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# Frontline PHARMACISTS

## Newsletter

## Official Publication of IPA Kerala State branch

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## EDITORIAL

Dear Healthcare Colleagues,

In the dynamic landscape of healthcare, pharmacy practice stands as a cornerstone, playing a pivotal role in patient care, medication management, and public health initiatives. As we navigate through evolving challenges and opportunities, it is crucial to recognize the vital contributions of pharmacy professionals and the significance of advancing the field through research, innovation, and collaboration. The Pharmacy Practice Journal serves as a beacon for fostering these advancements, driving excellence, and shaping the future of pharmacy practice. Pharmacy practice is not merely about dispensing medications; it embodies a comprehensive approach to healthcare delivery, encompassing medication therapy management, patient counseling, medication reconciliation, pharmacovigilance, and much more. It is at the intersection of science and compassionate care where pharmacy professionals excel, ensuring safe, effective, and personalized medication use for every patient encounter. This issue emphasises on important disease occasion during the subject dated. Leprosy, cervical cancer, multiple myeloma, coronary heart disease (CHD), kidney disease, and tuberculosis (TB) are among the silent killers that plague our societies, often unnoticed until they reach advanced stages. These diseases not only compromise individual health but also present significant challenges to healthcare systems worldwide. As we strive for global health equity, it's imperative to shed light on these conditions and take decisive action to mitigate their impact. It addressing the burden of silent diseases such as leprosy, cervical cancer, multiple myeloma, CHD, kidney disease, and TB requires concerted efforts at local, national, and global levels. By raising awareness, promoting preventive measures, ensuring access to quality healthcare services, and fostering collaboration among stakeholders, we can strive towards a future where these diseases no longer cast a shadow on the health and well-being of individuals and communities worldwide. Let us unite in our resolve to turn the tide against these silent killers and build a healthier, more equitable world for all. Together, let us continue to push the boundaries of pharmacy practice, inspire transformative change, and make a meaningful difference in the lives of patients and communities worldwide. The journey towards excellence in pharmacy practice begins with a shared commitment to innovation, collaboration, and continuous learning—and the Pharmacy Practice bulletin stands as our trusted companion on this journey.

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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# PHARMACIST'S INFLUENCE IN THE STEWARDSHIP OF KIDNEY

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Kidney disease is common and rising continuously which results in increased mortality rate and frequent hospitalization. The kidneys have major functions in the body such as removing wastes and toxins, controlling blood pressure, maintaining bone health etc. The patient with kidney disease takes many medications thus proper monitoring should be done because the patients have complex medication regimens. Kidney disease can be acute or chronic kidney disease . Acute kidney disease occurs suddenly and can be reversible by treating the underlying condition, but the chronic disease occurs gradually which develops within months to years this may be due to hypertension and diabetes.

Chronic kidney disease is an abnormality of kidney function, declined glomerular filtration rate or markers of kidney damage for 3 months which have influence in health condition3. In 2017 approximately 750M cases of CKD were recorded globally which is greater than that of COPD, asthma, and depressive disorders4. In 2017 CKD ranked 12th as a leading cause for death.The comorbidities associated with kidney disorders are Diabetes, Hypertension and CVD. One of the leading causes for kidney disease is diabetes whereas type 1 and type 2 lead to CKD. Due to diabetes, there were increased susceptibility for acute kidney disorder from cardiovascular condition and also the patients with hypertension are more prone to CKD there were also increased risk of stroke.

Pharmacist Intervention: Pharmacists play major roles in kidney patient's healthcare team, with expertise in identifying potential drug interactions, laboratory monitoring, drug dosage adjustment, patient education, managing anaemia, general medicines selection and constitute effective medication management programs1. Some of the studies also showed that pharmacist interventions improved patient's outcomes such as Hb levels, creatinine clearance, PTH and calcium levels. They may also reduce risks and advise about drug dosing in kidney impairment and identify and monitor the drugs that can cause proper functioning of kidney.

Community pharmacists potentially have more contact with patients than any other healthcare professionals. So they are in a strong position to identify the patients who are most at risk of developing kidney disease and can also understand the level of risk and to monitor the medicines that can cause serious damages. And they can also do initial counselling the risk of kidney disease and the importance of test and how patient can identify CKD through the test and about the treatment.

Each pharmacist should be able to :
Identify the patients.
Understand the patients who should be refer to screening through different steps.
Step 1: Identify the patient have any symptoms of CKD.
Step 2: Start a conversation.
Step 3: Take action on CKD with patients.
Step 4: Holistic advice for your at-risk patient

Preparing for effective patient counselling.

At the time of patient counselling the pharmacist should mention that over symptoms can't be seen in early stages of CKD, importance of screening test and other tests to monitor the condition of patients and the importance of early treatment to regulate the progression of CKD. The pharmacy team is able to improve the patient's outcomes by effective screening of the patients at the risk of CKD and it is easy to diagnose and treated earlier8. And it will also be helpful for building trust and long- lasting relationships with primary care services and can create more opportunities to work together to achieve better patient care. There is also an arising role for the pharmacist to monitor medications.

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# BRIEF OVERVIEW OF MEDICAL DEVICE RULES-2017

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## Introduction

Medical devices are an important part of health care and it includes heterogeneous class of products covers a wide variety of technologically simple items to much complicated items like cardiac valves or pace makers. MDR-2017 are aimed at bringing uniformity and standardisation to the regulation of medical devices in India, to ensure that the medical devices used in India meet the necessary quality and safety standards for patient care. The manufacturers, importers and other stakeholders in the medical device industry are to comply with the regulations to operate in Indian market

Broadly based on the function of medical device, they may be classified as preventive care device, assistive care device, diagnostic device and therapeutic device. Regulations of Medical Devices in India Medical Devices in India are regulated as drugs by the Central Drugs Standards Control Organization (CDSCO) as per the provisions of Medical device rules 2017 issued by the Government under the Drugs and Cosmetics Act, 1940 ("D&C Act"). Only the devices notified by the Government are regulated and falls under the provisions of regulations as per MDR17.

