A NEWSLETTER BY DEPARTMENT OF PHARMACY—SIH

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Inside this issue

Winters, Influenza and Vaccination

Erum Iftikhar (Principal Pharmacist)

Influenza season just around the corner, Influenza —more commonly referred to as the seasonal flu — is usually a self-limiting disease, which means everyone doesn't need antiviral treatment or diagnostic tests. It is highly contagious however, and can spread from person to person through coughing or sneezing.

Who are at higher risks? Patients with chronic illnesses, such as asthma, diabetes, cardiac and lung disorders, transplant patients and patients who are immune compromised. Other people at high risk of flu include:

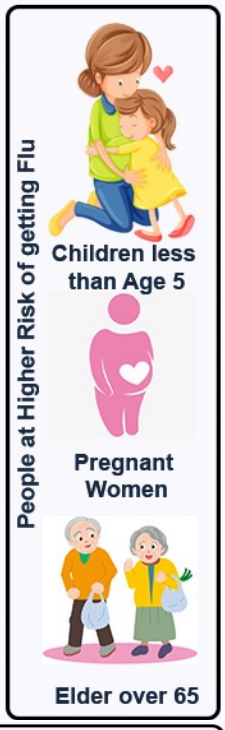
Pregnant women, the elderly, and children under the age of five are all at high risk.

The World Health Organization recommends seasonal influenza vaccination for pregnant women, children aged 6-59 months, the elderly, individuals with chronic medical conditions and health care workers.

Pharmacists should remind patients that once administered, the influenza vaccine takes about 2 weeks for it to become effective. Remind patients that an annual influenza vaccine is the best form of protection from the flu. Other flu prevention strategies that should be exercised along with vaccination include frequent hand washing with soap and water, avoiding close contact with sick individuals ,wearing a mask and employing cough etiquette .

If you are allergic to egg inform your pharmacist or doctor and then get the flu shot.

Reference: https://www.nhs.uk/conditions/vaccinations/flu-influenza-vaccine



World Pharmacists Day

Dear fellow pharmacists;

I congratulate you all on the auspicious occasion of World Pharmacist Day, i.e. 25th September!

Being a pharmacist is a sheer responsibility and commitment towards medication safety, maintaining effective supply chain and ensuring patient care. This will only happen if we start implementing the true pharmacy practice in the way we work and operate. It will happen by overcoming resistance to change and barrier to understand through consistent teaching, education, awareness and of course patience! And for this 'WE' first have to exhibit professionalism knowledge and skills in order for other healthcare professionals and patients to eventually recognize us and the profession.

Salwa Ahsan, Chief of Pharmacy (Shifa)

Interesting facts about medicines

- **Linezolid** is also a Mono Amine Oxidase inhibitor. So don't' forget this while prescribing.
- **Protamine** is obtain from fish sperms, so watch out for fish allergies.
- **Metformin** was discovered in the search for antimalarial agents.
- **Sildenafil** was developed for hypertension, that's why don't use with nitrates.
- **Sirolimus** (immunosuppressant) was initially developed as an antifungal agent.
- Efforts to create a non-addictive form of **morphine** led to the creation of heroine

TAKE DRUG WITH COCA COLA?

(Anas Ahmed, Resident Pharmacist)

