DIRC Newsletter

Vol. 21 No. 2 April - June 2019

Newsletter of Drug Information and Research Center, KSPC

Member of International Society of Drug Bulletins (ISDB)

Official Desk

Dear Pharmacist,

Scholarship - 2019

As discussed in the official desk of April-June 2017 newsletter, the scholarship scheme for the legal heirs (son/daughter) of Registered Pharmacists in Karnataka for pursuing a course in Pharmacy - D.Pharm, B.Pharm, M.Pharm and Pharm D was introduced by KSPC from the year 2018.

Sri. Gangadhar V. Yavagal
President
Karnataka State
Pharmacy Council

The Council has bestowed scholarship in the year 2018 for two students each who joined for 1st year B.Pharm and M.Pharm course. This scholarship will be continued in the subsequent years for the respective students as per the terms and conditions laid by the KSPC.

For 2019 the application form for the scholarship scheme will be lived in the month of August and the applicants interested can refer to the general instructions displayed in our Council website to apply for this scheme.

Hence, I request all the Registered Pharmacist to share this message among all the other fellow Pharmacists regarding the KSPC initiatives.

CONTENTS

Guest Column

Modern Hospital Pharmacy Services

Dr. R. S. Thakur
Former President, FIPO
Email: drramsthakur@gmail.com

Safe, effective and efficient therapy is central to the delivery of high-quality healthcare that every patient deserves and every government aims at. The 2008 Pharmacy White Paper of UK identified the role of Pharmacist in optimizing the use of medicines and the Department of Health of UK recognized that pharmacists' unique knowledge, skills and expertise relating every facet of medicines are an integral part of delivering better services to patients in most economic way. This conclusion has been supported by reductions in medication-related adverse events, lower treatment costs, better patient outcomes, reduced length of stay and reduced readmission rates in the hospitals. In UK, hospitals are also required to register with the Care Quality Commission and meet the medicines management standards prescribed in its essential standards of quality and safety. These standards require protecting patients against the risks associated with the unsafe use and management of medicines, in accordance with regulation 13 of the Health and Social Care Act 2008 (Regulated Activities) Regulations 2010. Compliance of the standards is possible, only by high-quality pharmacy services. It demands that pharmacists provide patient care that optimizes medication therapy and promotes health, wellness and disease prevention.

Modern hospital Pharmacy services comprise the way in which medicines are selected, procured, delivered, prescribed, administered and reviewed to optimize the contribution that medicines make achieving desired outcomes of patient care. Hospital pharmacy services are, now focused around 'the responsible provision of drug therapy for the purpose of achieving definite outcomes which improve the patient's quality of life'. It includes pharmacist's input in the design, implementation and monitoring of a therapeutic plan, in collaboration with the patient and other healthcare professionals and shifts the focus of pharmacist's activities from simple dispensing processes to therapeutic outcomes.

The increasing range and sophistication of medicinal products and awareness of medication errors, the disasters caused by medicines on health

and life prompted more involvement of Pharmacists in proper storage and preservation of potency of medicines, prescription auditing and rational drug therapy to Pharmacotherapeutics and Pharmacovigilance responsibilities so that medications are completely safe, effective and economic. The growth in these services over the 1970s and 1980s represented a change in hospital pharmacy from product oriented practice to patient oriented involvement and formally acknowledged as **'Clinical Pharmacy'** in the 1986 Nuffield report. This report welcomed the new roles of Pharmacists and recommended an increased role for hospital pharmacists through the development of clinical pharmacy services.

The recommendations of the Nuffield report were officially recognized in a 1988 Health Services circular of UK that outlined the main aims of the Department of Health with respect to hospital pharmacy as **"the achievement of better patient care and financial savings through the more cost-effective use of medicines and improved use of pharmaceutical services obtained by implementing a clinical pharmacy service."** This practice has substantially helped in safe, effective and efficient therapy.

In the new environment of hospital pharmacy counseling patients became one of the important parts of dispensing prescription to achieve patient compliance and ensure appropriate use of medicines. As pharmacy services expanded, there was increasing specialization, with the expertise of individual pharmacists in certain therapeutic areas contributing to more significant and robust drug information and developments in service provisions.

Prescription monitoring

The core of pharmacists' contribution to appropriate medication use is checking and monitoring patients' prescriptions. This allows the clinical pharmacist to interact with the patient and reviewing the contents of the prescription for medication dosing, route of administration, drug interactions, prescription ambiguities, inappropriate prescribing and many other potential problems. Formal assessments of prescriptions in hospitals have shown that there are wide variations in the quality of prescribing and pharmacists are able to identify and resolve many clinical problems. Patients can be questioned on their medication histories, including allergies and intolerances, efficacy of prescribed treatment, side-effects and adverse drug reactions (ADRs). The presence of medical doctor allows the pharmacist to communicate easily with her/him who values the prescription-monitoring service that clinical pharmacists provide.

Prescribing advice to medical doctor

Medical detailing by Pharmacist is always unbiased and free from conflict of interest as he is not on pay roll of any manufacturer or distributor of medicines. The information provided by the pharmacist is absolutely scientific, based on research data and publications. It helps the physician with choice of medicine, dose, method of administration, side-effects, interactions, monitoring requirements and many other aspects of medicines use. Studies, examining prescribing advice given by pharmacists have shown high rates of acceptance from medical staff, demonstrating that the role is both are valuable and effective.

Medicine administration advice to nurses

Medication errors at ward level during administration of medicines are also high. The Institute of Medicine's (IOM) first Quality Chasm report, *To Err Is Human: Building a Safer Health System* (Washington, DC: National Academy Press; 1999) revealed that medication-related errors were a significant cause of morbidity and mortality as they accounted "for one out of every 131 outpatient deaths and one out of 854 inpatient deaths" (p.27). Medication errors were estimated to account for more than 7,000 deaths annually in US. Based on this work and previous IOM reports, the IOM put forth a report in 2007 on medication safety, *Preventing Medication Errors*. Harm from medications arises from unintended consequences as well as medication error (wrong medication, wrong time, wrong dose, etc.). Pharmacist's advice to nurses about patient safety to ensure that their patients receive the right medication in right dose through right route of administration at the right time plays crucial role in improving outcomes of therapy.