## Classification

A risk based system is adapted for regulation of medical devices includes

Low risk (Class A) Low Moderate (Class B) Moderate High (Class C) and High Risk devices classified as (Class D).

## Salient Features of MDR 2017:

Risk based classification

Provisions of Notified Bodies

Quality Management System in line with ISO 13485;

Provisions related to the 'Essentials Principles of Safety and Performance' for manufacturers have been specified in the Rules;

Separate provisions for regulation of Clinical Investigation of investigational medical devices (i.e. new devices) have been made at par with international practice

Provision is made to designate or establish Central Government medical device testing laboratories to verify conformance with the quality standards.

## Medical devices mean:

a.. Specific devices intended for internal or external use in the diagnosis, treatment, mitigation or prevention of disease or disorder in human beings or animals which are notified by the government from the time to time under the Drugs and Cosmetics Act, 1940 ("D&C Act").

b. Specific substances intended to affect the structure or any function of the human body which are notified by the government. At present, the substances notified are mechanical contraceptives (eg. condoms, intra-uterine devices, tubal rings) and disinfectants.

c. Surgical dressings, surgical bandages, surgical staples, surgical sutures, ligatures, blood and blood component collection bag with or without anticoagulant, Substances used for in vitro diagnosis

d. All substances intended to be used for or in the diagnosis, treatment, mitigation or prevention

of any disease or disorder in human beings or animals.

As per notifications issued by the Ministry of Health and Family Welfare on 11thFebruary, 2020, all medical devices intended for use in human beings or animals as drugs will come under the purview of regulations with effect from the 1stday of April, 2020.

The definition of Medical Devices, will be applicable forall devices including an instrument, apparatus, appliance, implant, material or other article, whether used alone or in combination, including a software or an accessory, intended by its manufacturer to be used specially for human beings or animals which does not achieve the primary intended action in or on human body or animals by any pharmacological or immunological or metabolic means, but which may assist in its intended function by such means for one or more of the specific purposes of: (i) Diagnosis, prevention, monitoring, treatment or alleviation of any disease or disorder;
(ii) Diagnosis, monitoring, treatment, alleviation or assistance for, any injury or disability;
(iii) Investigation, replacement or modification or support of the anatomy or of a physiological process;
(iv) Supporting or sustaining life;
(v) Disinfection of medical devices; and
(vi) Control of conception

## Regulatory body

The Central Drugs Standard Control Organization (CDSCO) is the National Regulatory Authority (NRA) responsible for approval of manufacturing, import, conduct of clinical trials, laying down standards, sale and distribution of medical devices as per Gazette of India notification G.S.R. 78(E), dated 31st January 2017 by the MoHFW, GoI, effective from 01.01.2018 . The Medical Devices Rules 2017 consists of 12 Chapters, 8 Schedules and 40 MD forms to assist the medical device manufacturers, innovators in adopting MDR17.
Manufacturers of medical devices must conform to certain standards laid out by the Bureau of Indian Standards (BIS) or international standards bodies like the International Organization for Standardization (ISO) or the International Electro technical Commission (IEC).

The manufacturers and importers are required to obtain licenses from the Central Licensing Authority (CLA) or the State Licensing Authority (SLA). Medical devices are required to be registered with the Central Drugs Standard Control Organization (CDSCO) prior to importation. Fees are prescribed for various processes such as license application, registration, testing, and inspections.
New Medical Device Online portal is functional for uploading the applications for Import License and Manufacturing License of Medical devices and IVDs, for post approval changes, registration of medical devices testing laboratories, clinical investigation etcThe manufacturer should comply with the labelling requirements which include intended use, precautions instructions for usage and details of manufacturers.The packaging should be so as to maintain its integrity and sterility. The technical persons responsible for manufacturing and testing are designated as Medical Device Officer and Medical Device Testing officer.
Rules are outlined for conducting clinical investigations for medical devices, specifying the process and requirements for approval.

Manufacturers are required to implement a quality management system compliant with the specified standards. They should maintain records related to manufacture, sale, and distribution of medical devices. Specific requirements are outlined for the import and export of medical devices, including the need for an Import License and an Export Certificate.

Manufacturers, importers, and other stakeholders are required to report adverse events related to medical devices to the National Coordination Centre for Medical Devices (NCC-MvPI).

# NEW HIV TREATMENT GUIDELINES

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Human immunodeficiency virus (HIV) is an infection that attacks the immune system of our body. Acquired immunodeficiency syndrome (AIDS) is the most advanced stage of the disease. The virus targets the body's white blood cells, weakening the immune system. This makes it easier to get sick with diseases like tuberculosis, infections, and some cancers.

HIV is spread from the body fluids of an infected person, including blood, breast milk, semen, and vaginal fluids. It can be treated and prevented with antiretroviral therapy (ART). Untreated HIV can progress to AIDS, often after many years. WHO now defines Advanced HIV Disease (AHD) as CD4 cell count less than 200cells/mm3 or WHO stage 3 or 4 in adults and adolescents. All children with HIV younger than 5 years of age are considered to have advanced HIV disease.

Upon being diagnosed with HIV, it is recommended to initiate antiretroviral therapy (ART) as soon as possible. ART typically involves the use of three HIV medicines from at least three distinct drug classes. This could entail the daily consumption of multiple pills at various intervals throughout the day. Managing the regimen of multiple pills can be challenging for some individuals, particularly those dealing with substance use or mental health disorders.

In 2021, the Food and Drug Administration (FDA) approved Cabenuva, which contains two different types of HIV drugs: cabotegravir and rilpivirine. It can be administered as injection once a month or once every two months.Lenacapavir (Sunlenca) received FDA approval in late 2022 as the second injectable HIV medication. It is in a new class of drugs, called capsid inhibitors, meaning that it affects the shell that protects the virus, preventing it from multiplying. Lenacapavir could cut doctor visits down to twice a year. However, it is approved only for persons whose virus has become resistant to other drugs.