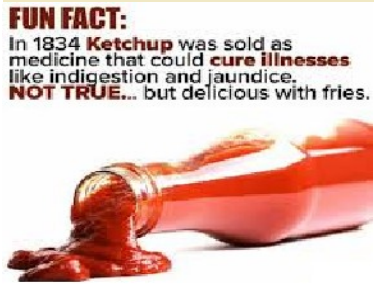
It is well-accepted that Cola containing drinks (CCDs) are acidic and many of its ingredients potentiate interactions of CCDs with different drugs in the context of both pharmacodynamics and pharmacokinetic, which includes drug absorption, metabolism, and renal excretion of drugs. In a study it was aimed to evaluate the effect of the acidic beverage Coca-Cola on the pharmacokinetics of velpatasvir (VEL) when given with omeprazole. This was an open-label, randomized, crossover trial in 11 healthy adults. A single dose of sofosbuvir/velpatasvir (SOF/VEL) 400/100 mg was administered alone (reference) or with omeprazole 40 mg once daily with water (intervention I); in the intervention II arm, omeprazole 40 mg was combined with 250 mL of Coca-Cola. Geometric mean ratios (GMRs) were calculated for VEL area under the concentration-time curve from zero to infinity (AUC_{0-inf}) and maximum plasma concentration (C_{max}). VEL exposure was reduced by 26.7% when SOF/VEL was coadministered with omeprazole vs. reference: GMRs (90% confidence interval (CI)) were 73.3% (55.6–96.8) and 69.1% (52.3–91.2) for AUC_{0-inf} and C_{max}, respectively. Intake of SOF/VEL with Coca-Cola compensated for the interaction with omeprazole and resulted in a higher VEL exposure. GMRs (90% CI) were 161.6% (122.4–213.3) for AUC_{0-inf} and 143.9% (109.0–190.0) for C_{max}. Therefore, Coca-Cola can be used to overcome the drug–drug interaction between VEL and omeprazole.

Impact of Cola Drinks	
Increased Effect	**Decreased effect**
Methotrexate	Lithium
Clozapine	Warfarin
Carbamazepine	
Phenytoin	
Ibuprofen	
Azole Antifungals	
Erlotinib	

These interactions can be contributed as an interaction with caffeine present in the CCDs. It competes for binding to CYP1A2 and may competitively inhibit CYP1A2-dependent metabolism of other CYP1A2 substrates. It has been shown that co-administration of CCDs with weak bases can increase the gastric concentration of drug and subsequently increase its overall absorption. Cola drinks contain phosphoric acid and sugar. There are reports demonstrating prolonged gastric emptying, it also effect the dissolution rate of capsules shells, CCDs can also lower PH of urine so weak acidic drugs excretion will be decreased.

Conclusion: CCDs have potential to increase or decrease the effect of drugs so CCDs should be used after consultation with physician or pharmacist.

Reference:/ https://www.ncbi.nlm.nih.gov/pubmed/31313296



Angiotensin receptor blockers reduce the risk of dementia

(Sana Akhter, Staff Pharmacist)

Do antihypertensive drugs differ with respect to slowing age-related cognitive decline? That has been the subject of considerable debate. More recently, accumulating evidence from observational studies suggests that the use of ARBs was associated with improved memory preservation compared with the use of other antihypertensive drugs. A total of 1626 adults without dementia aged 55-91 years were included. Researchers assessed data from three groups: hypertensive patients treated with ARBs, hypertensive patients treated with other antihypertensives, and patients without hypertension. In general, over 3 years of follow-up, hypertensive patients in the non-ARB group had worse cognitive outcomes compared with both normotensive patients and hypertensive patients treated with ARBs, whereas hypertensive patients treated with ARBs had similar improvements in short- and long-term memory compared with normotensive patients. In addition, patients using blood-brain barrier (BBB)–crossing ARBs (valsartan, telmisartan, and candesartan) were compared with those using non-BBB–crossing ARBs. Users of BBB -crossing ARBs had improved long-term memory-related outcomes and a smaller volume of white-matter hyperintensities. **The researchers concluded that ARBs, particularly BBB-crossing ARBs such as valsartan, telmisartan, and candesartan, are probably associated with greater memory preservation and less white-matter volume than other antihypertensive medications.**

To further explain the potential neuroprotective mechanism, recall that the renin-angiotensin-aldosterone system (RAAS) has effects on the pathophysiology of dementia through other mechanisms outside of the effects on cerebral blood flow and vascular resistance. These mechanisms include tau phosphorylation, amyloid metabolism, and oxidative stress. In addition, angiotensin II blocks the release of acetylcholine in cholinergic neurons, adding to the neurodegenerative effect seen in Alzheimer disease. These additional mechanisms help explain why RAAS blockade is superior to blood pressure control alone for improving cognition-related outcomes.

