be obtained from the Licensing authority by submitting an application with supporting documents, accompanied by a fee of Rs 7500/-( for running Blood centre only). The licences are granted after joint inspection of the premises by an Inspector from the State Licensing Authority (SLA) and Inspector from the Central Licence Approving Authority (CLAA) jointly by both Authorities. The Inspectors shall examine all portions of the premises and appliances and inspect the process of manufacture, professional qualifications and experience of the expert staffs etc and submit a detailed report to the Authorities. The validity of the licence is 5 years from the date of grant/ renewal. For Blood components & Products the licences, applications and fee varies.

The minimum area for accommodating the blood centre is 100m2 and together for component preparation, it is 150 m2. There must be 10 designated rooms in the area with 5 air conditioned sections. The rooms are specified for Registration& Medical Examination.
Blood collection (A/C), Blood component preparation (A/C), Laboratory for Group serology (A/C), Laboratory for Blood Transmissible Diseases (A/C), Refreshment cum rest room (A/C), Sterilization cum washing ,Store cum records, Counselling area with adequate privacy and Identified Quality Control area. The rooms must be arranged logically to avoid cross contamination as per the GMP norms.

The essential Competent Technical staffs (Whole time) include Blood Centre Medical Officer, Blood Centre Technician, Registered Nurse & Technical Supervisor (for Component units). There are around 18 types of designated equipment prescribed for the Blood centre. They shall be observed, standardised and calibrated on a regularly scheduled basis to comply the official requirements. All supplies and reagents used in the collection, processing, compatibility, testing, storage and distribution of blood components shall be stored at proper temperature in a safe and hygienic place & in a proper manner.

There must be clearly written Standard Operating Procedures for all the processes taking place in the blood centre as part of Good manufacturing Practices. The entire records of the processes must be kept for a period of 5 years. There are around 104 criteria given for Blood donation to ensure the quality and safety of the Blood transfused to patients. The major ones include the wellbeing of the donor, Age (18-65 yrs), Whole blood volume Collected & weight of the Donor (350 ml-45kg, 450 ml-more than 55kg), Donation interval (Once in 90 days for men,120 days for women), Blood Pressure (100-140 mm systolic, 60-90 mm Diastolic), Pulse (60-100), Temperature (37oC), Haemoglobin (More than 12.5g/dL) and physiological status, diseases, Surgery, Infections like Hepatitis, AIDS, STD, Malaria, Typhoid, Dengue, T B, Leprosy, Cancers, certain medications, recipients of organ, stem cell and tissue transplants, residents of other countries (Continuous stay below 3 years in India) etc.

The medical Officer will examine the Donors thoroughly to ensure their suitability and find out the Blood Group and conduct test for any blood transfusion Transmissible diseases mentioned in

the SOP. The blood collection room is equipped as per the Guidelines and the untested blood is stored there at 2 to 6 degree centigrade in refrigerators. Only disposable PVC Blood bags are used with sterile Anti-coagulant solution ( Citrate Phosphate dextrose Adenine Solution-CPDA-14ml in 100ml of Blood) Additive solutions like SAGM, ADSOL, NUTRICEL may be added to retain the RBCs up to 42 days. Emergency medicines &equipment must be there to save the donors during any complications.

The collected blood must be tested as per the standards of Indian Pharmacopoeia and it must be free from HIV antibodies, Hepatitis B antigens, Hepatitis C Virus Antibody, VDRL, Malarial parasites etc. The label must have all essential details as specified and must use different colors for each group. The label must indicate the type of donor as Voluntary or Replacement prominently.

# Be a Hero, Be a Donor…

# Every Blood Donor is a Hero

**Dr Shamna MS,**
Assistant Professor, College of Pharmaceutical Sciences,
Government Medical College, Kottayam.

Every year countries around the world celebrate World Blood Donor Day (WBDD). World Blood Donor Day is held on June 14 each year. The event was organized for the first time in 2004, by four core international organizations: the World Health Organization, the International federation of Red Cross and Red Cross Societies; the International Federation of Blood Donor Organizations (IFBDO) and the International Society of Blood Transfusion (ISBT) to raise awareness of the need for safe blood and blood products, and to thank blood donors for their voluntary, life-saving gifts of blood.

## What is blood donation?

Blood donation is a voluntary procedure. You agree to Have blood drawn so that it can be given to someone who Needs a blood transfusion

## Who can donate blood?

Any healthy person: with weight above 50 kg., hemoglobin level above 12.5 gm/dl, age between 18 to 65 years

The event serves to raise awareness of the need for safe blood and blood products and to thank voluntary, unpaid blood donors for their life-saving gifts of blood. In India, a blood transfusion is needed about every two seconds. Anew born open-heart surgery, on average, will need one to four units of red blood cells, one to two units of plasma, and one to four units of platelets. A liver transplant patient, on average, will need 6-10 units of red blood cells, 20 units of plasma and 10 units of platelets. About half of Indians can safely be blood donors. But only about 5percent donate blood. Every blood donor is a hero. Many, many people have needed blood. Remember, the only way for someone to receive blood is for another person to donate it. The other 95% are relying on these donors if they ever need a transfusion.