NACO Guidelines: ART regimen in ART naive adults and adolescents

a. Preferred first line ART regimen for all* PLHIV with Age >10 Years and Weight >30kg

Tenofovir (300 Mg) + Lamivudine (300 Mg) + Dolutegravir (50 Mg) : FDC tablet one tablet once daily (at bedtime or any time fixed as per patient's convenience).

*Including: HIV 1, HIV 2, HIV 1 & 2, women exposed to single dose nevirapine in past and PLHIV confected with TB or Hepatitis B & C.

Note: women of childbearing age or potential should be provided informed choice about the immense benefits and very small risks for the use of dolutegravir (DTG) in first trimester.

NACO Guidelines: Special Situations:

| **Condition (Exception)** | **Alternate regime** |
|---|---|
| PLHIV with body weight > 30 kg | Abacavir 600 mg + Lamivudine 300 mg one tablet +Dolutegravir (50mg once daily ALD |
| All patient with high ( above ULN for lab) serum creatinine values (calculated creatinine clearance) | Abacavir 600 mg OD+ Lamivudine (as per creatinine clearance ) and Dolutegravir 50mg once daily (As separate drug) |
| PLHIVon Rifampicin containing ATTT regime | Tenofovir (300mg) + Lamivudine (300mg) + Dolutegravir (50mg0 once daily) (FDC in evening) Additional Dolutegravir 50 mg morning) |

Updated PEP Guideline

| **Regimen** | **Drugs ( 28 days)** |
|---|---|
| One regime ( 3 drugs) | Tenofovir+ Lamivudine_ DTG |
| **Alternate regimen**<br>Tenofovir 300mg OD + Lamivudine 300mg OD+ LPV 200mg /TVR 50 mg- Two tab BD | |

Above treatment protocol is meant in situations when source HIV patient is ART naïve or with unknown status Further experts guidance shall be sought when the source patient is found to be treatment experienced ( For example : source patient on second line ART)

DRUG PROFILE

# GADOPICLENOL

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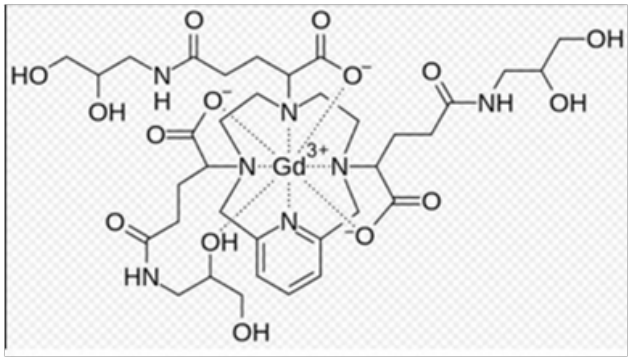
## INTRODUCTION

Gadopiclenol, sold under the brand name Elucirem, is a contrast agent used with magnetic resonance imaging to detect and visualize lesions with abnormal vascularity in the central nervous system and in the body. Gadopiclenol is a paramagnetic macrocyclic non-ionic complex of gadolinium.

## CHEMICAL STRUCTURE OF GADOPICLENOL




2-[3,9- bis[1-carboxylato-4-(2,3-dihydroxypropylamino)-4-oxobutyl]- 3,6,9,15 tetrazabicyclo[9.3.1]pentadeca- 1(15),11,13-trien-6-yl]-5-(2,3-dihydroxypropylamino)-5-oxopentanoate

Mechanism of Action

Gadopiclenol is a macrocyclic non-ionic complex of gadolinium and a paramagnetic molecule that develops a magnetic moment when placed in a magnetic field. The magnetic moment alters the relaxation rates of water protons in its vicinity in the body.Its use in magnetic resonance imaging (MRI) allows to selectively increase contrast in tissues where gadopiclenol accumulates.

## PHARMACOKINETICS

*Absorption*

Peak plasma concentration: 525 mcg/mL 2-6 years: 403 mcg h/mL7-11 years: 478 mcg h/mL12-17 years: 582 mcg h/mLAdults: 569 mcg h/m

*Distribution*

Protein bound: ≤1.8% Vd: 13 L

Following administration, gadolinium is present for months or years in brain, bone, skin, and other organs

*Metabolism*

Not metabolized

Elimination

Total body clearance: 100 mL/min Renal clearance: 81 mL/min Excretion: Urine 98%

*Administration*

IV Administration: Before administration, assess all patients for any history of a reaction to contrast media, bronchial asthma and/or allergic disorders;

these patients may have an increased risk for a hypersensitivity reaction to this drug
Administer IV at rate of ~2 mL/second
Flush IV line with 0.9% NaCl after administration
Contrast MRI can immediately following injection. Administer in facility where trained personnel and therapies are promptly available for treatment of hypersensitivity reactions, including personnel trained in resuscitation
During and following administration, observe patients for signs and symptoms of hypersensitivity reactions.
Storage
Store at 25ºC (77ºF); excursions permitted to 15-30ºC (59-86ºF). Do not freeze prefilled syringes
*Dosage from*
IV solution, single-dose vials
1.5 mmol/3mL (0.5 mmol/mL)
3.75 mmol/7.5mL (0.5 mmol/mL)
5 mmol/10mL (0.5 mmol/mL)

Indication
Gadopiclenol is indicated in adult and pediatric patient aged 2 years and older for use with magnetic resonance imaging (MRI) to detect and visualize lesions with abnormal vascularity in the central nervous system (brain, spine, and associated tissues) and the body (head and neck, thorax, abdomen, pelvis, and musculoskeletal system).
Contraindication
Pregnancy
GBCAs cross the placenta and result in fetal exposure and gadolinium retention.
Lactation
Estimated infant exposure is 0.01%-0.04% of the maternaldose.
Adverse Effect
With percentage prevalence Injection site pain (0.7% ) Headache (0.7%), Nausea (0.4%)
Injection site warmth (0.4%) Injection site coldness (0.3%) Dizziness (0.3%)Localized swelling (0.3%)

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https://medicaldialogues.
https://www.pharmacytimes
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# JESDUVROQ

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JESDUVROQ (DAPRODUSTAT) is a hypoxia-inducible factor prolyl hydroxylase (HIF PH) inhibitor indicated for the treatment of anemia due to chronic kidney disease in adults who have been receiving dialysis for at least four months. Tablets of Jesduvroq are taken orally once a day. The FDA has approved Jesduvroq as the first oral medication to treat CKD-related anemia; other FDA-approved therapies for this ailment require injections under the skin or into the blood. Jesduvroq has not been shown in clinical trials to enhance well-being, weariness, or quality of life. Jesduvroq ought not to be utilized:

• As a substitute for red blood cell transfusions in patients who require immediate correction of anemia

• for the management of CKD-related anemia in individuals not receiving dialysis.

