A NEWSLETTER BY DEPARTMENT OF PHARMACY—Shifa (SIH)

PHARMACY BULLETIN

Shifa International Hospitals Ltd.
شفا انٹرنیشنل ہسپتال لمیٹڈ

ISSUE 15, July 2022

Inside this issue

Let disaster don't effect your medicines or health

Rabia Hanif (Resident Pharmacist)

When a natural disaster strikes such as a bushfire, floods or earthquakes, managing medication and medical devices is not an easy task. For example, some people with diabetes can't survive without insulin, while many people with asthma or COPD rely on inhalers. Then there are antiepileptics, antidepressants, anticoagulants, hypertension medicines and many more that must be continued as prescribed.

Here are some key tips to remember if you, or someone in your family, depends on medicines and are faced with a natural disaster:

1. Be aware of the situation and keep your immediate need things ready in a bag (e.g. dry food, water, medicines etc.), in case one has to evacuate the place.
2. Bring your medicines to the evacuation center.
3. Keep your medicines in its original container/packing. Keep in water proof/sealable plastic bags to prevent contact from moisture/water.
4. Medicines requiring refrigeration are to be placed in an insulated cooler with reusable ice packs or ice cubes
5. Keep administration device (spoon, cup, dropper or syringe etc.) along with your medicines
6. Always keep a list of medications that you are taking: it will help the healthcare provider to identify and supply accordingly when you need medication. Using your phone to take a snap of your medication will be a good way to keep a record of your medications.
7. Store necessary health and immunization records in a waterproof container/bag.
8. Do not share medicines with other people: Use medication only when it is prescribed for you.
9. Do not use medication affected by flood water or fire
10. Always safely dispose the medication, leftover medications could pose risk to other people.
11. Lastly, for any further clarification on medications affected by flood waters, fire etc. do speak to your doctor or pharmacist for guidance.

FLOOD SAFETY TIPS

- Gather emergency supplies, including non-perishable food and water.
- Listen to your local radio or television station for updates
- Avoid driving through flooded areas and standing water.
- Do not drink flood water, or use it to wash dishes, brush teeth, or wash/ prepare food. Drink clean, safe or boiled water for drinking, cooking, etc.
- Throw away any food and bottled water that may have come into contact with flood water.

Department of Pharmacy Shifa is pleased to announce

ANNUAL MEDICATION MANAGEMENT CONFERENCE 2022

22-23 September 2022

"Pharmacy united in action for a healthier world"

Prevention of CMV disease in transplant patients. What's new?

Rehan Anjum (Transplant Clinical Pharmacist)

Prevention and treatment of CMV disease is a fundamental part of supportive care for recipients of hematopoietic stem cell transplant (HSCT) and solid-organ transplant (SOT). **Prevention is mainly by chemoprophylaxis** during times of highest risk, such as in the first several months after transplantation and at times of intensification of immunosuppression. CMV serology is helpful for identifying patients at higher risk for clinically significant CMV infection.

Until recently, the drug of choice for prevention of infection has been **Valganciclovir**, which is the oral prodrug of ganciclovir. Ganciclovir administered intravenously is used when oral therapy is not feasible. Oral ganciclovir is no longer used as it has low bioavailability and is associated with poorer outcomes than other therapies.

Main toxicity with valganciclovir and ganciclovir: Bone marrow suppression. This predominantly manifests as leukopenia but also can be present with thrombocytopenia or anemia. This side effect has largely curtailed use of (val)ganciclovir chemoprophylaxis during such periods in HSCT recipients. Additionally, transplant recipients are often treated with other medications, such as mycophenolate, that may deplete their bone marrow reserves. Management of cytopenia arising from (val)ganciclovir use often requires growth factor (granulocyte colony-stimulating factor) support and/or discontinuation of the antiviral agent.

To become active, ganciclovir must be phosphorylated by the viral enzyme phosphotransferase. A mutations in gene confer resistance to ganciclovir.

Risk factors for CMV resistance include extensive exposure to ganciclovir, suboptimal ganciclovir levels in the setting of intensive immunosuppression and high viral loads.

Until recently, the main treatments available for refractory or ganciclovir-resistant CMV were **foscarnet and cidofovir**. The efficacy and safety of both drugs are suboptimal.