Medication errors and adverse drug reaction reporting

Adverse drug reactions (from any cause) occur in around 10% of all hospital admissions and medication errors account for one fourth of all the incidents that threaten patient safety. In 2009 a study by the General Medical Council, Manchester: University of Manchester, School of Pharmacy and Pharmaceutical Sciences and School of Medicine, identified a mean prescribing error rate of 8.9 per 100 prescriptions. Pharmacists have an important role to play in the detection and management of ADRs and more recently, directly reporting ADRs to the Committee on Safety of Medicines via the Yellow Card scheme. Pharmacist's involvement helps in increasing the number of ADR reports made, particularly those involving serious reaction.

Patient education and counseling

Helping patients to understand their medicines and how to take them is a major feature of modern hospital pharmacy services. Patient compliance or adherence to the regimen of treatment recommended by the doctor is a major concern of healthcare professionals. Adherence to treatment, particularly for long-term chronic conditions, is often poor and tends to worsen as the number of medicines and complexity of treatment regimens increase. National Institute for Health and Clinical Excellence (NICE) noted that 33 to 50 % of all medicines prescribed for long-term conditions are not taken as recommended and estimated that the cost of admissions resulting from patients not taking medicines as recommended was between £36 million and £196 million in 2006–2007 (NICE clinical guideline 76. London: NICE, 2009 and Accompanying medicines adherence clinical guideline 76. London: NICE, 2009).

Several studies examining patient counseling and education have shown that pharmacists are able to improve patients' knowledge of their treatment and improve patient adherence to treatment (Pharmacotherapy 1999; 19: 860–869).

Medicines formularies

The role of the pharmacist in the development of medicines formularies is important for ensuring that all essential medicines and only bioequivalent medicinal products are included in the hospital formulary, prescribers' practices comply with formulary recommendations. Pharmacists' detailed knowledge of medicines, various products and their pharmacokinetics and the regular contact they have with doctors, nurses and patients make them ideally placed to rationalize prescribing. A key feature of successful medicines rationalization is the ongoing communication between prescribers and pharmacists who encourage self-audit and peer review.

In order to achieve these objectives and provide World class pharmacy services in India it is, necessary to modernize and reorganize Pharmacy Services for perfect health care delivery and for that purpose:

Establish **Directorate of Pharmacy in Health Department** both in the Central Government and State Governments which will organize and manage every issue related to drugs and pharmaceuticals for

hospital supply and ensure that best quality medicines are made available at all times to all patients through the following mechanism:

- Pharmacy and therapeutics committee in every hospital;
- Hospital formulary for every hospital as a guide for hospital supply of medicines;
- Select drug products only after sample quality assessment of past several batches to assure quality;
- Prequalification inspection of manufacturing facility before enlisting manufacturers for purchase and supply of medicines;
- Prequalification inspection of in-house testing facilities of manufacturers for purchase and supply of medicines;
- Regular analysis of each batch of supply in two different laboratories under neutral label with bar coding to discourage supply of substandard products;
- Proper storage infrastructure for each product as per storage condition prescribed for the product in Schedule P of Drugs and Cosmetics Rules, 1945 or in the Pharmacopoeia, both during transportation as well as storage and distribution.
- Availability of testing facilities within the State for all drug products which are enlisted in Hospital Formulary and purchased for hospital supply;
- A dynamic quality monitoring system and clinical evaluation of product efficacy to be set up.
- All Medical Colleges and Pharmacy Colleges to set up quality control laboratory for random analysis and testing of drugs procured in the hospital supply.
- Establishment of pharmacovigilance facility to generate data on drug related problems in patients.
- Establishment of pharmacoeconomics facility for rationalizing medication cost and efficient utilization/ reduction of hospital budget.
- Establishment of bioavailability and bioequivalence study and monitoring facilities at district level hospitals and all medical college hospitals.
- Implementing health education and preventive measures to ensure control of waterborne, airborne diseases, Compulsory immunization programme and long term therapy management to build a healthy society and healthy nation.

This will not only reduce cost but also reduce burden on hospital beds and OPD cases, because it will reduce drug induced diseases and drug related toxicities which prevail between 7 to 9% on an average and they affect vital organs like liver, kidney, pancreas, gall bladder, lungs etc. and substantially affect quality of life and thus productive man hours.

It is high time to reorganize Pharmacy Services throughout the country and ensure safe and effective medication to all, thus build healthy India.

❑

Drug of the Quarter

Drug : **Fingolimod**

Class : Immune Modulator

Dosage form : Capsules

Strength : 0.5mg capsules

DCGI Approval : 25.03.2019

USFDA Approval : 21.09.2010

Indication: For the treatment of patients with relapsing forms of multiple sclerosis (MS) to reduce the frequency of clinical exacerbations and to delay the accumulation of physical disability.

Dose Information

Adult Normal Dosing:

Multiple sclerosis, Relapsing forms

- Prior to initiation: Before the first dose, obtain an ECG on all patients.
- 0.5 mg orally once daily; observe for 6 hours after first dose for bradycardia and repeat ECG at the end of the observation period.
- If therapy is interrupted for 1 day or more during the first 2 weeks of therapy, for more than 7 days during the third and fourth weeks of therapy, or for more than 14 days after the first month of therapy, first-dose procedures and monitoring are recommended upon preinitiation.

Pediatric Dosing:

Multiple sclerosis, Relapsing forms

- Prior to initiation: Before the first dose, obtain an ECG on all patients.
- Usual dosage (10 years or older; more than 40 kg): 0.5 mg orally once daily.
- Usual dosage (10 years or older; 40 kg or less): 0.25 mg orally once daily.
- First dose monitoring: Observe patients for 6 hours after the first dose for bradycardia and repeat ECG at the end of the observation period.
- Re-initiation of therapy: First-dose procedures and monitoring are recommended when the dose is increased in pediatric patients, or upon re-initiation of therapy if therapy is interrupted for one day or more during the first 2 weeks of therapy, for more than 7 days during the third and fourth weeks of therapy, or for more than 14 days after the first month of therapy.