## Mechanism of Action

Reversible inhibitor of HIF-PH1, PH2, and PH3 (hypoxic inducible factor).Hypoxia-inducible factors stabilize when oxygen-sensing prolyl hydroxylase enzymes are inhibited. This can result in the transcription of erythropoietin and other genes that are important in the therapy of anemia.In a dose-dependent way, Daprodustat raises endogenous erythropoietin. When repeated dosages are administered, reticulocyte counts peak between 7 and 15 days later, followed by increases in red blood cell production. After the first administration, new hemoglobin steady-state values are reached a few weeks later (four weeks for ESA users and sixteen to twenty weeks for non-users). Additionally, when given for 52 weeks to persons receiving dialysis who have anemia from CKD, it lowers blood ferritin, transferrin saturation, and hepcidin and raises serum transferrin and total iron binding capacity (TIBC).

## Pharmacokinetics

Absorption:Within 24 hours of dosage, steady-state concentrations are reached. Daprodustat is easily absorbed when taken orally; in healthy individuals, the median time to peak concentration (Tmax) is between one and four hours. Daprodustat has a 65% total bioavailability.
Distribution: The distribution of blood cells and plasma in daprodustat is roughly equal (blood: plasma ratio: 1.23). In healthy patients, the volume of distribution at steady state after intravenous dosage is 14.3 L. In in vitro Daprodustat binds to plasma proteins >99%.
Metabolism:Daprodustat is predominantly metabolized in vitro by CYP2C8 (which contributes 95% of the total), with CYP3A4 (5%) making up the remaining 5%.
Excretion: Mean clearance from plasma was 18.9 L.Excreted mainly in faeces(74%) and 21% through urine. Approximately 99.5% of the dose was excreted as oxidative metabolites.

**Adverse Effects:**
Hypertension, Abdominal pain, Dizziness, Hypersensitivity, Vascular access thrombosis, Myocardial infarction Stroke. Deep vein thrombosis, pulmonary embolism.

**Warnings And Precautions:**
Increased risk of cardiovascular mortality, stroke, thromboembolism, serious acute kidney injury, hospitalization for heart failure, and serious gastrointestinal erosions are observed. It is recommended that patients seek rapid medical attention in the event that they develop signs or symptoms of myocardial infarction (MI), stroke, venous thromboembolism (VTE), and to examine and treat these conditions promptly. Reports of heart failure hospitalizations; take into account a patient's medical history before prescribing; inform patients about heart failure symptoms and signs, and urge them to contact their doctor right once if they worsen. Irregular blood pressure control is contraindicated; monitor blood pressure frequently and start antihypertensive medication if necessary. When treating people without dialysis for CKD-related anemia, safety has not been proven; usage in this context is not advised. Malignancies reported but not researched or advised for patients with active cancer
Gastrointestinal erosion:Patients who have gastrointestinal (GI) erosion risk factors, such as peptic ulcer disease, history of GI erosion, concurrent use of drugs that increase the risk of GI erosion, current tobacco use, and alcohol use, should be especially aware of this risk. Inform patients to seek immediate medical attention if they experience any of the symptoms and indicators of GI bleeding, including stomach and esophageal erosions.

Recommended Starting Dose of JESDUVROQ

**Evaluation of Anaemia and Iron Stores:**
Before starting JESDUVROQ, make the necessary corrections and rule out any additional causes of anaemia, such as vitamin deficiencies, metabolic or chronic inflammatory disorders, or bleeding. Prior to and during JESDUVROQ treatment, assess each patient's iron status. If serum transferrin saturation is less than 20% or serum ferritin is less than 100 mcg/mL, give further iron therapy. Most individuals with chronic kidney disease (CKD) will need extra iron while receiving treatment.

**Liver Testing:**
Before starting JESDUVROQ, measure serum levels of alkaline phosphatase, total bilirubin, aspartate aminotransferase (AST), and alanine aminotransferase (ALT). If, while taking JESDUVROQ, the patient exhibits symptoms or signs that could indicate liver damage, repeat the liver tests.
Starting Dose of JESDUVROQ for Adults on Dialysis not receiving an Erythropoiesis-Stimulating Agent:

| Pre-Treatment Haemoglobin Level (g/dL) | Starting Dose of JESDUVROQ (Once Daily Dosing) |
|---|---|
| <9 | 4mg |
| ≥9 to ≤10 | 2mg |
| >10 | 1mg |

Starting Dose of JESDUVROQ for Adults on Dialysis Switching from an Erythropoiesis-Stimulating Agent
Epoetin alpha IV: Beginning at 4 mg PO qDay for ≤2,000 units/week, daprodustat should be started at 6 mg PO qDay for >2,000 to <10,000 units/week, 8 mg PO qDay for ≥10,000 to <20,000 units/week, and 12 mg PO qDay for ≥20,000 units/week.
Darbepoetin alpha IV/SC: Starting daprodustat at 4 mg PO qDay for 20–30 mcg/4 weeks; starting daprodustat at 6 mg PO qDay for 30–150 mcg/4 weeks; and starting daprodustat at 8 mg PO qDay for 150–300 mcg/4 weeks. >300 mcg/4 weeks: begin taking 12 mg PO qDay of daprodustat.
Methoxy polyethylene glycol (PEG)-epoetin beta SC/IV:30–40 mcg/month: Take 4 mg of daprodustat PO qDay; 41–180 mcg/month: Take 6 mg of daprodustat PO qDay; 180–360 mcg/month: Take 8 mg of daprodustat PO qDay; 360 mcg/month: Take 12 mg of daprodustat PO qDay

After starting and after every dosage modification, check Hgb every two weeks for the first month, and then every four weeks after that.

