PSG DIC News Digest

A Newsletter from Drug Information Center, Department of Pharmacy Practice

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What is new in Tuberculosis Management?

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Treating Tuberculosis appropriately is very important in preventing emergence of drug resistance. Drug resistant TB is on the rise worldwide including India and contributes for increasing morbidity and mortality.

Here, highlights of the latest guidelines on Tuberculosis Management (2010) by WHO (World Health Organization) are given to ensure effective treatment.

- All patients with chest radiographic findings / symptoms and signs suggestive of Pulmonary tuberculosis should submit sputum specimens for microbiologic examination.
- Examine at least 2 samples, in countries with a functional EQA (External Quality Assurance) system, where the work load is very high and human resources are limited. In India we have EQA system.
- When possible, at least one early morning specimen should be obtained as sputum collected at this time has the highest yield of bacteria.
- Smear negative suspect cases should receive antibiotics for 7-10 days and sputum is then repeated.
- Avoid using Fluoroquinolones and Aminoglycosides, as these are potential and powerful anti-TB drugs.
- Do DST (Drug Susceptibility Testing) for every patient with TB treatment in the past.
- AFB Culture / DST recommended in the following cases:
  - All sputum smear negative cases
  - All relapse cases
  - All suspected resistant cases
  - All HIV positive cases
  - All cases who are sputum positive at the end of the intensive phase
- New Guidelines Recommends only two regimens:

  a) New Treatment Regimen

Intensive Phase	Continuation Phase	Comments
2 months of HRZE	4 months of HR	Presumed or known to have drug susceptible TB
2 months of HRZE	4 months HRE	Applies only in countries with HIGH levels of INH resistance in new TB patients where DST is not done or results are unavailable before the continuation phase begins

b) Re-Treatment Regimen:

2 Months of SHRZE followed by 1 month of HRZE followed by 5 months of HRE

S-Streptomycin ; H-Isoniazid ; R-Rifampicin ; Z-Pyrazinamide ; E-Ethambutol

- Wherever feasible, the optimal dosing frequency for new patients with Pulmonary TB is daily throughout the course of therapy (Strong/high grade of evidence)
- New patients with Pulmonary TB may receive a daily intensive phase followed by three times weekly continuation phase [2HRZE/4(HR)] provided that each dose is directly observed (Conditional/high or moderate grade of evidence).
- Three times weekly dosing throughout therapy [2 (HRZE)] is another alternative provided that every dose is directly observed and the patient is NOT living with HIV or living in an HIV-prevalent setting (Conditional/high or moderate grade of evidence).
- ***Standard Treatment Regimens WHO 2010 - Drug Doses***

Drug	Daily		Thrice / Week	
	Dose (mg/kg) bodyweight	Maximum (mg)	Dose (mg/kg) body weight	Maximum (mg)
Isoniazid	5	300	10	900
Rifampicin	10	600	10	600
Ethambutol	15	---	30	---
Streptomycin	15	---	15	---
Pyrazinamide	25	---	35	---

Suggested weight bands for DOTS : 30-39, 40-54, 55-70 & above 70 Kgs.

- Pyridoxine 10mg daily for all pregnant and breast feeding patients
- Renal disease : give pyridoxine 10 mg daily
- Neuropathy : Pyridoxine 50-75 mg daily
- ***Pregnancy and Tuberculosis:***
  - Successful treatment of TB is important for successful outcome.
  - All first line antitubercular drugs are safe in pregnancy except streptomycin
  - Continue antitubercular therapy while breast feeding.
  - Do not separate mother and child
  - Rule out active disease in new born, then give INH prophylaxis for 6 months followed by BCG.
- ***Dosing frequency for New TB patients with HIV***

Dosing frequency intensive phase	Continuation phase	Comment
Daily	Daily	Optimal
Daily	3 times per week	Acceptable alternative for any new TB patient receiving DOTS
3 times per week	3 times per week	Acceptable alternative only for HIV negative receiving daily DOTS and is NOT living with HIV or living in an HIV prevalent setting

[Daily rather than 3 times per week intensive phase dosing may help to prevent acquired drug resistance in TB patients starting treatment with INH resistance]

CHALLENGES IN PAEDIATRIC DRUG DELIVERY

***Dr. K. Jothilakshmi,** DNB.,*
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***Dr. S.M. Brindha,** MD.,*
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"Children are not miniature adults". This concept should be borne in mind when we prescribe medications to pediatric patients. Children are dynamic with respect to drug disposition due to developmental changes in body composition, drug metabolism and organ function. Also, children are different with respect to drug action due to ontogeny of receptor expression and function.