Medication for Prevention and Treatment of CMV in Transplant Recipients

Drug	Safety & Adverse Effects	Uses
Ganciclovir/ valganciclovir	Cytopenias	Prevention and treatment of CMV infection
Maribavir	Dysgeusia, GI upset, drug interactions	Treatment of resistant/refractory CMV. In future this may also include uncomplicated CMV in HSCT
Letermovir	GI upset, drug interactions	Prevention and possibly treatment with viral load <1,000 copies/mL
Cidofovir	Renal and ocular toxicity	Treatment of resistant/refractory CMV infection
Foscarnet	Renal and electrolyte toxicity	Treatment of resistant/refractory CMV infection

Additionally, the FDA has only granted them an indication for retinitis.

Main toxicities with foscarnet: Renal impairment and electrolyte abnormalities. **For cidofovir**: Renal impairment and uveitis.

Letermovir: It is approved by the FDA for prophylaxis in CMV-seropositive HSCT recipients. The approved dose is 480 mg daily (oral or IV) through 100 days post-transplant. Letermovir is not active against other herpesviruses (e.g., herpes simplex virus [HSV] and varicella zoster virus [VZV]), for which purpose (val)acyclovir needs to be co-administered in patients who require prophylaxis for HSV and VZV.

Most common side effects of letermovir: Gastrointestinal (GI). It is not associated with the bone marrow toxicities of (val)ganciclovir or the renal and electrolyte toxicities of foscarnet. More challenging are the various **drug interactions**. Letermovir is a moderate inhibitor of the cytochrome enzyme CYP3A and an inducer of CYP2C9 and 2C19,hence can increase levels of drugs metabolized through these pathways .

Maribavir: Maribavir is approved by the FDA for the treatment of post-transplant CMV infection that is refractory to treatment with other anti-CMV agents, such as (val)ganciclovir, cidofovir, or foscarnet. The approved dose is 400 mg twice daily.

As with letermovir, maribavir is not active against other herpesviruses (e.g., HSV and VZV), for which (val)acyclovir needs to be co-administered if prophylaxis against HSV and VZV is needed.

The main side effects of maribavir: taste disturbances (dysgeusia) and GI upset. The drug is metabolized by the CYP3A4 system and is a weak inhibitor of that enzyme complex. Hence, coadministration with maribavir leads to increased levels of calcineurin inhibitors (cyclosporin and tacrolimus) and mammalian target of rapamycin (mTOR) inhibitors (sirolimus and everolimus). For example, maribavir 400 mg twice daily increased tacrolimus trough concentrations by 57%. Maribavir was also evaluated for CMV prophylaxis, but results have been mixed and it is not approved for that indication.

Conclusion: While (val)ganciclovir remains the cornerstone for treatment of CMV in both HSCT and SOT and for prophylaxis in SOT recipients, the arrival of letermovir and maribavir as therapeutic options is a major advance in the field. Letermovir is approved by the FDA for prophylaxis in CMV-seropositive HSCT recipients and maribavir is approved as treatment of CMV infection refractory to (val) ganciclovir, cidofovir, or foscarnet. The main side effects of both drugs are GI in nature, with maribavir causing dysgeusia in a substantial percentage of patients. Neither letermovir nor maribavir is associated with the bone marrow suppression seen with (val) ganciclovir or with the renal and electrolyte toxicities seen with foscarnet and cidofovir.

Reference: Uptodate.com

ENHANCING MEDICATION SAFETY

NMBAs or Neuromuscular blocking agents (also called Paralyzing Agents) are HIGH ALERT MEDICATIONS. Errors in their use can lead to fatalities. These errors can occur anywhere during the entire medication-use process. The stated tragic event could occur at any hospital around the world, therefore it is important for other hospitals to learn from the mistakes and proactively implement safety measures to prevent such errors from happening.

Many hospitals might recognize these systematic flaws in their own practices e.g. how such medicines are stored, ordered, taken from stock, dispensed or administered. The key to success is that they access is limited with the ones who are trained to handle such type of medicines and rest of the staff are knowledgeable about the type and indication of use so the accidental wrong administration can be prevented.