### Dosage Adjustments

Take into account the fluctuation, rise, and fall rates of Hgb when modifying dosages. Do not raise the dosage more than once every four weeks. One dose level at a time should be increased or decreased if the dosage needs to be changed. Cut back on dosage when Hgb rises quickly (for example, more than 1 g/dL in two weeks or more than 2 g/dL in four weeks), OR more than 11 g/dL.
Stop the treatment when Hgb exceeds 12 g/Dl and upon reaching the desired range for Hgb, restart at one dosage level lower. If therapy is not continued for more than 24 weeks and there is no clinically significant increase in Hgb, stop. Look for other reasons why the response was insufficient and treat before continuing.

Recommended dose levels:1 mg/day,2 mg/day,4 mg/day,6 mg/day,8 mg/day,12 mg/day,16 mg/day,24 mg/day (maximum recommended dose).

Contraindications: Patients who get a strong CYP2C8 inhibitor, such as gemfibrozil, or who have uncontrolled hypertension should not use JESDUVROQ.

Drug Interactions:Given the significant rise in daprodustat exposure, it is not recommended to provide strong CYP2C8 inhibitors (such as gemfibrozil) concurrently with JESDUVROQ. Exposure to daprodustat is increased by concurrent administration of mild CYP2C8 inhibitors, such as clopidogrel. In patients using clopidogrel or a mild CYP2C8 inhibitor, JESDUVROQ should be cut in half before beginning treatment, with the exception of those whose starting dose is already 1 mg.Daprodustat exposure may be reduced by CYP2C8 inducers (e.g., rifampin), potentially leading to a loss of efficacy.

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# Practice Quiz

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1.Leprosy's is also called:
- a. Hartmann's disease
- b. Hansen's disease
- c. Humprey's disease
- d. Harry's disease

2. Lepromatous leprosy is observed in patients with:
- a. Deficient cell mediated immunity
- b. Adequate cell mediated immunity
- c. Adequate humoral immunity
- d. None of the above

3. Which particular type of hypersensitive response does the Lepromin test involve?
- a. Type
- b. Type
- c. Type
- d. Type

4. Identify the drug not used in the treatment of type lepra reaction
- a. Chloroquine
- b. Thalidomide
- c. Cyclosporine
- d. Corticosteroids

5. How do viruses in the papillomavirus family cause cancer?
- a. Generates the three carcinogenic proteins E5, E6 and E7 and replicates in dividing cells
- b. Concatenates the viral genome with the DNA of the cells
- c. Has an oncogene able to initiate cancer
- d. Acts as a cofactor for a cellular oncogene

6. What are the characteristics of colorectal cancer is from the following?
    a. Surgery alone is the cure for more than 90% of people with Duke's A illness
    b. Less than 5% of patients present with distant metastases
    c. There is no survival impact from chemotherapy
    d. Duke's C illness

7. In case of advanced colorectal cancer, acute intestinal blockage indicates?
    a. Surgery is typically used to treat
    b. Is commonly brought on by intestinal blockage at a particular location
    c. Ought to be managed with consistent oral antispasmodics, analgesics and antiemetics
    d. Need to be administered with syringe driver containing a mixture of antiemetics, antispasmodics, analgesics

8. Which of the following should be prescribed to patients with multiple myeloma who also exhibit lytic lesions or bone loss?
    a. Corticosteroids
    b. Radiation therapy
    c. Thalidomide
    d. Zoledronic acid

9. After a multiple myeloma diagnosis is made conclusively, which tumor marker is identified?
    a. Bence Jones proteinuria
    b. Tamm Horsfallmucoprotein
    c. Vascular endothelial growth factor
    d. Macrophage inflammatory protein 1

10. Adverse effects of lenalidomide, an immunomodulator used in the treatment of multiple myeloma include?
    a. Neutropenia
    b. Thrombocytopenia
    c. Anaemia
    d. All of the above

11. Congenital chromosomal abnormalities or Down syndrome is also known as?
    a. Trisomy 20
    b. Trisomy 31
    c. Trisomy 21
    d. Trisomy 30

12. Identify the physical characteristic of Down syndrome where the fifth finger is slightly curved towards the other fingers?
    a. Clubbing
    b. Clinodactyly
    c. Dupuytren's contracture
    d. Phalange

13. Which one from the following is the first line drug for the treatment of tuberculosis?
    a. PAS
    b. Pyrazinamide
    c. Kanamycin
    d. Cyclosporin

14. The katG gene mutations in Mycobacterium tuberculosis cause resistance to?
    a. INH
    b. Rifampicin
    c. Pyrazinamide
    d. Streptomycin

15. Resistance to MDR TB can be defined as?
    a. Use of more than three anti tubercular drugs
    b. Isoniazid and Rifampin irrespective of resistance to any other drugs
    c. INH, PZA and rifampicin
    d. Use of fluoroquinolones and second line anti tubercular drugs

16. Which investigation is appropriate for identifying coronary artery disease?
    a. Cardiac catheterization
    b. Electrocardiogram
    c. Treadmill stress test
    d. All of the above

17. Which procedure is involved in the treatment of coronary angioplasty for CAD?
    a. A new part of the artery replaces the blocked section
    b. To expand the artery, medication is used
    c. Inflation of a tiny balloon inside an artery
    d. None of these