Blood are specialized cells suspended in plasma constantly circulating throughout body carries oxygen and nourishment to cells and removes waste products supports body's immune system and capacity to heal itself blood as a scarce resource in the world 75 million units of blood are donated each year 500,000 women who die from complication of pregnancy each year 150,000 die because of lack of blood 30% of the worldwide population has access to only 20% of safe blood. Only 16% of blood supply is donated voluntarily by non-remunerated blood donors in the world because of only family/replacement do in most of developing countries.

The blood donation drive to be promoted by creating an awareness about the importance and societal needs among the public. It is one of the most important things you can do.

- Donating blood is easy
- It is quick and safe.
- It doesn't hurt badly at all.
- It saves lives.

### Are you ready to be a superhero?

Every two seconds someone in the world needs blood. Blood donation is an important part of health care. One out of every 10 people admitted in a hospital needs blood. A single car accident victim can require as many as 100 units of blood. Do remember, anyone may require blood anytime, including ourselves as well as our dear ones. Blood donation reduces the chances of ischemic heart diseases as frequent donation reduces the accumulated and unwanted iron load from the body. You don't need to have superpowers.to be a hero, you can donate blood!

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# DRUG PROFILE

## a. Rucaparib Camsylate

**Ms. Arya Subanthu**
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Rucaparib is an anti-neoplastic agent, a powerful Poly (ADP-ribose) polymerase (PARP) inhibitors. Ovarian cancer accounts for a considerable number of deaths among women globally. Targeted therapy is being adopted as an effective way of treating such cases. Rucaparib is part of a class of drugs called poly (ADP ribose) polymerase (PARP) inhibitors designed for precisely that purpose. Rucaparibs' significant use lies primarily in managing advanced ovarian cancers initially responding to platinum based chemotherapy later relapsed; Its' also usable for scenarios involving females suffering from deleterious BRCA mutation associated ovarian cancers who had already gone through two or more cycles of chemotherapy treatments .BRCA1 or BRCA2 (BRCA) alterations in metastatic castration-resistant prostate cancer (mCRPC) and have sensitivity to poly(ADP-ribose) polymerase inhibitors. The mode by which this medication goes about its healing function lies in its ability to suppress PARP enzyme activities critical for repairing damaged DNA cells. By doing this action, rucaparib can effectively prevent cancer cells from regenerating their previously damaged cells thus killing off these affected cells. This process can help slow down malignant tumour development and the spread rate significantly. On May 15, 2020, the U.S. Food and Drug Administration (FDA) has granted approval to rucaparib.

### Mechanism of Action:

Rucaparib is a poly (ADP-ribose) polymerase (PARP) enzyme inhibitor which includes PARP1, PARP 2, and PARP 3. PARP enzymes and takepart in DNA transcription, cell cycle regulation, and DNA repair. Inhibition of PARP leads to the increased formation of PARP -DNA complexes followed by DNA damage, apoptosis, and cell death of cancer cell.In tumour cell lines which is deficient in BRCA1/2 and other DNA repair genes, cytotoxicity and anti-tumour activity is raised. It's essential to note that while rucaparib commonly objectives ovarian most cancers, PARP inhibitors have also shown effectiveness in different malignancies with DNA restore deficiencies, along with breast, prostate, and pancreatic cancers.

### Pharmacodynamics:

As a poly (ADP-ribose) polymerase (PARP) inhibitor, rucaparib exerts its pharmacokinetic effects via inhibiting the enzymatic interest of PARP enzymes PARP enzymes play an important role inside the restore of intracellular DNA harm, in particular at the bottom excision restore technique. When administered, rucaparib selectively binds to the catalytic domain of PARP enzymes, inhibiting their regular interest. This inhibition impairs DNA damage restore in most cancers cells, particularly those missing DNA repair pathways which include BRCA1 or BRCA2 mutations.

### Pharmacokinetics

### Absorption:

Rucaparib is administered orally inside the form of drugs. After oral ingestion, rucaparib is absorbed

from the gastrointestinal tract and enters the bloodstream. The charge and volume of absorption may be inspired through factors consisting of meals consumption, drug interactions, and person affected person traits.

**Distribution:**
Once absorbed, rucaparib is distributed at some point of the body. It binds substantially to plasma proteins, ordinarily albumin. The extent of protein binding is extraordinarily excessive, with about 94% to 98% of rucaparib sure to plasma proteins. Protein binding influences the distribution, metabolism, and elimination of the drug.