Tragic Event

On Dec 26, 2017 involving a neuro-ICU nurse named RaDonda Vaught, who mistakenly administered Vecuronium, a NMBA, instead of Versed (midazolam) which was actually ordered to relieve the anxiety of a 75-year-old patient with claustrophobia, undergoing PET scan. Patient was found unresponsive by a transport technician about 30 minutes later and died the next day after being withdrawn from life support.

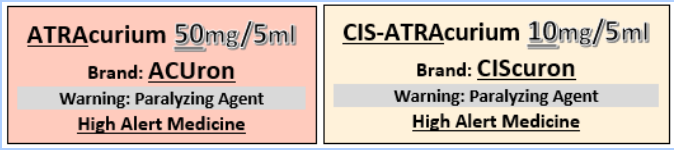
The following are some measures that can be undertaken to avoid medication errors involving NMBAs:

Bold Warnings

- Clear warning labels indicating respiratory paralysis and need for ventilation should be displayed (see sample sticker)

- **Auxiliary sticker** to be pasted directly on neck of ampules/vials.
- An electronic and interactive **pop-up alert** while ordering or dispensing NMBAs that interrupts and requires acknowledgment by the user that actually NMBAs is required
- Bins/shelves containing NMBAs must be properly labeled to distinguish from rest of the drugs
- Look-Alike and Sound-Alike medicines with that of NMBAs must be identified and stored separately to avoid any accidental mix-ups. Remove discontinued brand names from the system/labels to avoid confusion
- Use tall man letters to highlight the similar names
- Eliminate NMBA's where they are not routinely used.

Institutional Protocols for NMBAs:



- The institution's intubation and paralyzing guidelines using NMBAs and for patient monitoring should be established and communicated to all concerned staff
- Define prescription privileges for NMBAs (Anesthesia only)
- Establish formal training for practitioners involved in storage, prescribing, dispensing, and administering NMBAs
- NMBAs discontinued or hold by doctor must be stored away from active medicines due for administration, and sent back to pharmacy or returned to stock immediately (to avoid any accidental administration). Never leave any unlabeled syringe or infusion bag containing NMBA in patient care area
- Always verify the order if patient's location is not suggestive of likely intubation e.g. orders coming from clinics, daycare or general wards etc. should be carefully verified before dispensing. OR, ER, ICUs are the main areas where NMBAs are usually used.

DRAP Draft Guidelines on High Alert Medication Management

High Alert Medication (HAM) bear a heightened risk of causing significant patient harm due to error in storage, prescribing, dispensing, administration and use. **DRAP with the help of Pakistan Society of Health-System Pharmacist (PSHP),** has revised **list of High Alert Medication** (available on DRAP's website). While a draft **Guidelines on High Alert Medications** have been posted on website dated 16th June, 2022, for seeking comments and suggestions from stakeholders on the draft document. Stakeholders were to submit their comments and suggestions within 15 days of uploading this document.

Salwa Ahsan presenting guidelines to Mr. Asim Rauf, CEO DRAP

The document is intended for the guidance and support of hospitals and healthcare professionals (HCP) for safe prescribing, dispensing, administration and monitoring of high alert medication (HAM) and applies to all healthcare settings and healthcare professionals involved in handling and usage of HAM. The outlined and recommended strategies are intended to educate HCPs, prevent risks associated with HAM, implement safety checks and encourage reporting of Adverse Events /Adverse Drug Reactions.

Acknowledgement:-

DRAP would like to acknowledge the efforts of Pakistan Society of Health System Pharmacists (PSHP) with special thanks to Ms. Salwa Ahsan and Mr. Haris Aziz and all other members of Pakistan Society of Health System Pharmacists (PSHP) for their contribution in the development of these guidelines, endorsed by the International Pharmaceutical Federation (FIP).

Salwa Ahsan, Chief of Pharmacy Shifa International, contributed in development of these guidelines and well acknowledged by DRAP in the guidelines. This action manifest Shifa international hospital Islamabad's commitment for healthier and safe Pakistan.

Link for draft guidelines: https://www.dra.gov.pk/wp-content/uploads/2022/06/Guidelines-on-High-Alert-Medication-Management.pdf

Guidelines for the Provision and Assessment of Nutrition Support Therapy in the Pediatric Critically Ill Patients:

Rehan Anjum (Clinical Pharmacist)

A.S.P.E.N released guidelines for provision and Assessment of nutrition support therapy in pediatric critically ill patients in 2017. These guidelines are for pediatric critically ill patient **(>1 month and <18 years**) and **not intended for neonates or adult patients**.