In addition to the pharmacodynamic and pharmacokinetic differences in children there are many practical issues in paediatric drug dosing.

1. Children are often unable to swallow pills or capsules until they are 6 or 7 years of age.
2. Palatability is the major determinant of compliance with treatment with oral formulations. Taste masking agents, preservatives and solubilising excipients in liquid formulations must have an acceptable safety profile in children.
3. Drug dosing requires calculations to be performed, which adds to the complexity of paediatric orders. The prescriber is expected, not only to remember the appropriate mg/kg/dose and frequency, but also to calculate the mg amount properly and apply to the maximum dose when necessary.

Oral liquid preparations, considered the Holy Grail of paediatric drug formulations, are also not without problems.

1. Solutions often contain potentially toxic excipients.
2. Suspensions often result in unequal drug delivery over time due to non uniform dispersal. Also, they have palatability problems due to both taste and texture.
3. Sprinklers / sachets often have erratic absorption.

People often resort to extemporaneous preparations for drugs which do not have liquid formulations. Most often, there are made by dissolving capsules or powdered tablets in a suitable base. Here again comes the question of stability, bioavailability and effect of food.

To compound to the above problem of providing appropriate formulation, paediatricians often face the problem of inappropriate dosage being given. Accuracy in measuring drug volumes less than 1 ml becomes critical, considering 0.1 ml discrepancies may account for a 10% change in dose. Dosing accuracy is much better with oral syringes when compared to measuring spoons. Considerable risk for inappropriate dosing exists if the bottle is not shaken properly or if the concentration is made incorrectly (for oral suspensions).

FDA-APPROVED DRUGS IN 2011

S.No	Product	Use	Approval
1.	Ticagrelor	Reduction of thrombotic events in patients with acute coronary syndrome.	July 2011
2.	Rivaroxaban	Prophylaxis of deep vein thrombosis during knee or hip replacement surgery.	July 2011
3.	Azficel-T	Improvement of nasolabial fold wrinkles in adults.	June 2011
4.	Everolimus	For the treatment of advanced pancreatic neuroendocrine tumors.	May 2011
5.	Sunitinib malate	The treatment of pancreatic neuroendocrine tumors.	May 2011
6.	Fidaxomicin	For the treatment of Clostridium difficile-associated diarrhea.	May 2011
7.	Fentanyl citrate nasal spray	For the management of breakthrough cancer pain.	June 2011
8.	Nitroglycerin ointment 0.4%;	For the treatment of chronic anal fissure.	June 2011
9.	Oxycodone HCl	For the management of acute and chronic moderate to severe pain.	June 2011
10.	Boceprevir	Treatment of chronic hepatitis C genotype 1.	May 2011
11.	Ezogabine	For the treatment of partial-onset seizures.	June 2011
12.	Indacaterol maleate inhalation powder	For the treatment of airflow obstruction resulting from chronic obstructive pulmonary disease.	July 2011
13.	Fidaxomicin	For the treatment of Clostridium difficile-associated diarrhea.	May 2011
14.	Rilpivirine	For the treatment of HIV-1.	May 2011
15.	Telaprevir	For the treatment of genotype 1 chronic hepatitis C.	May 2011
16.	Belatacept	For the prevention of organ rejection following kidney transplant.	June 2011
17.	Abiraterone acetate	The treatment of prostate cancer.	June 2011

Ref : www.fda.gov

RECENTLY BANNED DRUGS IN INDIA

S.No	Name of the drug	Use	Reason for ban
1.	Rosiglitazone	Type 2 Diabetes	Increased risk of Heart attacks
2.	Gatifloxacin	Antibiotic	High risk of developing serious hyperglycemia
3.	Tegaserod	Irritable bowel syndrome	Increase risk of heart attacks and strokes

Ref : http://www.thehindu.com/news/national/article2113029.ece

New knowledge-New Therapy

Study carry out by the pharmacists of the University of Jena shows men suffer more rarely from inflammatory diseases than women. They isolated immune cells of male and female donors and analyzed in test tubes the activity of the enzymes responsible for the production of pro-inflammatory substances. They found that in male cells the enzyme phospholipase D is less active than in the female ones. The activity of the enzyme is reduced after treatment with testosterone also in the female immune cells. Based on these findings, the Jena pharmacists concluded that the male sex hormones play a key role in the modulation of the immune response and testosterone can protect men from arteriosclerosis. The new knowledge should be taken into account in the assessment of new therapies and drugs for inflammatory diseases,

Ref : http://www.drugs.com/

Mrs. G. Andhuvan,
Asst. Professor - Dept. of Pharmacy practice.