**Metabolism:**
Rucaparib undergoes sizable hepatic metabolism, mostly mediated via the cytochrome P450 (CYP) enzyme machine, in particular the CYP2D6 and CYP3A4 enzymes. These enzymes convert rucaparib into metabolites, which may additionally have varying stages of pharmacological hobby. The main lively metabolite of rucaparib is known as M8.

**Elimination:**
The removal of rucaparib and its metabolites takes place in the main thru the hepatic path. The predominant elimination pathway is thru feces, with a smaller component removed through urine. The 1/2-existence of rucaparib is about 17 to 19 hours, that means it takes this amount of time for the attention of the drug within the frame to decrease by way of half.

**Use of Medication:**
Ovarian cancer: Recurrent, BRCA-mutated, Maintenance therapy (Maintenance treatment for adult patients with deleterious BRCA mutation (germline and/or somatic)–associated recurrent ovarian cancer ,epithelial ovarian , fallopian tube and primary peritoneal cancers who have been treated with platinum based chemotherapy and shown complete or partial response).

**Prostate cancer:**
Adult patients with a deleterious BRCA mutation (germline or somatic)-associated metastatic castration-resistant prostate cancer who have been treated with androgen receptor-directed therapy and a taxane-based chemotherapy.

**Off-Label use:**
Pancreatic cancer, locally advanced or metastatic, germline BRCA2-mutated, maintenance therapy.

**Dosage Form and Strength:**
Film Coated Tablet (Rucaparib Tablet 200 Mg, Rucaparib Tablet 250 Mg, Rucaparib Tablet 300 Mg).

**Available Brands:**
Tablet Nuparp 200/250/300 mg manufactured by BDR Pharmaceuticals internationals pvt and marketed by zydus life sciences limited; Tablet Bdparib 200/ 300 mg marketed by BDR Pharmaceuticals internationals Pvt; Tab lucaparib 200 /300 mg manufactured by LUPIN ltd

**Storage and Handling Instructions:**
Store at temperature not exceeding 30° celcius; Keep all medicines out of the reach and sight of children

**Possible Side Effects:**
Nausea or weakness, vomiting, decrease in hemoglobin, changes in how food tastes, constipation, decreased appetite, diarrhea, low blood cells counts, mouth sores, upper respiratory tract infection, shortness of breth, rash, changes in liver or kidney function blood tests, stomach pain, increased cholesterol levels

**Dosage Adjustment for Toxicity:**

Adult

| DOSE REDUCTION | DOSE |
|---|---|
| Starting dose | 600 mg twice daily |
| First dose reduction | 500 mg twice daily |
| Second dose reduction | 400 mg twice daily |
| Third dose reduction | 300 mg twice daily |

Discontinue Rucaparib: if unable to tolerate 300 mg twice daily (ASCO [Tew 2020]).

Concerns related to adverse effects:Secondary malignancy: Myelodysplastic syndrome/acute myeloid leukemia (MDS/AML) has been reported (rarely) in patients receiving rucaparib; may be potentially fatal.

Monitoring Parameters: Monitoring parameters includes BRCA mutation testing (for recurrent ovarian cancer and for metastatic castration-resistant prostate cancer), Evaluation for germline BRCA2mutation in pancreatic cancer (off-label use). CBC at baseline and monthly or as clinically indicated to check for hematological toxicities ,followed by further hematology evaluation like bone marrow and cytogenetic analyses is necessary for prolonged hematologic toxicity if blood counts do not recover to ≤ grade 1 after 4 weeks and also for suspected cases of myelodysplastic syndrome/acute myeloid leukemia (MDS/AML). Pregnancy test should be done prior to the treatment intiation. Monitor signs/symptoms of MDS/AML. Monitor patient adherence. Hepatitis b virus (HBV )screening is recommended by American Society of Clinical Oncology.(ASCO [Hwang 2020])

Precautions While Taking Rucaparib Tablet: Avoid spending time in sunlight. Rucaparib tablet can make patients skin sensitive to the sun (photosensitivity). There is more chances for sunburns during treatment with Rucaparib tablets.

Administration: Rucaparib tablet can be taken with or without food .the doses should be taken approximately 12 hours apart..

Patient Counselling: Rucaparib tablet can be taken with or without food .the doses should be taken approximately 12 hours apart .Before taking rucaparib tablet, patient should inform health care provider about their medical conditions .Avoid pregnancy during treatment and for 6 months after the last dose of rucaparib tablet. Do not breast feeding during treatment and for 2 weeks after the last dose of rucaparib tablet. If a dose missed, administer the next dose at its scheduled time. Do not repeat missed doses. Rucaparib is linked with a moderate or high emetic potential; antiemetics are always recommended to prevent nausea and vomiting.