Pharmacokinetics

Absorption

- Tmax: Oral 12 to 16 hours
- Bioavailability: Oral: 93%
- Effect of food: No effect on systemic exposure

Distribution

- Vd: 1200 L
- Protein binding: greater than 99.7%

Metabolism

- Liver: Extensive, primarily CYP4F2
- Fingolimod phosphate: Active metabolite
- Substrate of CYP4F2 and CYP3A4

Excretion

- Primarily through kidney
- Total body clearance: 6.3 L/hr

Elimination Half Life: 6 to 9 days

Contraindication:

- Class III or IV heart failure within the last 6 months
- Cardiac arrhythmias requiring anti-arrhythmic treatment with Class Ia or Class III anti-arrhythmic drugs
- Decompensated heart failure requiring hospitalization within the last 6 months
- Hypersensitivity reaction to fingolimod or any of the excipients
- Type II second-degree or third-degree atrioventricular block (history or current), unless the patient has a functional pacemaker
- Myocardial infarction within the last 6 months
- QTc interval at baseline 500 milliseconds or greater
- Sick-sinus syndrome (history or current), unless the patient has a functional pacemaker
- Stroke within the last 6 months
- TIA within the last 6 months
- Unstable angina within the last 6 months

Caution:

- Patients with preexisting cardiovascular conditions like atrioventricular conduction delays, hypertension, cerebrovascular disease etc.
- Patients with preexisting dermatological conditions like Basal cell carcinoma, Merkel cell carcinoma, cutaneous T-cell lymphoma.
- Patients with preexisting liver disease or severe hepatic impairment.
- Patients who are on immunosuppressive medications.
- Patients with Progressive multifocal leukoencephalopathy or other neurological disease conditions.
- Concomitant use: Avoid use of live attenuated vaccines during and for 2 months after treatment.
- Concomitant use: Avoid use with agents that slow heart rate or atrioventricular conduction (eg, diltiazem, verapamil, digoxin, beta blockers) requires overnight ECG monitoring following the first dose of fingolimod in a medical facility as severe bradycardia or heart block may occur

Storage & Stability: Store at 25 degrees C (77 degrees F), with excursions permitted between 15 and 30 degrees C (59 and 86 degrees F). Protect from moisture.

Mechanism of Action: Fingolimod hydrochloride is metabolized to the active metabolite fingolimod phosphate, which is a sphingosine 1-receptor modulator. The exact mechanism of action of fingolimod in patients with multiple sclerosis is unknown; however, it may work by reducing lymphocyte migration to the central nervous system.

Adverse Effects

Common

- Gastrointestinal: Abdominal pain, Diarrhea
- Hepatic: Increased liver enzymes
- Immunologic: Influenza
- Musculoskeletal: Backache, Pain, In Extremity
- Neurologic: Headache
- Respiratory: Cough, Sinusitis

Serious

- Cardiovascular: Atrioventricular block, Bradyarrhythmia
- Dermatologic: Basal cell carcinoma - primary, Malignant melanoma, Primary cutaneous T-cell lymphoma
- Hematologic: Lymphocytopenia (Severe)
- Immunologic: Cryptococcosis, Herpesvirus infection, Infectious disease.
- Neurologic: Cryptococcal meningitis, Posterior reversible encephalopathy syndrome, Progressive multifocal leukoencephalopathy
- Ophthalmic: Macular retinal edema

Drug-Drug Interactions:

Category	Drug/s (Examples)	Interaction Effect	Management
QT Prolonging Drugs*	Citalopram, Chlorpromazine, Haloperidol, Methadone, Erythromycin	Concurrent use of Fingolimod and QT interval prolonging drugs may result in increased risk of QT-interval prolongation.	Contraindicated for concurrent use.
Antifungal**	Ketoconazole	Concurrent use of fingolimod and ketoconazole may result in increased fingolimod exposure and increased risk of QT-interval prolongation.	Avoid concomitant use.
Vaccines**	BCG, Rubella, Mumps, Influenza, Yellow fever, Typhoid	Concurrent use of fingolimod and live Vaccines may result in an increased risk of secondary transmission of infection; reduced effectiveness of immunization.	Avoid concomitant use.

Severity: *The drugs are contraindicated for concurrent use. **The interaction may be life-threatening and/or require medical intervention to minimize or prevent serious adverse effects.

Effects in Pregnancy

Severity	Management
Moderate	Fetal risk cannot be ruled out. Available evidence is inconclusive or is inadequate for determining fetal risk when used in pregnant women or women of childbearing potential. Weigh the potential benefits of drug treatment against potential risks before prescribing this drug during pregnancy.

Effects in Lactation:

Severity	Management
Major	Infant risk cannot be ruled out: Available evidence and/or expert consensus is inconclusive or is inadequate for determining infant risk when Fingolimod is used during breast-feeding. Weigh the potential benefits of treatment against potential risks before prescribing Fingolimod during breast-feeding.

Patient Education:

1. Advice patient to report a new or suspicious skin lesions and limit exposure to sunlight and ultraviolet light. Instruct to wear protective clothing and use high protective factor sunscreen during outdoors.
2. Recommend female patient to avoid pregnancy during therapy and for at least 2 months after discontinuation and to inform healthcare provider if they become pregnant during treatment.
3. Advice patient to report any vision change, especially in patients with diabetes mellitus or a history of uveitis.
4. Advice patient to report immediately any symptoms like severe headache, altered mental status, visual disturbances or seizure.
5. Advise the patient not to discontinue this drug without the instruction of the doctor, since it may cause severe increase in disability.

References:

1. http://www.micromedexsolutions.com/
2. http://www.cdsco.nic.in/
3. http://www.rxlist.com/

❑

Drug Safety Alerts - Pharmacovigilance Programme of India (PvPI)

The preliminary analysis of Serious Unexpected Serious Adverse Reaction (SUSARs) from the PvPI database reveals that the following drugs are associated with the risks as given below.