First man cured of AIDS by stem cell Transplant

Brown (First man cured from AIDS) lived in Berlin with HIV and leukemia. He was treated with bone marrow stem cell transplant for leukemia. The stem cells came from a donor with a rare gene mutation that involves immunity to HIV again a rare occurrence. HIV specifically attacks $CD4^{+}$ T cells, making the body unable to launch a counter offensive against invaders. The researchers showed that after stem cell therapy Brown's body had reconstitution of $CD4^{+}$ T cells at a systemic level and specifically in his gut mucosal immune system. The man received bone marrow from a donor who had natural resistance to HIV infection; this was due to a genetic profile which led to the CCR5 co-receptor being absent from his cells. The most common variety of HIV uses CCR5 as its 'docking station', attaching to it in order to enter and infect CD4 cells, and people with this mutation are almost completely protected against infection. The German researchers and San Francisco-based immunologist believe that the findings point to the importance of suppressing the production of CCR5-bearing cells, either through transplants or gene therapy.Researchers, however, have warned that though the study offers promise, it is not a sure fire cure from the dreaded disease transplants are risky, and this involved a very rare transplant. Brown is a rather lucky man.

Ref : http://indiatoday.intoday.in.

Mrs. P. Rama,
Lecturer - Dept. of Pharmacy practice.

DRUGS APPROVED IN INDIAN MARKET

S.No	Name of the drug	Indication	Date of issue
1.	Ropinirole ER Tablet 1 mg.	Parkinson's disease	04.01.11
2.	Erlotinib HCl Tablet 150 mg (Additional Indication)	Patients with locally advanced metastatic non-small lung cancer	04.01.11
3.	Moxifloxacin HCl BP 0.5% w/v + Bromfenac Sodium 0.09% w/v Eye drop	For the reduction of post operative inflammatory conditions of the eye	05.01.11
4.	Pidotimod Tablet 400 mg / 800 mg & Oral Solution 400 mg / 800 mg per 7 ml	For infections of the respiratory system in secondary and primary immunodeficiency with alteration in maturation of T cells in adults only.	11.02.11
5.	Ursodeoxycholic Acid Suspension 125 mg / 5 ml and 250 mg / 5ml.	For the treatment of patients with chronic cholestatic liver disease	11.02.11
6.	Iloperidone Tablets 1mg / 2 mg / 4 mg / 6 mg / 8 mg / 10 mg / 12 mg	For the acute treatment of adults with schizophrenia.	17.02.11
7.	Eslicarbazepine Acetate Tablets 200 mg / 400 mg / 600 mg / 800 mg	As an adjunctive therapy in adults with partial-onset seizures with or without secondary generalisation.	07.03.11
8.	Ketoprofen Plaster (Size- 7 x10 cm)	For the Relief of Musculoskeletal pain and Inflammation.	09.03.11
9.	Dasatinib 20 mg / 50mg / 70mg (Additional Indication)	Treatment of newly Diagnosed Adults with Chronic Myeloid Leukaemia (CML) in Chronic Phase.	16.03.11
10.	Ilaprazole Tablets 5 mg / 10 mg	For the treatment of duodenal ulcer in adults only.	05.04.11
11.	Asenapine Maleate Sublingual Tablets 5 mg / 10 mg	For acute treatment of schizophrenia in adults only	07.04.11
12.	Tapentadol Hydrochloride Tablets 50 mg / 75 mg / 100 mg	For relief of moderate to severe acute pain in adults 18 years of age or older.	18.04.11
13.	Brinzolamide Ophthalmic Suspension 1%w/v	For the treatment of elevated intraocular pressure in patients with ocular hypertension or open-angle glaucoma.	26.05.11
14.	Besifloxacin Ophthalmic Suspension 0.6% w/v	For the treatment of bacterial conjunctivitis.	31.05.11
15.	Silodosin Capsules2mg/4mg/8mg	The treatment of signs and symptoms of benign prostatic hyperplasia (BPH) in adults only	23.06.11
16.	Tiapride Hydrochloride Tablets 25 mg / 50 mg / 100 mg	For the treatment of agitation and aggressiveness in adult patients with cognitive impairment	23.06.11

Ref : www.cdsco.nic.in

DEPARTMENT ACTIVITIES

1. Ms. Ajin Jomy - Fourth Pharm D student received third prize for the poster presentation entitled **"Different Aspects of Pharma Research"** held at Nazareth College of Pharmacy May 2011.