Reference: https://www.medscape.com/viewarticle/915949#vp_1 (JULY,2019)

My Child Ingested the packet written 'Do Not Eat'!!

The paper or cloth packet in the many tablets jar contain Silica gel which are clear round balls. It can also be often found in new store-bought products (such as shoes, backpacks, water bottles and handbags). The purpose of the silica gel packet is to absorb water and maintain dryness in these products. **Silica gel is chemically inert and is considered to be non-toxic**. The concern with this substances it that it can be a choking hazard (A choking hazard is any object that could be caught in a child's throat blocking their airway and making it difficult or impossible to breathe), this is why these packets often say 'DO NOT EAT' on them. If you eat silica, it won't be digested, so it will pass through the gastrointestinal tract to be excreted in feces.

Silica Gel can be poisonous: silica gel beads may contain poisonous and potentially carcinogenic cobalt chloride, which is added as a moisture indicator. You can recognize silica containing cobalt chloride because it will be colored blue (dry) or pink (hydrated). Another common moisture indicator is methyl violet, which is either orange (dry) or green (hydrated). Methyl violet is a mutagen and mitotic poison. While you can expect most silica you encounter to be non-toxic, ingestion of a colored product warrants a call to Poison Control.

Reference: Helmenstine, Anne Marie, Ph.D. "Are Silica Gel Beads Poisonous?" ThoughtCo, Jul. 14, 2019.

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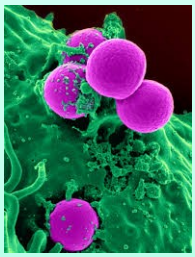
MRSA in solid organ transplantation

Khalil Ullah (Resident Pharmacist)



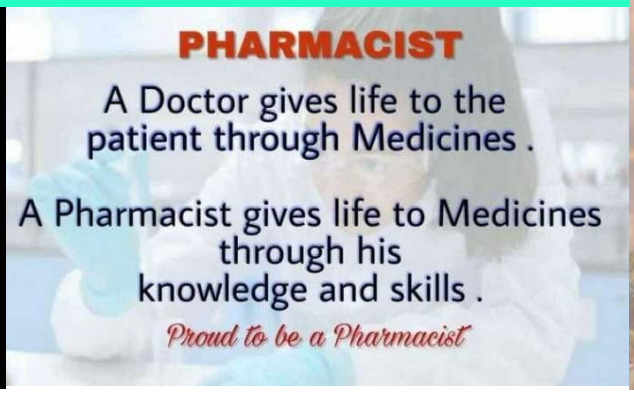
Despite an increasing armamentarium of antimicrobials active against MRSA, improved diagnostic tools, and overall declining rates of infection, MRSA infections remain a substantial cause of morbidity and mortality in solid organ transplant recipients. Pre- and post-transplant MRSA colonization is a significant risk factor for post-transplant MRSA infection. American Society of Transplantation Infectious Diseases Community of Practice review the epidemiology, diagnosis, prevention, and management of methicillin-resistant Staphylococcus aureus (MRSA) infections in solid organ transplantation.

The preferred initial treatment of MRSA bacteremia remains Vancomycin. Hand hygiene, chlorhexidine bathing in the ICU, central-line bundles that focus on reducing unnecessary catheter use, disinfection of patient equipment, and the environment along with antimicrobial stewardship are all aspects of an infection prevention approach to prevent MRSA transmission and decrease healthcare-associated infections.