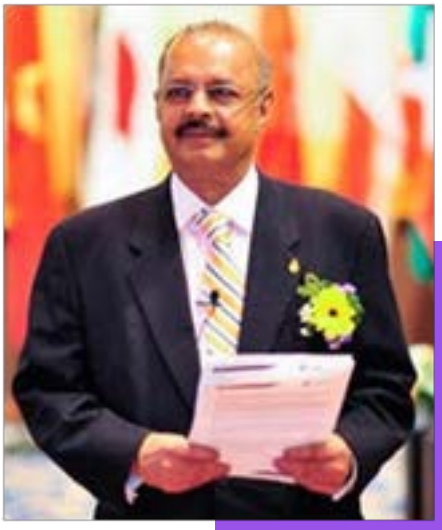
18. Tests for the albumin-to-creatinine ratio quantify the amount of which criteria in patients with chronic kidney disease?
    a. Potassium
    b. Sodium
    c. Albumin
    d. Uric acid

19. The stage of kidney disease that a glomerular filtration rate between 30 and 44 corresponds to?
    a. Stage 1
    b. Stage 2
    c. Stage 3
    d. Stage 4

20. Which o the following describes the typical course of therapy for patients with chronic kidney disease?
    a. Antibiotics
    b. Dialysis
    c. Antidepressants
    d. Insulin therapy

*Please refer the answer key on page number 25

# CONDOLENCE MESSAGE



**Dr. Muhammad Majeed**
Founder CMD , Sami- Sabinsa Groups
Bangalore &
Former Patron, Industry Forum
IPA Kerala State Branch

*We mourn the untimely and sudden demise of Dr. Muhammad Majeed, Founder Chairman, and Managing director of Sami-Sabinsa Group, Bangalore.*

*A great doyen of global phyto- pharmaceutical industry. Indeed, it is an irreparable loss for the global Pharma fraternity also. Dr.Majeed is a man of love, resilience, vision, and profound inspiration.The best tribute to this great man is encouraging translational research in academia and growth of Pharma industry.*

*For his contributions, he was globally recognized and bestowed with a lot prestigious awards. Dr.Majeed, was a man of Confidence, Hard work, and Success. Enduring kindness in him is seen through the charity he extended via the Dr. Muhammad Majeed Foundation. He used to donate generously to the needy. His passion for research is well known and he used to support professional events and the academic institutions in their research and capacity building.*

*We will miss a man of flawless integrity, vision, and enthusiasm. – The glory has passed away but he will live in our hearts. His sad and unexpected demise is a great loss to our profession. We share in the grief and mourning of the bereaved family of Dr. Muhammad Majeed and offer our deepest and heartfelt condolences. Let his dream project Sami- Sabinsa Group continues to grow further and serve the mankind.*

*May the departed soul Rest In Peace*

*Indian Pharmaceutical Association*
*Kerala state Branch*

# IPA KERALA STATE - ASSOCIATION NEWS

## Inauguration of the "Train the Trainers Program on Patient Counselling"

The Kerala State branch of the Indian Pharmaceutical Association organized the fifth batch of the training program on patient counseling for practicing pharmacists. The training program was formally inaugurated on Sunday 14th January 2024 by the Chief Guest Dr. K. Sujithkumar Drugs Controller Kerala state. In the inaugural address, the chief guest congratulated the IPA Kerala state branch for organizing such a training program to promote patient counseling service. He emphasized that Good pharmacy practice with effective patient counseling is the major role of pharmacists. He said that effective patient counseling would leverage the practice setting of the pharmacy profession.

Prof. Manjiri Garat Vice President, Community Pharmacy Division FIP and Principal, K.M. Kundnani Pharmacy Polytechnic, Mumbai was the Keynote speaker and Guest of Honour. She said that proper patient counseling would improve medication compliance and the safe use of medicines. She explained the progressive pharmaceutical care services rendered by community pharmacists in the global scenario. She outlined the FIP role in Pharmacy practice and advised the pharmacists to refer to the publications of FIP to update their knowledge. She urged pharmacists to scope with the digital era and use digital platforms to improve professional competency and services.

Mrs. Manju CS Associate Professor, Government Medical College Kozhikode welcomed the gathering and Mrs. Remya Gayathri, Assistant Professor of Pharmacy Practice, Chemists' College of Pharmaceutical Sciences Ernakulam was the master of ceremony and gave an opening remark about the training program. Dr. P. Jayasekhar President IPA Kerala state branch chaired the inaugural ceremony and appreciated the participants for their interest in updating knowledge in patient counseling.

Mr. MP George, Vice President of IPA Kerala state and former Drugs Controller Kerala state gave a professional message highlighting the significance of patient counselingservice – a tool to serve society effectively. Dr. PK. Sreekumar, Chairman of the Community Pharmacy Forum and former Deputy Drugs Controller gave a brief report and outcomes of the last 4 batches training program conducted. Dr.Suja Abraham, Professor &HoD Pharmacy Practice Nirmala College of Pharmacy outlined the 18 modules of the training program and said that the participants would get 15 CPE points if they complete all the courses.

Felicitations were offered by Dr. Mohammed Haneefa Principal, Moula College of Pharmacy Perinthalmanna, D Jose K Thomas, Clinical Pharmacist (USA) Dr. Nobil Skaria, Senior Oncology Clinical Pharmacologist & Head of Clinical Pharmacy, Apollo Adlux Hospital. Angamali, Mr Vinod Kumar, Head Pharmacist General Hospital Thalasseri and Mr. Shisi Pakalkuri, Treasurer IPA Kerala State Branch

Dr. John Joseph Hon. Secretary IPA and Emeritus Professor Lisie College of Pharmacy Ernakulam proposed a vote of thanks