Sl. No	Suspected Drug/s	Category	Indication/Use	Adverse Reaction/s Reported
			June 2019	
1	Teicoplanin	Antibiotic	Glycopeptide antibiotic-use in serious gram +ve infection, staphylococcal infection, staphylococcal infection in patients sensitive or unresponsive to penicillin and cephalosporins CAPD related peritonitis prophylaxis in orthopedic surgery at risk of gram +ve infections.	Toxic Epidermal Necrolysis (TEN)
			May 2019	
2	Amiodarone	Anti-Arrhythmic drug	In the treatment of control of ventricular and supraventricular arrhythmia where other drug cannot be used, arrhythmia associated with wolf-white syndrome. For cardiopulmonary resuscitation in the event of cardiac arrest related to ventricular fibrillation resistant to external electric shock.	Acute Pancreatitis
3	Teicoplanin	Antibiotic	Glycopeptide antibiotic-use in serious gram +ve infection, staphylococcal infection in patients sensitive or unresponsive to penicillin and cephalosporins CAPD related peritonitis, prophylaxis in orthopedic surgery at risk of gram +ve infections.	Red Man syndrome
			March 2019	
4	Dabigatran	Anticoagulant	For prevention of stroke, systemic embolism and reduction of vascular mortality in adult patients with atrial fibrillation.	Alopecia
5	Sertraline	Antidepressant	Major depressive disorders, Obsessive Compulsion Disorders (OCD), panic disorders.	Maculopathy

Healthcare professionals, patients / consumers are advised to closely monitor the possibility of the above adverse events associated with the use of above drugs.

If such events are encountered, please report to the NCC-PvPI either by filling of Suspected Adverse Drug Reactions Reporting Form/Medicines Side Effect Reporting Form for Consumer (http://www.ipc.gov.in) or by PvPI Helpline No. 1800-180-3024.

Reference: www.ipc.gov.in

Meanings: **Toxic Epidermal Necrolysis**- A potentially life-threatening dermatologic disorder characterized by widespread erythema, necrosis and bullous detachment of the epidermis and mucous membranes, resulting in exfoliation and possible sepsis and/or death, **Red Man syndrome**- An anaphylactoid reaction caused by the rapid infusion of the glycopeptide antibiotic Vancomycin, **Maculopathy**-A damage to the macula, the part of the eye which provides us with our central vision

❑

Serious Risks/Safety Information – USFDA

Potential Signals of Serious Risks/New Safety Information Identified by the Adverse Event Reporting System (AERS) - USFDA

The USFDA Adverse Event Reporting System (FAERS) is a database that contains information on adverse event and medication error reports submitted to FDA. The database is designed to support the FDA's post-marketing safety surveillance program for drug and therapeutic biologic products.

The appearance of a drug on this list does not mean that conclusive of the risk. It means that FDA has identified a ***potential safety issue*** but does not mean that FDA has identified a causal relationship between the drug and the listed risk. If after further evaluation the FDA determines whether the drug is associated with the risk or not and it may take a variety of actions including requiring changes to the labeling of the drug, requiring development of a Risk Evaluation and Mitigation Strategy (REMS) or gathering additional data to better characterize the risk.

Therapeutic Class / Category	Drug (Examples)	Route of Administration	Dosage Form	Potential Signal of a Serious Risk / New Safety Information	Additional Information
Oct - Dec 2018					
Antimigraine	Erenumab	Subcutaneous	Injection	Hypersensitivity events	The labeling section of the product was updated to include hypersensitivity reactions.
Antipsychotics	Aripiprazole	Oral, Intravenous	Tablet, Injection	Acute generalized exanthematous pustulosis, Drug reaction with eosinophilia and systemic symptoms, Stevens-Johnson syndrome and toxic epidermal necrolysis	Evaluation is in progress.
Antihyperlipidemic	Fenofibrate, fenofibric acid	Oral	Tablets, Capsules	Interstitial lung disease	Evaluation is in progress.
Analgesic/CNS agent	Buprenorphine hydrochloride, Naloxone hydrochloride	Oral	Tablet, Film	Drug-induced dental caries	Evaluation is in progress.
Antineoplastic Agent	Bosutinib monohydrate	Oral	Film	Cardiac failure	Evaluation is in progress.
Antiemetic	Chlorpromazine hydrochloride	Oral	Tablets	Drug reaction with eosinophilia and systemic symptoms, Stevens-Johnson syndrome, and toxic epidermal necrolysis.	Evaluation is in progress.
Antiemetic	Aprepitant	Intravenous	Injection	Hypersensitivity reactions including anaphylaxis	The labeling section of the product was updated to include hypersensitivity reactions.
Antipsychotic	Clozapine	Oral	Tablet, Suspension	Stevens-Johnson syndrome and toxic epidermal necrolysis.	FDA decided that no action is necessary at this time based on available information.
Immune Modulator	Fingolimod	Oral	Capsule	Hemolytic anemia.	Evaluation is in progress.
Anticonvulsant	Gabapentin, pregabalin	Oral	Tablets, Capsules Suspension	Respiratory depression and Bullous pemphigoid.	Evaluation is in progress.
Antipsychotic	Haloperidol	Intravenous	Injection	Acute generalized exanthematous pustulosis, Drug reaction with eosinophilia and systemic symptoms, Stevens-Johnson syndrome and toxic epidermal necrolysis.	Evaluation is in progress.

Therapeutic Class / Category	Drug (Examples)	Route of Administration	Dosage Form	Potential Signal of a Serious Risk / New Safety Information	Additional Information
Antineoplastic Agent and Anticoagulant	Axitinib, Warfarin sodium	Oral	Tablet	Drug interaction between Axitinib and Warfarin.	Evaluation is in progress.
Antipsychotic	Paliperidone	Oral	Tablet	Drug reaction with eosinophilia and systemic symptoms, Stevens-Johnson syndrome and toxic epidermal necrolysis.	Evaluation is in progress.
Antimanic/CNS Agent	Lithium carbonate	Oral	Tablet, Capsule	Acute generalized exanthematous pustulosis, Drug reaction with eosinophilia and systemic symptoms, Stevens-Johnson syndrome and toxic epidermal necrolysis	Evaluation is in progress.
Antipsychotic	Risperidone	Oral, Intravenous	Tablet, Injection	Acute generalized exanthematous pustulosis, Drug reaction with eosinophilia and systemic symptoms, Stevens-Johnson syndrome and toxic epidermal necrolysis.	Evaluation is in progress.
Antineoplastic Agent, Enzyme and Antineoplastic Agent	Rituximab, Hyaluronidase human and rituximab	Intravenous	Injection	Pyoderma gangrenosum.	Evaluation is in progress.
Calcimimetics and Immunological Agent	Cinacalcet, Etelcalcetide, Denosumab	Oral, Intravenous	Capsule, Injection	Drug interaction between calcimimetics (i.e. cinacalcet hydrochloride or etelcalcetide) and denosumab.	Evaluation is in progress.
Antipsychotic	Quetiapine fumarate	Oral	Tablet	Acute generalized exanthematous pustulosis, Drug reaction with eosinophilia and systemic symptoms, Stevens-Johnson syndrome and toxic epidermal necrolysis.	Evaluation is in progress.
Antineoplastic Agent	Regorafenib	Oral	Tablet	Cardiac failure.	Evaluation is in progress.
Antineoplastic Agent	Sunitinib, Axitinib, Sorafenib, Pazopanib	Oral	Tablet, Capsule	Aortic dissection.	Evaluation is in progress.
Antineoplastic Agent	Osimertinib	Oral	Tablet	Severe cutaneous adverse events (SCAR): Stevens-Johnson syndrome, toxic epidermal necrolysis, erythema multiforme and bullous pemphigoid.	FDA decided that no action is necessary at this time based on available information.
Antipsychotic	Olanzapine	Oral, Intravenous	Tablet, Injection	Acute generalized exanthematous pustulosis, Stevens-Johnson syndrome and toxic epidermal necrolysis.	Evaluation is in progress.
Antiandrogen / Antineoplastic Agent	Abiraterone acetate	Oral	Tablet	QT prolongation	Evaluation is in progress.