Risk factors for MRSA infection in solid organ transplant (SOT) have been most commonly described in adult liver transplant recipients, usually in the setting of active surveillance. In liver transplant, risk factors include nasal colonization with MRSA, alcoholic cirrhosis, decreased prothrombin ratio, recent surgical intervention and prolonged OR time, cytomegalovirus (CMV) seronegativity, primary CMV infection, prior antibiotic exposure, and prolonged hospital and ICU length of stay. Patients colonized with MRSA undergoing cardiothoracic surgery including heart transplant are at higher risk for SSIs. In a single-center study of kidney transplant recipients, younger adult age and steroid use were associated with Staphylococcus aureus infection, one third of which were MRSA. While data in pediatric SOT are sparse, one large single-center study of pediatric SOT candidates found that up to 13% were colonized with MRSA. The greatest risk of colonization was in lung, multivisceral, and heart transplant candidates with a history of cardiac surgery who had significant underlying disease and hospital exposure.

- For severe MRSA infections in transplant recipients, ASTID recommend consultation with infectious diseases (strong, high).
- For MRSA bacteremia and pneumonia, ASTID recommend initial therapy with intravenous Vancomycin based on cumulative experience and available data (strong, high).
- For skin and soft tissue infections with MRSA, ASTID recommend drainage when possible and consideration of antibiotic therapy.
- The choice of agent depends on specific patient-related factors as well as the results of antimicrobial susceptibility testing but options include Vancomycin, doxycycline, trimethoprim-sulfamethoxazole, clindamycin, or linezolid (strong, moderate).
- Prophylaxis with Vancomycin should be considered in patients undergoing SOT who are known to be colonized or previously infected with MRSA (weak, low).

Reference: PEREIRA MR, RANA MM; AST ID COMMUNITY OF PRACTICE,CLIN TRANSPLANT. 2019 MAY.



Nutritional Supplements available at Shifa International Hospital

Rehan Anjum, Clinical Pharmacist

ENSURE POWDER

1kcal/ml

Composition

Energy:	428 kcal
Carbohydrates:	57.4 g
Proteins:	15.9 g
Lipids:	14 g

Preparation:

6 scoops (53.8g) + 195 ml water= 230 ml

(1 Scoop =8.97g)

Per serving

230 Kcal 8.6g proteins

7.5 g Fats 31 g CH_2O

CH_2O	AA	FATS
54 %	15 %	29%

PEPTAMEN

1kcal/ml

Composition

Energy:	441 kcal
Carbohydrates:	50 g
Proteins:	17 g
Lipids:	17 g

Preparation:

6 scoops (55g) +210 ml water =250 ml

(1 Scoop =9.1g)

Per serving

242 Kcal 9.35g proteins

9.35g Fats 30.3g CH_2O

CH_2O	AA	FATS
50 %	15 %	35%

RESOURCE OPTIMUM

1kcal/ml

Composition

Energy:	405 kcal
Carbohydrates:	47.3 g
Proteins:	16.4 g
Lipids:	15.6 g

Preparation:

7 scoops (55g) + 190 ml water =230 ml

(1 Scoop=7.85g)

Per serving

223 Kcal 9 g proteins

8.6 g Fats 26 g CH_2O

CH_2O	AA	FATS
47 %	16 %	35%

ISOCAL

1kcal/ml

Composition

Energy:	470 kcal
Carbohydrates:	59 g
Proteins:	15.3 g
Lipids:	19.7 g

Preparation:

3 scoops(50g) + 210 ml water= 230 ml

(1 Scoop =16.7g)

Per serving

230 Kcal 7.7g proteins

9.9g Fats 29.5g CH_2O

CH_2O	AA	FATS
50%	13%	37%

AMINOLEBAN ORAL

1kcal/ml

Composition

Energy:	420 kcal
Carbohydrates:	64.7 g
Proteins:	27 g
Lipids:	07 g

Preparation:

5 scoops (50g) +180 ml water =200 ml

(1 Scoop =10 g)

Per serving

210 Kcal 13.5g proteins

3.5g Fats 32.35g CH_2O

CH_2O	AA	FATS
60 %	25 %	15%

GLUCERNA POWDER

1kcal/ml

Composition

Energy:	433 kcal
Carbohydrates:	41 g
Proteins:	19 g
Lipids:	16 g

Preparation:

5 scoops (52.1g)+ 200 ml water= 237 ml

(1 Scoop = 10.4g)

Per serving

225 Kcal 10 g proteins

8.2 g Fats 30 g CH_2O

CH_2O	AA	FATS
49 %	18 %	35%

RESOURCE DIABETES

1kcal/ml

Composition

Energy:	460 kcal
Carbohydrates:	44.5 g
Proteins:	20.5 g
Lipids:	20 g

Preparation:

7 scoops (55g) + 210 ml water= 250 ml

1 Scoop= 7.9g)

Per serving

250 Kcal, 11.3 g proteins

11 g Fats 24.5 g CH_2O

CH_2O	AA	FATS
42 %	18 %	40 %

GUCERNALIQUID

1kcal/ml

Composition (100 ml)

Energy:	99 kcal
Carbohydrates:	8.14g
Proteins:	4.18 g
Lipids:	5.44 g

Preparation:

Ready to use 250 ml

Per serving

248 Kcal 10 g proteins

14 g Fats 20 g CH_2O

CH_2O	AA	FATS
34 %	17 %	49 %

NOVASOURCE RENAL

2kcal/ml

Composition (100 ml)

Energy:	201 kcal
Carbohydrates:	18.5%
Proteins:	9.1%
Lipids:	10 %

Preparation:

Already mixed

Per serving

475 Kcal 21.6 g proteins

23.7 g Fats 43.8g CH_2O

CH_2O	AA	FATS
37 %	18 %	45 %

NEPRO LP

1.85 kcal/ml

Composition

Energy:	504 kcal
Carbohydrates:	52.3 g
Proteins:	12.9 g
Lipids:	26.12 g

Preparation:

9 scoops (87g) + 170 ml water =236 ml

(1 Scoop =9.7g)

Per serving

438 Kcal, 10.6g proteins

22.7 g Fats 52.3 g CH_2O

CH_2O	AA	FATS
43 %	10 %	47%

ENSURE LIQUID

1.5kcal/ml

Composition (100 ml)

Energy:	150 kcal
Carbohydrates:	20 g
Proteins:	6.4 g
Lipids:	5.2 g

Preparation:

Ready to use 250 ml

Per serving

375 Kcal 16 g proteins

13 g Fats, 50 g CH_2O

CH_2O	AA	FATS
53 %	17 %	30%

BENEPROTEIN

6g protein

Composition

Energy:	342kcal
Carbohydrates:	0 g
Proteins:	86 g
Lipids:	0 g

Preparation:

1 Scoop (7g) +60-120 ml water or add with food

(1 Scoop =7g)