2. Fifth Pharm D students have attended a national level seminar on **"Herbal Medicine Drug Interaction - A Nano level exploration "**held at JKK Nataraja College of Pharmacy on 15 - 16 June 2011.

3. Dr.Cynthia Gross Prof. & Interim Head, Department of Experimental pharmacology, University of Minnesota discussed about Traditional and Nontraditional Pharmacy Programme on 18th June 2011.

4. Mrs. Katerina Diakidis, Excutive Training & Development, Maastricht Education and Research Centre, Maastricht University, Netherlands, discussed about higher education Opportunities for Pharmacy Students in Netherlands on 25th June 2011.

5. Department of Pharmacy practice has organized AICTE sponsored national level seminar on **"Emerging Opportunities and Challenges for Clinical Pharmacists "**held at PSG College of pharmacy from 8 - 9 July 2011.

6. Ms. Kabila B - Fifth Pharm D student received first prize for an oral case presentation in the national level seminar on **"Emerging Opportunities and Challenges for Clinical Pharmacists "**held at PSG College of pharmacy from 8 - 9 July 2011.

7. Ms. Kanaka Durga Vadlapatla - Fourth Pharm D student received third prize for the oral case presentation in the national level seminar on **"Emerging Opportunities and Challenges for Clinical Pharmacists"** held at PSG College of pharmacy from 8-9 July 2011.

8. Fifth Pharm D students have done the oral presentation at Al Shifa College of Pharmacy in the national seminar on **"The Effective Intervention of Pharmacovigilance in Indian Scenario** on 29th July 2011.

9. Ms. Kabila B and Mr. Britto Durai Singh L - Pharm D 5th year students were selected as organizing volunteers for **FIP - 2011** held at Hyderabad from 3rd to 8th Sep 2011.

10. Drug information center activities

S.No.	Activities	May	June	July	August
1	Number of patient counseled	1250	2419	2249	2052
2	Number of prescription audited	230	260	258	275
3	Number of queries	26	15	10	11

Reported ADR in PSG Hospitals till July 2011 through PSG Pharmacovigilance centre

Drug Details	ADR	Duration of adverse reaction
Antitubercular therapy x 2 weeks	Hepatitis	2 days
Aminophyline infusion	Seizures	---
Inj. Piroxicam 40 mg i.m	Fixed drug eruption	1 week
T. Allopurinol 100 mg x 6 months	Lichenoid dermatitis	---
Antitubercular therapy x 2 weeks	Urticaria	6 days
T. Methotrexate 5 mg once a week x 6 doses	Ulcer on trunk & oral mucosa	---
T. Norfloxacin + Tinidazole	Fixed drug eruption on trunk, face & extremities	3 days

NEWER AGENTS FOR PARTIAL SEIZURES

ESLICARBAZEPINE : Eslicarbazepine acetate a prodrug of eslicarbazepine (S-licarbazepine) voltage gated sodium channel antagonist used in the treatment of adult patients experiencing refractory partial onset seizures. It is an oral drug used in the doses of 800-1200 mg per day. It has good oral bioavailability (92-98 %). No relevant pharmacokinetic interactions between eslicarbazepine and the concomitant antiepileptics like carbamazepine, lamotrigene, valproic acid and topiramate. May be used normal dose in patients with moderate hepatic impairment but dose has to be reduced in patients with creatinine clearance of < 60 ml/min.

LACOSAMIDE : Lacosamide is a functionalized amino acid approved for adjuvant therapy of partial onset seizure with other Anti epileptic drugs (AEDs). It acts by selectively enhanced slow inactivation of voltage gated sodium channels, without affecting the fast inactivation mechanism and also modulates collapsing response mediator protein 2 (CRMP-2) which implicated in the development of epilepsy. Oral bioavailability is around 100 % and eliminated from systemic circulation via urinary excretion and biotransformation. Used in the doses of 50 mg twice daily, may be increased 100 mg / week, upto recommended maintenance dose of 200 - 400 mg/day. No significant drug - drug interaction with common AEDs.

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www.acedata-india.net