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## b. Zavegepant


**Ms. Sandra Prasanth and Dr. Sini SG**
Pharm D student & Assistant Professor of Pharmacy Practice
The Dale View College of Pharmacy and Research Centre, Thiruvananthapuram

Zavegepant is a third generation, high affinity, selective, structurally uniquesmall molecule and first and only calcitonin gene-related peptide (CGRP) receptor antagonist nasal spray indicated for the acute treatment of migraine with or without aura.

### Mechanism of action:

Migraine headache is a widespread and complex neurobiological disorder that is characterized by unilateral headaches that are often accompanied by photophobia and phonophobia. Calcitonin gene-related peptide (CGRP) has been found to be greatly associated with migraine pathophysiology. Following stimulation of the Trigeminovascular system, CGRP has shown to be released and found at high levels in the cerebrovascular circulation and Trigeminovascular system. CGRP receptors are found to be localized at vascular smooth muscle cells of the dura meninges as well as neurons and glial cells involved in the trigeminal system. Acting on smooth muscle cell receptors, neurovascular structures, and spinothalamic pathways the release of CGRP results in vasodilation, possible central nervous system sensitization, and transmission of pain characteristic of acute migraine episodes.

Zavegepant targets, binds to and inhibits the activity of CGRP receptors located on mast cells in the brain. This may inhibit neurogenic inflammation caused by trigeminal nerve release of CGRP. In addition, by blocking the CGRP receptors located in smooth muscle cells within vessel walls, zavegepant inhibits the pathologic dilation of intracranial arteries. Zavegepant, by blocking the CGRP receptors, also suppresses the transmission of pain by inhibiting the central relay of pain signals from the trigeminal nerve to the caudal trigeminal nucleus. Altogether, this may relieve migraine. As CGRP receptors induce the release of pro-inflammatory mediators, such as interleukin-6 (IL-6), from inflammatory cells, zavegepant may prevent an IL-6-mediated inflammatory response.

### Pharmacokinetics:

Absorption:After a single intranasal dose of zavegepant (10 mg), the peak plasma concentration was detected approximately 30 minutes later. The absolute bioavailability of zavegepant administered with a nasal spray is approximately 5%.

### Distribution:

Zavegepant has a plasma protein binding of approximately 90%.

### Metabolism:
In vitro, zavegepant is mainly metabolized by CYP3A4, and by CYP2D6 to a lesser extent. After a single intravenous dose of zavegepant (5 mg), approximately 90% of the circulating dose was unchanged zavegepant. None of the zavegepant metabolites detected in plasma were found at a proportion higher than 10% (no major metabolites).

### Excretion:
Zavegepant is mainly excreted via the biliary/ fecal route, while the renal route plays a minor role in its elimination. Following a 10 mg dose, intranasal zavegepant has an effective half-life of 6.55 hours.

### Adverse Effects:
Most common adverse reactions (occurring in ≥2% of patients treated with Zavegepant) were taste disorders including dysgeusia and ageusia, nausea, nasal discomfort, and vomiting.

### Drug Interactions:
Avoid use with drugs that inhibit or induce OATP1B3 or NTCP transporters. Avoid use of intranasal decongestants; if unavoidable, administer intranasal decongestants at least 1 hour after Zavegepant administration.

### Use in Specific Populations:
Hepatic Impairment: Avoid use in patients with severe hepatic impairment. Renal impairment: Avoid use of Zavegepant in patients with creatine clearance (CLcr) less than 30 mL/min.

### Dose:
Intranasal zavegepant 10 mg and 20 mg were effective for the acute treatment of migraine, with a favourable safety profile.

### Patient Counselling:
- Do not use a nose decongestant spray at the same time as this drug. If you need to use a nose decongestant spray, use it at least 1 hour after this drug.
- Do not take this drug by mouth. Use in your nose only. Keep out of your mouth and eyes (may burn).
- Use this drug as early as you can after the attack has started.
- Blow your nose before use.
- Do not tilt your head or lay down when you use this drug.

### Storage:
Store in a dry place and at room temperature. Do not freeze. Do not store in a bathroom.

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# Practise Questions

**Dr. Suja Abraham**
Professor & HOD Pharmacy Practice
Nirmala College of Pharmacy
Muvattupuzha

1. Which of the following antiparkinsonism drugs is an anticholinergic agent?
   a) Amantadine b) Selegilin
   c) Trihexyphenidyl d) Bromocriptine

2. Indicate a peripheral dopa decarboxylase inhibitor:
   a) Tolcapone b) Clozapine
   c) Carbidopa d) Selegiline

3. Hyperprolactinemia is caused by blockade of dopamine in:
   a) The chemoreceptor trigger zone of the medulla
   b) The pituitary
   c) The extrapyramidal system
   d) The mesolimbic and mesofrontal systems