References:

1. http://www.fda.gov/
2. www.micromedexsolutions.com, Micromedex (R) 2.0, 2002-2019, IBM Corporation 2019.

Meanings: **Pyoderma gangrenosum**- A rare condition that causes large, painful sores (ulcers) to develop on the skin and most often on the legs. ❑

Drug News – Around the Globe

1. Drug: Imipenem, Cilastatin and Relebactam* **Country: USA**

Imipenem, Cilastatin and Relebactam are antibacterials.

Approved Indication: Imipenem, Cilastatin and Relebactam combination was approved to treat adults with complicated urinary tract infections and complicated intra-abdominal infections.

This medicine should not be concomitantly used in patients taking antiseizure medications like valproic acid or divalproex sodium.

Approved Dosage Form: Injection.

Side-effects: Nausea, diarrhea, headache, fever and increased liver enzymes [1].

2. Drug: Dupilumab* **Country: USA**

Dupilumab is a monoclonal antibody used for allergic diseases.

Approved Indication: Dupilumab is the first drug approved to treat adults for inadequately control nasal polyps (growths on the inner lining of the sinuses) accompanied by chronic rhinosinusitis (prolonged inflammation of the sinuses and nasal cavity). Patients receiving Dupilumab injection should avoid receiving live vaccines.

Approved Dosage Form: Injection

Side-effects: Injection site reactions as well as eye and eyelid inflammation [1].

3. Drug: Bremelanotide* **Country: USA**

Bremelanotide is a novel melanocortin 4 receptor agonist

Approved Indication: Bremelanotide is approved to treat acquired, generalized hypoactive sexual desire disorder (HSDD) in premenopausal women.

Bremelanotide is not recommended to use in patients at high risk for cardiovascular disease.

Approved Dosage Form: Injection

Side-effects: Nausea and vomiting, flushing, injection site reactions and headache[1].

4. Drug: Galcanezumab* **Country: USA**

Galcanezumab is a humanized monoclonal antibody.

Approved Indication: Galcanezumab is approved for the treatment of episodic cluster headache to reduce the frequency of attacks in adults.

Approved Dosage Form: Injection

Side-effects: Injection site reactions[1].

5. Drug: Dalteparin sodium** **Country: USA**

Dalteparin sodium is a low molecular weight heparin.

Approved Indication: Dalteparin sodium injection, for subcutaneous use is approved to reduce the recurrence of symptomatic venous thromboembolism (VTE) in pediatric patients one month of age and older.

Approved Dosage Form: Subcutaneous Injection

Side-effects: Bleeding[1].

6. Drug: Belimumab* **Country: USA**

Belimumab is a humanized monoclonal antibody that inhibits B-cell activating factor.

Approved Indication: Galcanezumab is approved for treatment of children with systemic lupus erythematosus (SLE) – often referred to as simply "lupus". This is the first time that the FDA has approved a treatment for pediatric patients with SLE. This medicine has been approved for use in adult patients since 2011.

Approved Dosage Form: Intravenous infusion

Side-effects: Nausea, diarrhea and fever[1].

Meaning: Lupus- a serious chronic disease that causes inflammation and damage to various body tissues and organs.

Reference: https://www.fda.gov

Note – ** Available in India
*Not available in India

Safety Alert - Around the Globe

1. Drug: Rivaroxaban* **Country: New Zealand**

May cause potential risk of bleeding.

Rivaroxaban is a direct-acting oral anticoagulant.

Alert: The Medsafe has alerted that rivaroxaban can cause bleeding as a result of a drug-drug interaction with medicines that inhibit both CYP3A4 and P-gp (e.g. ritonavir and voriconazole).

Hence, KSPC-DIRC alerts the healthcare professionals to be cautious while prescribing Rivaroxaban.

Reference: www.medsafe.govt.nz/

Continuing Pharmacy Education (CPE)

Dispensing Instructions to the Pharmacists

Meniere's disease-Medicines

Meniere's disease (MD) is a disorder of the inner ear that is characterized by symptoms of vertigo, tinnitus, hearing loss, loss of balance, nausea, vomiting and a fullness in the ear.

The inner ear is responsible for hearing and balance. The symptoms are caused by the buildup of fluid in the compartments of the inner ear, called the labyrinth. The labyrinth contains the organs of balance and of hearing. The condition usually starts in one ear but can spread to both ears over time.

There is no cure for Meniere's disease, but the initial management of Meniere's disease is medical therapy with the goal of symptomatic relief. Surgery should be performed when there has been a failure of medical therapy as defined by no relief of symptoms after 1 year or when the vertigo is incapacitating.

Drug treatment includes the following:

- **Sedative-Hypnotics:** Diazepam, diphenhydramine and meclizine
- **Diuretics:** Hydrochlorothiazide
- **Vasodilators:** Betahistine
- **Calcium Channel Blockers:** Flunarizine
- **Corticosteroids:** Dexamethasone
- **Aminoglycosides:** Gentamicin

Below is a brief overview of few oral drugs.