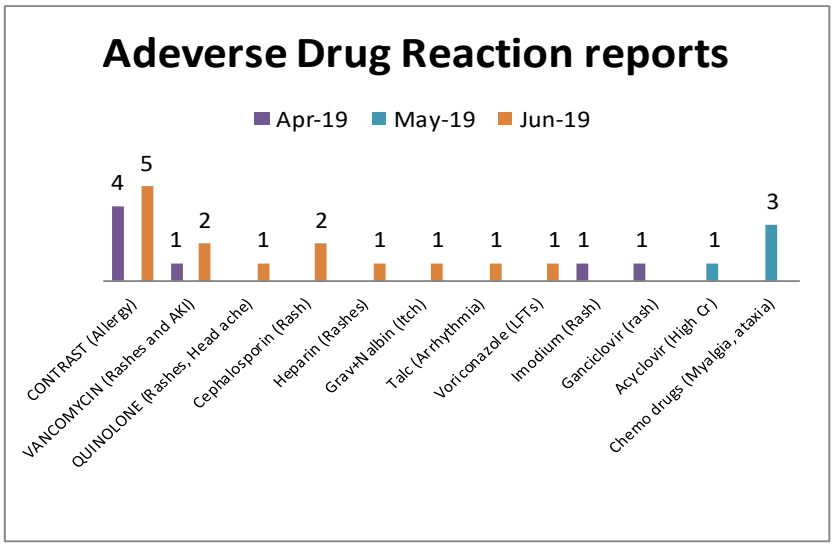
Per serving

25 Kcal 6 g proteins

0 g Fats, 0 CH_2O

CH_2O	AA	FATS
0 %	100 %	0%

Formulary updates			(Visit Shifa Intranet Home Page, Medication Updates for details)
Brand	**Generic**	**Class**	**Indications**
Hirdasec	Racecadotril	Antidiarrheal	Acute diarrhea
Diafol	Methyl folate , multivitamin, mineral	Multivitamin and Supplement	Balanced composition for renal failure patients
MMR vaccine	MMR vaccine	Attenuated live vaccine	Prophylaxis of Measles , Mumps and Rubella
Reconium	Rocuronium	NMBA	Neuromuscular blockade for endotracheal intubation, surgery, or mechanical ventilation (as adjunct to general anes-
Acetin	Acitretin	Vit A Analog	Psoriasis, Disorders of keratinization
Levocarnitine	Levocarnitine	IV Supplement	Carnitine deficiency in dialysis patients

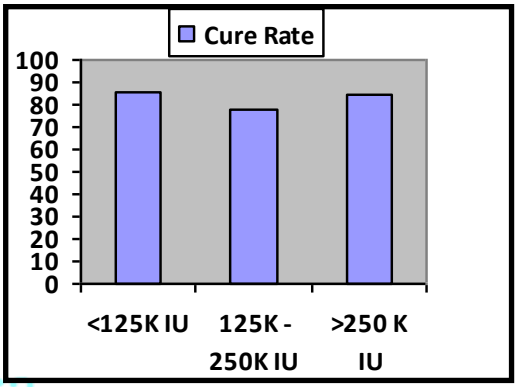


Remember, Reporting ADRs especially for new drugs is important for patient safety. Report ADR via **ADR hotline Ext# 3977** or send the filled ADR form to pharmacy

COLISTIN INTRATHECAL DOSE:

Rehan Anjum (Clinical Pharmacist)

Meningitis and or ventriculitis may be a significant complication in patients undergoing craniotomy and the incidence is up to 8% in patients with external catheter derivation. Coagulase-negative staphylococci are predominant amongst Gram-positive and, amongst Gram-negative rods, Acinetobacter baumannii has an incidence of 3.6-11% of causing meningitis and or ventriculitis. CNS infections caused by multi-drug resistant Gram-negative bacteria, intrathecal (ITH) colistin is considered an effective and safe option. When it comes to ITH dosing there is difference between two main references that is uptodate and sanford. According to Uptodate colistin dose intrathecal/intraventricular (off-label route): 4.2 mg CBA/day (equivalent to 10 mg CMS/day). According to sanford guide of antimicrobials its dose is 10 mg CBA (which is equivalent to 25 mg CMS/day). Though in clinical practice, the dose is often chosen empirically, ranging between 1.6 and 40 mg CMS (20,000-500,000 IU) either as a single dose or in divided doses. IDSA guidelines about ITHC dose published in 2004 also report 10 mg of CMS once daily for 14 days , and it is further validated by many studies (Tunkel 2017; Imberti 2012; Ziaka 2013, O. Bargiacchi, et al. 2016). **So By literature search and guidelines review suggested dose of 4.2 mg CBA (10 mg CMS or 125000 units by IDSA Guidelines is still valid if administered once daily for at least 14 days.**



Reference: Uptodate, Sanford guide of antimicrobials, IDSA Tunke 2004, O. Bargiacchi, et al. 2016

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*Kindly send us your **comments/suggestions** via email at : **drug.information@shifa.com.pk***

Thank you , we are looking forward for your valuable feedback.