4. Treatment of anemia in chronic renal failure may involve all of the following except
   a) Calcitriol b)Epoetin alfa
   c) Darbepoetin d) transfusion with packed RBC

5. Which type of anemia is most likely to occur in chronic renal failure
   a) Hypochromic, microcytic b) Normochromic, normocytic
   c) Hypochromic, macrocytic d) Normochromic macrocytic

6. Which of the following medication is the first line agent for stage I hypetension for a patient with no compelling indication
   a)Hydrochlorothiazide b) Spironolactone
   c) Hydralazine d) Clonidine

7. Which of the following symptom represents Vit K deficiency?
   a)Depression b) Bleeding
   c) Diarrhoea d) Beriberi

8.Indicate a selective inhibitor of monoamine oxidase B:
   a) Levodopa b) Amantadine
   c) Tolcapone d) Selegiline

9. Indicate the drug that induces parkinsonian syndromes:
   a) Chlorpromazine b) Diazepam
   c) Triazolamd d) Carbamazepine

10. Which of the following drugs is used in the treatment of Parkinsonian disorders?
   a) Phenytoin b) Selegiline
   c) Haloperidol d) Fluoxetine

11. Gastrointestinal irritation, cardiovascular effects, including tachycardia, arrhythmias, and orthostatic hypotension, mental disturbances, and withdrawal are possible adverse effects of:
   a) Amantadine b) Benztropine
   c) Levodopa d) Selegiline

12. The main reason for avoiding the combined administration of levodopa and monoamine oxidase inhibitor is:
   a) Respiratory depression b) Hypertensive emergency
   c) Acute psychotic reactions d) Cardiovascular collapse and CNS depression

13. Indicate selective catechol-O-methyltransferase inhibitor, which prolongs the action of levodopa by diminishing its peripheral metabolism:
   a) Carbidopa b) Clozapine
   c) Tolcapone d) Rasagiline

14. Which of the following antiparkinsonian drugs is an antiviral agent used in the prophylaxis of influenza A?
   a) Selegiline b) Sinemet
   c) Pergolide d) Amantadine

15. Parkinsonian symptoms and tardive dyskinesia are caused by the blockade of dopamine in:
   a) The nigrostriatal system
   b) The mesolimbic and mesofrontal systems
   c) The chemoreceptor trigger zone of the medulla
   d) The tuberoinfundibular system

16. Indicate the antiparkinsonism drug which should be avoided in patients with glaucoma:
   a) Selegilin b) Levodopa
   c) Bromocriptine d) Trihexyphenidyl

17. Extrapyramidal reactions can be treated by:
   a) Levodopa b) Benztropine mesylate
   c) Bromocriptine d) Dopamine

18. Example for potassium sparing diuretic is
   a) Captopril b) Furosemide
   c) Spironolactone d) Hydrochlorothiazide

19. Labetolol is
    a) Alpha blocker
    b) Beta blocker
    c) Both alpha and beta blocker
    d) Calcium channel blocker

20. Antihypertensive agent preferred in pregnancy
    a) Methyl dopa
    b) Lisinopril
    c) Atenolol
    d) Nifedipine

21. Hypokalemia is the side effect of all drugs except
    a) Hydrochlorothiazide
    b) Torsemide
    c) Amiloride
    d) Chlorthalidone

22. Normal lifespan of RBC is
    a) One week
    b) 60 days
    c)120 days
    d) 6 months

23. Blood products include
    a) Albumin
    b) Fresh frozen plasma
    c) Immunoglobulin
    d) All of the above

24. Contraindication for blood transfusion is
    a) Fluid overload
    b). burns
    c) Trauma
    d) Clotting factor deficiency

25. National Coordinating center for hemovigilance programe of India is
    a). Sree Chitra Tirunal Institute of Medical Sciences & Technology (SCTIMST), Thiruvananthapuram
    b). National Institute of Biological, Noida
    c). Indian Pharmacopoeia Commission, Ghaziabad
    d). None of the above

*Please refer the answer key on page number 32*

# IPA KERALA STATE - ASSOCIATION NEWS

## Merit Award: First rank in the D. Pharm Part II Examination 2022

Ms. Nintu Antony, the student of Institute of Pharmaceutical Sciences, Aluva was honoured by Justice Kemal Pasha (Hon'ble Retired Judge of High Court of Kerala) for securing First rank in the D. Pharm Part II Examination 2022, conducted by the Directorate of Medical Education, Kerala State. The Certificate of Merit, Citation Plaque, and Cash Prize instituted by Indian Pharmaceutical Association, Kerala State branch were presented by the Justice during the "National Pharmacy Education Day" celebration organized at the college on 6th March 2023.