Energy Expenditure and Intake:

What is the recommended energy requirement for critically ill children?

A.S.P.E.N suggest that **measured energy expenditure by Indirect Calorimetry (IC)** be used to determine energy requirements and guide prescription of the daily energy goal.

How should energy requirement be determined in the absence of IC?

If IC measurement of resting energy expenditure is not feasible, we suggest that the Schofield or Food Agriculture Organization/World Health Organization/United Nations University equations may be used without the addition of stress factors to estimate energy expenditure.

Multiple cohort studies have demonstrated that most published predictive equations are inaccurate and lead to unintended overfeeding or underfeeding.

The Harris-Benedict equations and the RDAs, which are suggested by the dietary reference intakes, should not be used to determine energy requirements in critically ill children.

What is the target energy intake in critically ill children?

A.S.P.E.N suggests achieving delivery of at least **2/3rd of the prescribed daily energy requirement** by the end of the first week in the Peads ICU (PICU).

Protein:

What is the minimum recommended protein requirement for critically ill children?

A.S.P.E.N recommends a minimum protein intake of **1.5 g/kg/d.**

Protein intake higher than this threshold has been shown to prevent cumulative negative protein balance in RCTs.

Higher protein intake may be associated with **lower 60-d mortality** in mechanically ventilated children.

How should protein delivery goals be determined in critically ill children?

The optimal protein dose associated with improved clinical outcomes is not known.

We do not recommend the use of **RDA values** to guide protein prescription in critically ill children.

These values were developed **for healthy children** and often underestimate the protein needs during critical illness.

Enteral Nutrition:

Is EN feasible in critically ill children?

EN is recommended as **the preferred mode** of nutrient delivery to the critically ill child.

What is the best site for EN delivery: *gastric or small bowel?*

Existing data are insufficient to make universal recommendations regarding the optimal site to deliver EN to critically ill children. A.S.P.E.N suggest that the gastric route be the preferred site for EN in patients in the PICU.

The **postpyloric or small intestinal site for EN** may be used in patients unable to tolerate gastric feeding or those at high risk for aspiration.

Existing data are insufficient to make recommendations regarding the use of continuous vs intermittent gastric feeding.

When should EN be initiated?

A.S.P.E.N suggest that EN be initiated in all critically ill children, unless it is contraindicated. And also that the early **initiation of EN, within the first 24–48 h after admission** to the PICU, in eligible patients.

Parenteral Nutrition [PN]:

What is the indication for and optimal timing of PN in critically ill children?

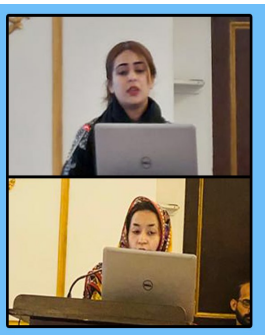
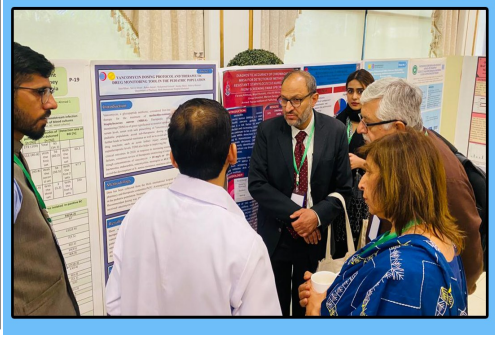
1. A.S.P.E.N do not recommend the initiation of PN within 24 hrs of PICU admission.
2. **The threshold for and timing of PN initiation should be individualized**.
3. Supplemental PN should be delayed until 1 week after PICU admission for patients with normal baseline nutrition state and low risk of nutrition deterioration.
4. A.S.P.E.N suggests PN supplementation for children who are unable to receive any EN during the first week in the PICU.
5. For patients who are severely malnourished or at risk of nutrition deterioration, PN may be supplemented in the first week if they are unable to advance past low volumes of EN.