Drugs/ Category	Use	Warnings	Less serious side effects	Advice
Betahistine	Treatment of Meniere's disease.	Prescription to be reconfirmed in case of patients with gastric or duodenal ulcer or history of peptic ulcer disease, asthma or liver disease.	Flushing, skin rash, nausea, abdominal pain or discomfort, fatigue, drowsiness, headache	Take with food to avoid stomach upset.
Meclizine	Treatment of motion sickness and vertigo of vestibular origin.	Prescription to be reconfirmed in case of patients with kidney disease, liver disease, asthma, enlarged prostate, glaucoma, heart failure or trouble urinating.	Blurred vision, xerostomia, somnolence , headache	Take with food or milk to avoid stomach upset. Avoid alcohol and other CNS depressant medicines. Avoid driving vehicle or operate machinery while taking this medicine.
Flunarizine	Treatment to prevent migraine headaches	Prescription to be reconfirmed in case of patients with kidney disease, liver disease, movement disorders, parkinson's disease, a history of depression and any allergies.	Drowsiness, weight gain, nausea, heartburn, dry mouth or anxiety	Avoid alcohol and other CNS depressant medicines. Avoid driving vehicle or operate machinery while taking this medicine.
Hydrochlorothiazide	Treats high blood pressure and fluid retention (edema).	Prescription to be reconfirmed in case of patient is pregnant or breastfeeding or have kidney disease, liver disease, heart disease or heart failure, high cholesterol, diabetes, gout, trouble urinating, or lupus.	Headache, mild diarrhea, constipation, nausea.	Carefully follow the doctor's instructions about any special diet. Patient may need to eat foods that are high in potassium (such as oranges or bananas) to prevent potassium loss while using any of these drugs.

References:

1. Handbook of Pharma SOS, Educational Series-I, 7th Edition 2018, published by Karnataka State Pharmacy Council, Bangalore.
2. www.micromedexsolutions.com, Micromedex (R) 2.0, 2002-2019, IBM Micromedex ®
3. https://www.nidcd.nih.gov/

❑

Drug Usage in Special Population - Pediatrics and Geriatrics

(From KSPCDIRC publication)

Anti-infectives

Drug	Usage in Children (Pediatrics)	Usage in Elderly (Geriatrics)
Anti-Protozoal Drugs		
Diloxanide	No specific cautionary instructions available.	No specific geriatric dosage guidelines available.
Tinidazole	Safety and effectiveness of tinidazole in pediatric patients have not been established except for the treatment of giardiasis and amebiasis in patients older than 3 years.	No dosage adjustment required.

Drug	Usage in Children (Pediatrics)	Usage in Elderly (Geriatrics)
Anti-Malarial Drugs		
Quinine	Safety and efficacy not established in pediatric patients younger than 8 years.	Dosage adjustment should be done in severe chronic renal failure. Use not recommended in severe hepatic impairment.
Chloroquine	Safety and efficacy have been established in pediatric patients.	Dosage adjustment should be done in severe chronic renal failure.
Mefloquine	Safety and effectiveness have not been established in pediatric patients younger than 6 months of age. Experience in pediatric patients weighing under 20 kg is limited.	No dosage adjustment required.
Primaquine	Safety and efficacy have been established in pediatric patients.	No dosage adjustment required. Caution in patients with glucose-6-phosphate dehydrogenase deficiency.
Quinine	Safety and effectiveness have not been established in pediatric patients younger than 6 months of age.	Dosage adjustment should be done in liver disease Use is not recommended in severe chronic renal failure.

Reference: Drug Usage in Special Population-Pediatrics and Geriatrics, Educational Series-II, 7th Edition 2018, published by Karnataka State Pharmacy Council, Bengaluru.

Drug Usage in Special Population - Pregnancy and Lactation

(From KSPCDIRC publication)

Anti-infectives

Drug	Usage in Pregnancy (Teratogenicity)	Usage in Breastfeeding (Lactation)
Anti-Protozoal Drugs		
Diloxanide	Data not available. Avoid in pregnancy.	Data not available. Use with caution.
Tinidazole	Fetal risk cannot be ruled out. Available evidence is inconclusive or is inadequate for determining fetal risk when used in pregnant women or women of childbearing potential. Administer only if the benefit to the mother justifies any potential risk to the fetus.	Excreted into breastmilk. Unknown effects. Avoid.
Anti-Malarial Drugs		
Quinine	Fetal risk cannot be ruled out. Weigh the potential benefits of drug treatment against potential risks before prescribing this drug during pregnancy.	Safe to use.
Chloroquine	Fetal risk cannot be ruled out. Available evidence is inconclusive or is inadequate for determining fetal risk when used in pregnant women or women of childbearing potential. Weigh the potential benefits of drug treatment against potential risks before prescribing this drug during pregnancy.	Safe to use.
Mefloquine	USFDA Category B (All Trimesters). Safe to take in prophylactic doses during the second and third trimesters of pregnancy. During the first trimester of pregnancy, most evidence suggests that mefloquine is safe.	Excreted in low concentrations in breastmilk. Caution.
Primaquine	Use of Primaquine is contraindicated in pregnant women.	Infant risk cannot be ruled out. Avoid.

USFDA Category B: Either animal-reproduction studies have not demonstrated a fetal risk but there are no controlled studies in pregnant women or animal-reproduction studies have shown adverse effect (other than a decrease in fertility) that was not confirmed in controlled studies in women in the first trimester (and there is no evidence of a risk in later trimesters).

Reference: Drug Usage in Special Population-Pregnancy and Lactation, Educational Series-I, 7th Edition 2018, published by Karnataka State Pharmacy Council, Bangalore.