Ms. Nintu Antony received the IPA Merit Award from Justice Kemal Pasha in the auspicious presence of Dr. Sebastian Paul (Former, Member of Parliament), Dr. John Joseph ( Hon. Secretary, IPA Kerala state branch and Principal, Lisie College of Pharmacy Kochi), Mr. Radhakrishnan Nair G, Director of the Instituteof Pharmaceutical Sciences, Aluva and other dignitaries.

## Webinar on "Quality Assurance and Regulatory Affairs in Pharmaceutical Industry"

The Indian Pharmaceutical Association Kerala State branch organized a webinar on "Quality Assurance and Regulatory Affairs in Pharmaceutical Industry" on 16th April 2023. Mrs. Sreedevi TV, Senior Manager, Quality Assurance ,Eugia Pharma Specialties, (subsidiary of Aurobindo Pharma) Hyderabad was the speaker. The webinar was inaugurated by Dr. CS Satheesh Kumar ,Head, Corporate Communications), Agappe Diagnostics Ltd., Cochin. & Former Drugs Controller , Kerala State. He outlined the career scope of pharmacy graduates in the Regulatory Affairs of Pharmaceutical and Medical Devices Industry.

Mrs. Manju CS , Associate Professor of Pharmacy Practice, Government Medical College Kozhikode welcomed guest speakers and participants. Ms. Ancy KF, Pharm D intern of St. James' College of Pharmaceutical Sciences , Chalakudy was the Master of ceremony. Mr. Shaji M . Varghese, Chairman of Regulatory Forum and Assistant Drugs Controller Kozhikode while giving the presidential address, encouraged the students to take up industry careers.

Dr. Sujith Varma Principal,National College of Pharmacy, Kozhikode introduced the topic, and the speaker moderated the discussion. The participants' queries were well answered by the speaker. The session was very interesting as she shared career scope for pharmacy graduates in QA and RA. She explained the role of the RA department in securing cGMP and USFDA approvals. Dr. David Paul, Joint secretary of IPA state branch and Associate Professor, St. James College of Pharmaceutical Sciences, Chalakkudy proposed a vote of thanks

## One Day Seminar On: World Intellectual Property Day

The Indian Pharmaceutical association Kerala state branch and Amrita School of Pharmacy jointly celebrated the World Intellectual Property Day on 26th April 2023 at the Amrita Hospital, Kochi by organizing a one-day seminar. The seminar was attended by about 50 research scholars and faculty, and about 150 students from various colleges of Pharmacy and from Govt. Ayurveda college, Tripunithura . “Women and IP: Accelerating innovation and creativity” is the theme of this year’s WIP day.

The Chief Guest Dr. Sankar Sundaram, distinguished IPR Professor Chair, KUSAT inaugurated the one day seminar with a keynote address stimulating the young researchers to utilize the provisions of Patent Act to secure patents for their innovations. Dr. Sabitha M, Principal welcomed the gathering and Dr. P. Jayasekhar, President IPA Kerala state presided over the inaugural ceremony. Dr. Boby Johns G, Professor of Pharmaceutics, St. Joseph’s College of Pharmacy, Cherthala while felicitating the function, appreciated the Amrita school of Pharmacy and IPA for arranging such a wonderful seminar.

The professional sessions were handled by Dr. Yumna A and Adv. AmitKoli ( Partners, K& S Patent Attorney, Chennai) and Adv. Haneesh Krishnan (IP counsel, Kris-Hagan Bangalore) and Dr. DeepthyMenon, seasoned researcher and Professor, Amrita School of Nano medicine.

The sessions were chaired and moderated by Dr. Dinesh Kumar, HOD, Department of Pharmaceutics, St. James’ College of Pharmaceutical Sciences, Chalakkudy, Mr. MR Pradeep, Former Deputy Drugs Controller, Kerala State, Dr. Manoj Kumar , Professor, Dept of Pharmaceutical chemistry, Lisie College of Pharmacy, Ernakulam , and Dr. Athira KV, Assistant Professor of Pharmacology, Amrita school of Pharmacy, Kochi.

The interactive sessions were very useful to the participants and the queries were answered nicely by the learned legal experts. The session focused on an overview of IPR –Indian patents, Patent filing and procedures, Non-patentability in Pharma and Life science. Dr. DeepthyMenon, Professor of Amrita School of Nano medicine shared her rich experience in securing Indian patents and US patents, and focused on the stumbling blocks in patenting. All the sessions were so lively and informative.

Dr. Kaladhar K, an active researcher & Associate Professor, Amrita School of Pharmacy proposed a vote of thanks, after adding his own observations in filing patent applications. The enthusiastic participation of IPASF leaders and volunteers in organizing the seminar was well appreciated by all. The participants enjoyed the hospitality and thanked the Principal and faculty of Amrita School of Pharmacy, and the IPA Kerala state branch for organizing such a meaningful seminar.