## 3rd February 2024
## Personality Development Program- Transforgen 2024

One day Personality development training camp was organised by IPA Kerala state branch and Nirmala College of Pharmacy on 3rd February 2024 for the benefit of IPASF Leader from various Pharmacy collages colleges. The camp was inaugurated by Rev. Fr. Jose Pulloppillil, Administrator Nirmala College of Pharmacy. The topic like soft skill training emotional quotient, confidence building, time management, Public speaking skills, Interview, Techniques, Interpersonal skill, Positive Thinking etc were administered by Mr. Jaison Arackal, Director, Success Mine Training Academy, Mr. MP George, Former Drugs Controller Kerala state and Dr. Fels Saju, Associate Professor, Nirmala College of Pharmacy. 45 students from 7 colleges were benefited by the campus Amrita School of Pharmacy Kochi, Chemists College of Pharmaceutical Sciences and Research, Ernakulam, Govt. College of Pharmaceutical Science, Kottayam, Lisie College of Pharmacy Ernakulam, Nirmala College of Pharmacy Muvattupuzha , Nirmala College of Health Sciences, Chalakkudy, St. James College of Pharmaceutical Sciences, Chalakkudy

## 17th February 2024
## Pharmacia24, One day International Conference


*The inaugural address by Dr. P. Jayasekhar, President, IPA Kerala State Branch*

A day international Conference, Pharmacia 24 on the theme "Translational Research in Pharmaceutical Sciences and Practice" was jointly organized by IPA Kerala state branch and the Sreekrishna College of Pharmacy and Research Center, Parassala, Thiruvananthapuram on 17th February 2024. Dr. P. Jayasekhar, President of IPA Kerala state branch was the Chief Guest and in his inaugural address, he pointed out the need for meaningful academic research and the importance of teaching- research nexus in the context of NEP 2022 to foster a research mindset in the students. Dr. Chandrasekhar M, Professor of the Pharmaceutical Sciences University of Findlay, USA was the Guest of Honor and Keynote speaker. He gave an interesting talk about the diversified roles of US Pharmacists in pharmaceutical care service and gave suggestions on how clinical pharmacy service in India can be improved to get public recognition. The session was chaired by Dr. Xavier Arulalppa Professor & HOD Sreekrishna College of Pharmacy.

The Managing Trustee of the College Mrs. Geetha Monikantan presided over the inaugural ceremony and Dr. Prasobh GR, the Principal, welcomed the gathering. Dr. Gautham Krishna M, Chairman, of the College Trsut gave an overview of the development of the college. . There were about 800 registered delegates from 20 Pharmacy colleges from Kerala and Tamil Nadu.

A panel discussion on "Translation research- Molecule to Medicine and Wellness" was well received by the delegates. The mind-blowing discussion was chaired by Dr. P. Jayasekhar and he outlined the transitional research areas in pharmaceutical science and practice and the need for academic collaboration with industry and hospitals. Dr. Daniel Xavier Prasad, Professor & HOD Pharmacognosy, Sreekrishna College of Pharmacy moderated the panel discussion. Dr.Preeja G Pillai, Principal Mar Diosorous College of Pharmacy, Thiruvananthapuram focused on the cutting-edge methods of pharmacological screening in the drug discovery process with special emphasis on the use of transgenic animals. Dr. NJ Merlin Professor & HoD Pharmacology

Ezhuthachan College of Pharmacy Neyyattinkara outlined the contribution of cell-line studies in the screening of drug molecules, Dr. Aravind A, Associate Professor of Medicinal Chemistry, Govt. College of Pharmaceutical Sciences, Thiruvananthapuram gave an account of the modern drug discovery tools used in computer-aided drug design. Dr. Jaslim Edward, Principal of Sun College of Pharmacy, Nagercoil explained the phyto-molecules in drug discovery. Dr. John Wesley of Ezhuthachan College of Pharmacy outlined the scope of Novel drug delivery systems in drug discovery and translational research. Dr.Anusree Raj of SA Raja College of Pharmacy, Thirunelveli outlined the scope of clinical research and the feedback to improve the safety of medicine.

After the panel discussion, there was a session on "Entrepreneurship and innovative projects" by Dr. Karthik Rakam CEO and Co-Founder of Avenida Innovation LLP. He explained the scope of Pharmaceutical care services in clinical settings and community pharmacies and interacted with delegates. The session was chaired by Dr, Anusree Raj, Associate Professor of Pharmacy Practice at SAR Raja College of Pharmacy. Tirunelveli . There were a lot of oral and poster presentations of research findings by the students and faculty.

In the valedictory function, the speakers were given mementos and certificates of recognition. The winners of oral and poster competitions were given certificates of merit and mementos. At the end Dr.Nithin Manohar HoD, Department of Pharmacy Practice a vote of thanks


*Faculty participate d in the Panel discussion on "Translational Research - Molecules to Medicine and Wellness"*

## 23rd February 2024
## A Visit To Marine Biodiversity Museum, Central Marine Fisheries Research Institute ,Ernakulam.


Indian Pharmaceutical Association Kerala state branch has organized a visit to the Marine Biodiversity Museum in CMFRI, Ernakulum for the Pharmacy students on 23rd February 2024. This is a rare occasion for pharmacy students to know more about the marine ecosystem which is now a rich source of medicines, nutraceuticals, and wellness products.

The faculty and IPASF students from 9 colleges in Ernakulam, Kottayam and Thrissur district took part in the visit. The team visited the marine museum and interacted with scientists in the research labs. The team understood that the aquatic organisms are screened for antibacterial, immune-modulator, anti-fungal, anti-inflammatory, anticancer, antimicrobial, neuro-protective, analgesic, and antimalarial properties. They are used for new drug developments extensively across the world. Marine pharmacology offers the scope for research on these drugs of marine origin.

## 28th February 2024
## National Science Day 2024 Celebration

The Indian Pharmaceutical Association Kerala state branch organized a webinar on “National Science Day 2024 on 28th February 2022 to pay tribute to Dr. C.V. Raman for his discovery of the Raman Effect. The theme of the NSD 2023 “Indigenous Technologies for Viksit Bharat” is well connected to pharmaceutical Sciences. The webinar was well attended by the students and faculty members from all over Kerala and most of the colleges projected live streaming of the program in the auditorium.