ಭೇಷಜೀ ಪರಿಕರ್ಮ ನಿಬಂಧನೆಗಳು, 2015 (Pharmacy Practice Regulations, 2015)

(ಅಧ್ಯಾಯ–2)

4. ನೋಂದಾಯಿತ ಭೇಷಜಜ್ಞರ ಸಾಮಾನ್ಯ ಕರ್ತವ್ಯಗಳು ಮತ್ತು ಹೊಣೆಗಳು:

4.1 ನೋಂದಾಯಿತ ಭೇಷಜಜ್ಞರ ಶೀಲ:

ಎ) ಮನುಕುಲಕ್ಕೆ ಸೇವೆ ಸಲ್ಲಿಸುವುದೇ, ಭೇಷಜೀ ಪರಿಚರ್ಯೆಯ ಪ್ರಧಾನ ಗುರಿಯಾಗಿದೆ. ಪ್ರತಿಫಲಾಪೇಕ್ಷೆ ಅಥವಾ ಆರ್ಥಿಕ ಗಳಿಕೆಯ, ಪ್ರಮುಖವಲ್ಲದ ಆಶಯದ್ದಾಗಿರತಕ್ಕದ್ದು. ಈ ಪರಿಷರ್ಯೆಯನ್ನು ಯಾರ್ಯಾರು ಆರಿಸಿಕೊಳ್ಳುವರೋ ಅವರು ಇದರ ಆದರ್ಶಗಳಿಗೆ ಅನುಗುಣವಾಗಿ ನಡೆದುಕೊಳ್ಳುವಂತಹ ಹಂಗಿಗೆ ಒಳಗಾಗಿರುತ್ತಾರೆ. ಒಬ್ಬ ನೋಂದಾಯಿತ ಭೇಷಜಜ್ಞರು, ಒಬ್ಬ ನೇರ ನಡೆ ನುಡಿಯ ಪ್ರಾಮಾಣಿಕ ಋಜು ವ್ಯಕ್ತಿಯಾಗಿದ್ದು, ಔಷಧಗಳ ಕಲೆಯಲ್ಲಿ ಪಳಗಿರತಕ್ಕವನಾಗಿರಬೇಕು. ಆತನು ತನ್ನನ್ನು ಶುದ್ಧ ಚಾರಿತ್ರ್ಯದವನನ್ನಾಗಿಟ್ಟುಕೊಳ್ಳತಕ್ಕದ್ದು ಮತ್ತು ರೋಗಿಗಳಿಗೆ ಆರೈಕೆ ನೀಡುವಲ್ಲಿ ಶ್ರಮ ಪೂರ್ವಕ ಯತ್ನ ನಡೆಸತಕ್ಕವನಾಗಿರಬೇಕು. ಆತನು ವಿನಯ ಶೀಲನಾಗಿದ್ದು, ಉದ್ವೇಗರಹಿತನೂ ಸಹನಾಶೀಲ ಸಂಪನ್ನನೂ ಆಗಿದ್ದು, ಕಳವಳ ರಹಿತನಾಗಿ ತನ್ನ ಕರ್ತವ್ಯ ನಿಭಾಯಿಸುವಲ್ಲಿ ಪ್ರಾಮಾಣಿಕನಾಗಿದ್ದು ತನ್ನ ಪರಿಚರ್ಯೆಯ ಅನುಷ್ಠಾನದಲ್ಲಿ ಮತ್ತು ತನ್ನ ಜೀವನದ ಎಲ್ಲಾ ಕ್ರಿಯೆಗಳಲ್ಲಿ ಸಭ್ಯತೆಯಿಂದ ತನ್ನನ್ನು ಮುನ್ನಡೆಸಿಕೊಂಡು ಹೋಗತಕ್ಕದ್ದು.

ಬಿ) ಆಧುನಿಕ ಭೇಷಜೀ ಪ್ರಕಾರದಲ್ಲಿ ಯಾವುದೇ ರೀತಿಯ ಪರಿಕರ್ಮ ನಡೆಸಲು ಭೇಷಜೀಯ ಇತರ ಯಾವುದೇ ಪ್ರಕಾರದಲ್ಲಿ ಅರ್ಹತೆ ಪಡೆದಿರುವ ಒಬ್ಬ ವ್ಯಕ್ತಿಗೆ ಸಮ್ಮತಿ ಇರುವುದಿಲ್ಲ.

ಸಿ) ಒಬ್ಬ ನೋಂದಾಯಿತ ಭೇಷಜಜ್ಞರು, ತನ್ನ ಪರಿಚರ್ಯೆಯ ಗಾಂಭೀರ್ಯ ಮತ್ತು ಗೌರವವನ್ನು ಸದಾ ಎತ್ತಿ ಹಿಡಿಯತಕ್ಕದ್ದು.

4.2. ನೋಂದಾವಣೆಯ ನವೀಕರಣ:

ನೋಂದಾವಣಿ ನವೀಕರಿಸಲು ಆ ಭೇಷಜಜ್ಞರು ಐದು ವರ್ಷಗಳ ಅವಧಿಯೊಳಗೆ ಈ ಕೆಳಗೆ ಹೇಳಿದ ಸಂಸ್ಥೆಗಳಲ್ಲಿ ಯಾವುದಾದರೂ ಒಂದು ಸಂಸ್ಥೆಯು, ಭೇಷಜೀ ವಿಷಯದ ಬಗ್ಗೆ ಸಂಘಟಿಸಿದ, ಕನಿಷ್ಠ ಪಕ್ಷ ಒಂದು ದಿನ ಅವಧಿಯ, ಕನಿಷ್ಠ ಪಕ್ಷ ಎರಡು ಪುನ:ಶ್ಚೇತನ ಪಠ್ಯಕ್ರಮಗಳಲ್ಲಿ ಭಾಗಿಯಾಗಿರತಕ್ಕದ್ದು.

1. ಭಾರತದ ಭೇಷಜೀ ಪರಿಷತ್ತು
2. ರಾಜ್ಯದ ಭೇಷಜೀ ಪರಿಷತ್ತುಗಳು
3. ಕೇಂದ್ರ ಸರಕಾರ / ರಾಜ್ಯ ಸರಕಾರ
4. ಪರಿಷತ್ತಿನಿಂದ ಮಾನ್ಯತೆ ಪಡೆದ ವೃತ್ತಿಪರ ಸಂಸ್ಥೆಗಳು

4.3 ಕೇವಲ ನೋಂದಾಯಿತ ವೈದ್ಯಕೀಯ ಪರಿಕರ್ಮಿಯ ವೈದ್ಯಲಿಖಿತದ ವಿರುದ್ಧವಾಗಿ ವಿನಿಯೋಗ ನಡೆಸತಕ್ಕದ್ದು:

ಪ್ರತಿಯೊಬ್ಬ ನೋಂದಾಯಿತ ಭೇಷಜಜ್ಞರು, ನೋಂದಾಯಿತ ವೈದ್ಯಕೀಯ ಪರಿಕರ್ಮಿಯಿಂದ ಮಾಡಲಾದ ವೈದ್ಯಲಿಖಿತದ ಔಷಧಿಗಳನ್ನು ಮಾತ್ರ ವಿನಿಯೋಗಗೊಳಿಸತಕ್ಕದ್ದು ಮತ್ತು ಆ ವೈದ್ಯಲಿಖಿತವನ್ನು ಬದಲಿಸತಕ್ಕದ್ದಲ್ಲ.