## Leadership Development Training program for the IPA Students' Forum

The Indian Pharmaceutical Association (Kerala State Branch), Lions International 318A, Mar Dioscorus College of Pharmacy Thiruvananthapuram and Indriyam Foundation jointly organized a Leadership Development Training program, "Tansforgen" for the IPASF students of the Thiruvananthapuram district on 13th May 2023 .

The aim of the program was transforming the student members to a desired level individually, academically, professionally, intellectually and socially acceptable, among the younger generations as change makers or influencers. Around 28 students and 8 faculties from Mar Dioscorus College of Pharmacy ,Govt College of Pharmaceutical Science, MGM Silver Jubilee College of Pharmacy, and Dale View College of Pharmacy and Research participated in the one day program.

Ms. Athira B Raj, 3rd Semester B Pharm student of Mar Dioscorus College of Pharmacy was the master of the program. The inaugural session started off with prayer, followed by welcome address by Prof. Rachel Mathew, vice principal, Mar Dioscorus College of Pharmacy. The presidential address was delivered by Dr. P Jayasekhar, President IPA, and Kerala State Branch. He said that purpose of such training session was to equip the leaders of IPASF to take up awareness campaign as community outreach program in the nearby school about civic sense, substance abuse, snakebite envenoming , safe and proper uses of medicines etc. The chief guest for the day was MJF Ln. Abdul Vahab M, First Vice District Governor (Elect), Lions Club International 318A who spoke about the functioning of Lions Club in association with IPA, Kerala State Branch. He motivated the students to imbibe social commitment and values. The benedictory address was given by Fr. Abraham Thomas, Administrator, Mar Dioscorus College of Pharmacy and appreciated the efforts of IPA Kerala state branch in moulding the students as competent professional and good citizens .

The program kicked off with ice-breaking and self-introduction, handled by Ln. MP George, Former Drugs Controller, Kerala State who emphasized the point that "Leaders are not born. Leaders are made." During this session the students interacted with each other. The second session was handled by Dr. Dileep Kumar R,

Founder and Chairman of Indriyam Foundation, on “Snakebite Envenoming”. He described the various species of venomous and nonvenomous snakes of Kerala and also explained about snakebite management, followed by a doubt-clearance session regarding the topic.

The last session “Speak to Lead-Mastering the Art of Leadership and public speaking” was handled by JC Mr. S. Sreenath, Founder Unnathi Global Skill Solutions. It was an interesting and fun-filled session, packed with a lot of activities which boosted the confidence of the students. He also gave valid points and steps to remember while mastering the art of public speaking.

The certificates to participants were presented by Dr. P. Jayasekhar, JC Mr. S. Sreenath and Prof. Rachel Mathew. Ms. SapnaSivanthie, 8th Semester B Pharm Mar Dioscorus College of Pharmacy, Ms. SnehaSanal, 5th Semester B Pharm Government College of Pharmaceutical Sciences, Thiruvananthapuram, Ms. Aswany Krishna , Second Year Pharm D Dale View College of Pharmacy & Research Centre and Ms. FathimaSwaliha, 5th Semester B Pharm MGM Silver Jubilee College of Pharmacy, Kilimanoor shared their reviews and reflections of the session. All the students expressed their excitation in attending such wonderful value added training program and requested to continue such events in future. The session ended with the Vote of Thanks by Mrs. Ansu Sarah, Assistant Professor, Mar Dioscorus College of Pharmacy, Thiruvananthapuram.

## Community Outreach Program on “Safe and Proper Use of medicines” in Kerala State

The Community Pharmacy Forum of the Indian Pharmaceutical Association with the support of Vellanad Grama Panchayat conducted an awareness seminar about “Safe and Proper use of Medicines on 2nd May 2023 in the Panchayat Hall. The seminar was inaugurated by Smt. K. S. Rajalakshmi, President, GramaPanchayat and presided over by Sri. VellanadSrikantan the vice President of the Panchayat. They expressed the need of public awareness about safe and proper use of medicines.

The interactive seminar was conducted by Dr. PK Sreekumar, Chairman, the Community Pharmacy Forum of IPA and Former Deputy Drugs Controller, Kerala state. The session was chaired and moderated by Dr. P. Jayasekhar, President IPA state branch. More than 100 people mostly patients and health workers participated in the program. Dr. Abhirama B R, Dr. Sine SG, Pharmacy Practice faculty members of the Dale View College of Pharmacy and Research, Thiruvananthapuram, and Mr. Shisi A, Treasure IPA Kerala stat branch took part the in the panel discussion. Pharm D students from St. Joseph College of Pharmacy Cherthala also took part in the discussion. The participants asked doubts about the storage conditions of medicines, handling of expired medicines, drug interactions, and proper use of medication for lifestyle diseases like diabetes, hypertension asthma, etc. m and the panelist explained all queries nicely.