Dr. Anjana John Principal, JDT Islam College of Pharmacy, Kozhikode introduced the Chief Guest Dr. TV Narayana, National President of IPA and Director of Vikas Institute of Pharmaceutical

Sciences, Rajahmundry, Andhra Pradesh. His inspiring talk outlined the need of science and technology for the Viksit Bharat. He said IPA is encouraging research and practice for a developed India. He congratulated the state branch for organizing such a program to raise awareness among the students about the significance of science in the nation's development

Dr. Sabitha M Principal, Amrita School of Pharmacy Kochi introduced the Guest of Honor and Keynote speaker Prof. S.K. Kulkarni, Former Pro Vice Chancellor of Punjab University & Emeritus Professor of Pharmacology. He gave a talk on the theme " 'Viksit Bharat@2047 Sankalp: Challenges of building Innovation ecosystem in Pharma Academia. He said that though India is known as the Pharmacy of the World, we could not discover new molecules for mankind. The gap is due to poor translational research and academy-industry collaboration. He encouraged the students and young faculty to carry out interdisciplinary research so that academic research would benefit mankind.

Dr. Fels Saju Associate Professor, Nirmala College of Pharmacy, Muvattupuzha while welcoming the gathering narrated the significance of National Science Day and urged students to take science education and research more seriously. Dr. P. Jayasekhar President IPA Kerala state branch urged the teachers to inculcate a research mindset in the students. Teaching- research nexus is an important tool where the faculty can bring his/ her research into the classroom to stimulate research in our students. Critical thinking ability is to be fostered and promoted nicely in the classrooms.

Dr. K Krishnakumar, Principal, St. James College of Pharmaceutical Science, Chalakudy, gave a reflection on National Science Day. Mrs. Jooly Kurien, Associate Professor, Lisie College of Pharmacy, Ernakulam was the master of ceremony and outlined the significance of NSD.

Dr. David Paul, Assistant Professor, NIPER Kolkata, introduced the distinguished young scientist Dr.Syamprasad, Post Doc Associate of Pittsburgh University USA. He outlined the research experience on "Cancer and drug discovery and development process: Early preclinical development of aldose reductase inhibitors for the treatment of colitis-associated colon cancer"

Dr. Arul Rashed, Vice Principal, Al Shifa College of Pharmacy Malappuram proposed a vote of thanks. The live streaming of the webinar was done in the seminar hall/ auditorium of about 15 colleges so that pharmacy students and faculty could watch together and interact.

## 29th February 2024
## National Seminar on "Current Aspects of Clinical Pharmacy and its Opportunities"

*The Inaugural Session of the seminar*

Lisie College of Pharmacy organized a one day National Seminar on" Current Aspects of Clinical Pharmacy and its Opportunities" in association with Indian Pharmaceutical Association, Kerala State Branch on 29th February 2024at Lisie Hospital Auditorium, Ernakulam. The seminar commenced with the inaugural function at 9.30 am and Prof. Dr. John Joseph, Emeritus Professor and Hon. Secretory IPA, Kerala State Branch welcomed the gathering. Rev.Fr. Davis Padannakkal, Asst. Director, Lisie Medical and Educational Institutions inaugurated the function by lighting the lamp. In his inaugural address, he urged the students to take up the profession more seriously as it is essential for better health outcomes. Prof. Dr.Jinu Isaac, Principal, Lisie College of Pharmacy presided over the function. He highlighted the important mile stones in the development of Lisie College of Pharmacy and various activities undertaken by the Institution in association with IPA State branch in the uplift of Pharmacy profession. Mrs.Bhagyasree S, Assistant Professor Department of Pharmaceutics delivered the Vote of Thanks.

There were two sessions in the seminar. The first session was chaired by Dr.Kiron S.S, Professor, Department of Pharmacy Practice College of Pharmaceutical Sciences, Govt. Medical College Kannur. Dr.John Jacob, Co-Director, Jacob and Joseph Associates, MTM and Clinical Review Pharmacist – Walgreens Boots Alliance, Adjunct Asst. Professor, University of Florida gave a talk on "Clinical Pharmacy Careers for Pharmacy Graduates from India". In hispresentation he touched upon four important facets of Pharmacy Practice in the U.S scenario, namely Medical Therapy Management (MTM), Clinical Pharmacy services, Hospital Pharmacy services and Consultant Pharmacy services. Dr. John Jacob described the various types of activities the Pharmacists undertake and the about their responsibilities and about the respect they receive from the community. He explained the different

steps a graduate from India has to undertake to get a licence to practice Pharmacy in the US.

The second session was chaired by Dr.P.Manoj Kumar, Professor, Department of Pharmaceutical Chemistry, Lisie College of Pharmacy. Prof. Dr.Siby Joseph, Professor and HOD of Pharmacy Practice, St. Joseph's College of Pharmacy, Cherthala, Alappuzha engaged this session on the topic "Pharmaceutical Care Services in Indian Scenario". He explained the problems faced by the patients in India with five different case studies and how the intervention by a learned Clinical pharmacist can resolve medication problems to achieve better health outcomes. He also gave a SWOT analysis about the Clinical Pharmacy services in the context of Kerala. Dr.Siby was very optimistic about the future of Clinical Pharmacy services in India as more Physicians are accepting the services of Clinical pharmacists.

Students and faculty members from six colleges including Amrita School of Pharmacy Ernakulam, Nirmala College of Pharmacy, Muvattupuzha, Caritas College of Pharmacy, Kottayam, St.James College of Pharmaceutical Science, Chalakkudy, St Joseph's College of Pharmacy, Cherthala and Lisie College of Pharmacy, Ernakulam participated in the Seminar. There were 220 participants in total. All the delegates actively participated in the event to make it a grand success. The Programme ended with a delicious lunch for all.


*Answer key for the Practice Quiz*
*1.b, 2.a, 3.d, 4.c, 5.a, 6.a, 7.d, 8.d, 9.a, 10.d, 11.c, 12.b, 13.b, 14.a, 15.b, 16.d, 17.c, 18.c, 19.c, 20.b*

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