4. Duties and responsibilities of the Registered Pharmacist in general:

4.1. Character of Registered Pharmacist:

a) The prime object of the pharmacy profession is to render service to humanity; reward or financial gain is a subordinate consideration. Who-so-ever chooses his profession, assumes the obligation to conduct himself in accordance with its ideals. A registered pharmacist should be an upright man, instructed in the art of medicines.

He shall keep himself pure in character and be diligent in caring for the sick; he should be modest, sober, patient, prompt in discharging his duty without anxiety; conducting himself with propriety in his professional and in all the actions of his life.

b) A person having qualification in any other system of pharmacy is not allowed to practice modern system of pharmacy in any form.

c) A registered pharmacist shall uphold the dignity and honour of his profession.

4.2. Renewal of Registration:

For renewal of registration the pharmacist shall attend minimum 2 refresher courses in pharmacy of minimum one-day duration each in a span of 5 years organized by any one of the following body.

i) Pharmacy Council of India

ii) State Pharmacy Councils.

iii) Central Govt / State Govts.,

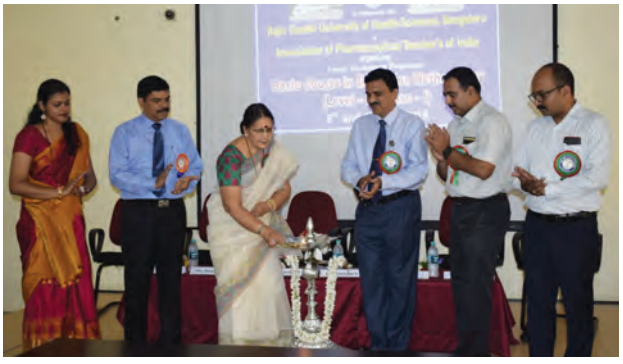
iv) Professional bodies recognized by the Council

4.3 Dispensing against prescription of Registered Medical Practitioner only:

Every registered pharmacist shall dispense only those medicines as prescribed by the Registered Medical Practitioner and shall not substitute the prescription.

KSPC News

Shree Devi College of Pharmacy, Mangalore



Shree Devi College of Pharmacy, Mangalore in collaboration with Rajiv Gandhi University of Health Sciences, Bengaluru and Association of Pharmaceutical Teachers of India (APTI) organized two days "Faculty Development Programme – Basic Course in Education Methodology (Level-1, Phase-1)" on 8th and 9th April 2019 at Shree Devi College of Pharmacy, Mangalore.

Dr. Jagadish V. Kamath, Principal, Sridevi College of Pharmacy, Mangalore and Executive Committee Member, Karnataka State Pharmacy Council, Bengaluru coordinated the training program.

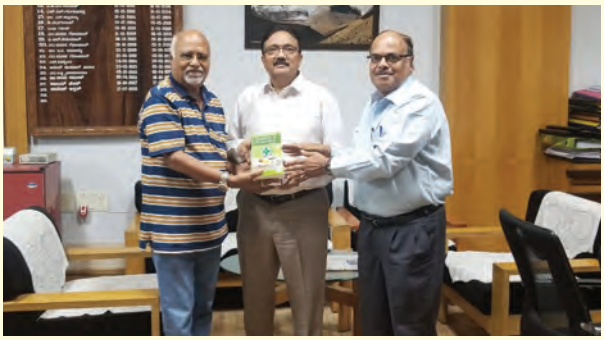
Dr.A.R. Shabaray, Principal, Srinivasa College of Pharmacy was one of the Chief Guest on this programme.

The programme was inaugurated by Smt. Maina S Shetty, Director of Shree Devi College of Pharmacy, Mangalore.

Training was given by more than 30 teachers.

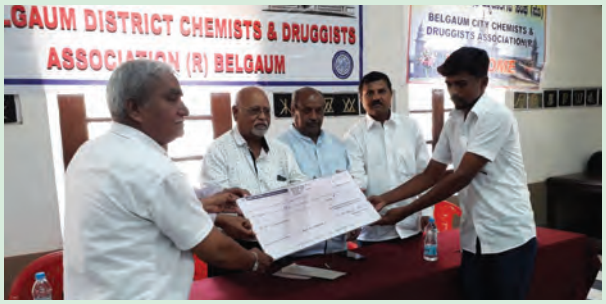
Visit to Health & Family Welfare Department, Karnataka

Sri. Gangadhar V Yavagal, President and Sri. D.A.Gundu Rao, Vice-President, Karnataka State Pharmacy Council presented KSPC Publications to Sri.Jawaid Akhtar, Principal Secretary to Government, Health & Family Welfare Department, Karnataka during their visit to Health & Family Welfare Department on 6th June 2019.



KPCRPWT Compensation

The death compensation of Rs.1,25,000/- (One Lakh twenty-five thousand) was handed over to the nominee Sri. Raghavendra A Ranikanavar, husband of Registered Pharmacist Smt.Sheema Medihalli, KSPC Reg.No.52722, Enrollment No.29059 by Sri. Gangadhar V Yavagal, President, Karnataka State Pharmacy Council and Sri. Madarkandhi R.S., Member, Karnataka State Pharmacy Council in a meeting organized by Belgaum City Chemists and Druggist Association along with Belgaum District Chemists & Druggists Association(R).



Additional Information on any article is available on request
Contact: **KARNATAKA STATE PHARMACY COUNCIL**
Drug Information and Research Center
514/E, I Main, II Stage, Vijayanagar, Bengaluru-560 104. Ph : 080- 46729800 (800 to 899 lines), 23383142, 23404000
E-Mail : kspcdic@gmail.com, Visit us at : www.kspcdic.com

BOOK–POST

Printed & published by: Registrar on behalf of Drug Information and Research Center (DIRC), Karnataka State Pharmacy Council