In the open session, the participants thanked the organizer for such a useful session and requested to continue such awareness campaigns in the future also. Mr. Shisi A Treasurer, the IPA Kerala state branch, proposed the vote of thanks

## Merit award to the GPAT Topper 2022

The newly constituted Chapter of IPA Students Forum at Lisie College of Pharmacy, Ernakulam was inaugurated on 24th June 2023 by Dr.P. Jayasekhar, President, IPA Kerala state branch. Ms Jooly Kurien, Associate Professor and IPSF Faculty advisor welcomed the gathering and mentioned that 120 students had enrolled in the Forum and planned to do a lot of activities as per the mission of IPASF. In the inaugural address, Dr. Jayasekhar outlined the activities of IPA and IPASF and motivated the students to uphold professional ethics and human values. He highlighted the significance of IPASF as it would groom the students to be team leaders, decision-makers, managers, and self-disciplined professionals.


*Mr. Dhanil Jose receiving the GPAT State Topper Merit Award from the President, IPA in presence of Dr. John Jospeh , Dr. JinuIssac and Dr. Manoj Kumar*

The merit award instituted by IPA Kerala state branch to the Topper of GPAT 2022 was presented to Mr. Dhanil Jose, an alumnus of the College of Pharmaceutical Sciences, Government Medical College, Thiruvananthapuram and pursuing his M.Pharm at NIPER Mohali. He was given a Certificate of Merit, Citation memento, and Cash Prize in the presence of IPASF and the faculty of Lisie College of Pharmacy. Mr. Dhanil gave a motivational and interactive talk to students about the preparation of the GPAT and NIPER entrance test and career planning.

Dr. JinuIssac, Principal Lisie College of Pharmacy, Dr. John Joseph, Hon Secretary IPA Dr. Manoj Kumar, Professor of Pharmaceutical Chemistry felicitated the IPASF and GPAT topper. All the IPASF students were given Membership certificates by the President and Hon. Secretary. Ms. Angel Joy, the final year B, Pharm student, and IPASF representative proposed vote of thanks.

## Webinar on "Career Opportunities in the Pharmaceutical industry"

The Indian Pharmaceutical Association Kerala State branch organized a webinar entitled "Career Opportunities in the Pharmaceutical Industry" on 20th May 2023. Dr. PremnathShenoy Former Director, QA/RA AstraZeneca Bangalore, and Mr. Vinupal KK Director, Solista Pharmaceutical Pvt Ltd, Pondicherry were the resource persons. The webinar was well attended by the pharmacy students and faculty members. Dr. John Joseph Hon. Secretary IPA state branch while welcoming the gathering said that the students from Kerala could not exposure to the pharm industry due to the paucity of firms in Kerala. Such webinars would motivate them to take up industry careers in the neighbouring states. Ms.Abhirami, an IPASF student from Amrita School of Pharmacy Kochi was the master of ceremony and outlined the need for the topic of the webinar. Dr.Shenoy presented the first talk: Indian Pharmaceutical Industry – career Opportunities in Manufacturing and Quality Control. Dr. David Joseph, Chairman of Industry Forum and Director of Variety Fling Pharmaceutics Ltd chaired the session to introduce the topic and speaker. Dr.Boby John G Professor and HOD, Pharmaceutics Department St. Joseph College of Pharmacy Cherthala moderated the session.

The talk on "Career Opportunities Quality Assurance Regulatory Affair and Marketing was given by Mr. Vinipal KK, Mr. PK Harikumar Former Production Manager, Kerala State Drugs and Pharmaceutical Ltd and convener of Industry Forum chaired the session to introduce the topic and speaker. Dr. Anjana John Principal, JDT Islam College of Pharmacy, Kozhikode moderated the session. There were a lot of queries from the participants about career/ scope in industries outside Kerala state. The webinar could provide insight into the intricacies of manufacturing and business and inspire the participants to take up an industry career, ever challenging and rewarding. Mr.Santhosh TR, Production Manager, Kerala state Drugs, and Pharmaceutical Ltd Alappuzha proposed a vote of thanks.

*Answers:*
*1C; 2C; 3B; 4A; 5B; 6A; 7B; 8D; 9A; 10B; 11C; 12B; 13C; 14D; 15A; 16D; 17B; 18C; 19C; 20A; 21C; 22C; 23D; 24A; 25B*

Vol.2- Issue. 02, April - June 2023

# Frontline PHARMACISTS



Published by Dr. Kiron SS, Chairman, Hospital Pharmacy Forum, IPA Kerala State branch for and on behalf of the Indian Pharmaceutical Association, Kerala State branch Ph: 9447086959