***Reference**: JPEN 2017 Vol 41, Issue 5, pp. 706 - 742*

MMIDSP 19th Annual Conference 2022

Shifa Pharmacy team participated in 19th Annual conference of *Medical Microbiology and Infectious Diseases Society of Pakistan* (MMISP) - May 19-21, 2022 at AFIP and the pearl continental Hotel, Rawalpindi. The team submitted a total of 7 abstracts, out of which 2 abstracts were selected for oral presentations and 2 were selected for poster presentation. One of the poster: "Impact of educational safety alerts as a stewardship strategy in minimizing antibiotics associated ADRs" by resident pharmacist **Rabia Hanif** won the **3rd position**

Well done Team!

Well Done!

Naima Manzoor

Principal Pharmacist, Emergency Pharmacy Shifa,

Abstract approved for **ORAL** presentation in **ISQua's 38th International Conference 17-20 Oct 2022, Brisbane Australia**

"Pharmacy led Medication discharge counseling in Emergency Department"

Well Done!

Muhammad Gulzaib

Clinical Pharmacist, Peads ICU

Manuscript selected for a Book Chapter and now published with full bibliographic details.

Current Practice in Medical Science Vol. 5, 2022

https://www.bookpi.org/bookstore/product/current-practice-in-medical-science-vol-5/

"Inadvertent Intravenous Administration of an Oral Preparation of Ibuprofen: A Case Report"

Congratulations!

Farhan Jilani

Manager Pharmacy, OPD Pharmacy (Shifa)

is now Certified in Medication Safety from: American Society of Health-System Pharmacist (ASHP) & Institute of Safe Medication Practices (ISMP) - USA

This program comprises of 15 modules, and is intended for pharmacists, physicians, nurses and other healthcare professionals responsible for improving the safety of medication use in their respective practice settings. This activity meets the criteria of the Certification Board for Professionals in Patient Safety for CPPS CE hours.

Medication Safety Certificate

ashp pharmacists advancing healthcare® ISMP INSTITUTE FOR SAFE MEDICATION PRACTICES

Best Regards:
Salwa Ahsan, Chief of Pharmacy
Department of Pharmacy Services - Shifa

Shifa International Hospitals Ltd.

Pharmacy Residency Program, Shifa is now listed in the American College of Clinical Pharmacy (ACCP) program directory:

Link: https://www.accp.com/resandfel/search.aspx

accp American College of Clinical Pharmacy

Crash Training Course for Practicing Pharmacists

Pharmacists have a direct patient care role including prescription review, providing patient education & counseling and safe and effective medication management and use. Pharmacists must keep abreast which is not possible without a structured learning and training. Hence, Department of Pharmacy Services Shifa initiated a 7-days structured training program for practicing pharmacists in ambulatory care/community pharmacies.

The 1st batch (12 pharmacists) completed training (7 modules) in April-May 2022. Course is practice/simulation-based learning in key areas e.g. **drug related problems, prescriptions' appropriateness review, use of drug Information resources, pharmacy ethics, regulatory compliance, Supply Chain Management and essentials of communication** etc. Participant passed the test in order to claim their certificate.

Participants Feedback: Learnt many new things, and we are well motivated to apply these thing in real practice!

(if you are interested in this training please write to us: drug.information@shifa.com.pk)

Proud

To be a

Pharmacist

Ear Infection in Peads, care for children

Saba Javaid (Peads Clinical Pharmacist)

Acute otitis media is an infection of the middle ear characterized by middle ear effusion, inflammation, and acute onset of symptoms. **It is the most common diagnosis leading to antibiotic prescription in children whereas the use of antibiotic is not always required.** Because the incidence of acute otitis media peaks in infants and young children between 6 months and 2 years of age, 80%–90% of children will have at least one episode by 2–3 years of age.

The main symptom of an ear infection is ear pain. Other symptoms include pulling at the ear, being more fussy than usual, fever, decreased appetite, and vomiting or diarrhea.

An ear infection may clear up on its own. Child may need to take medicine. After the infection goes away, Child may still have fluid in the middle ear. It may take weeks or months for this fluid to go away. During that time, child may have temporary hearing loss. But all other symptoms of the earache should be gone.

Follow these guidelines when caring for child at home:

- Don't give child any other medicine without first asking child's healthcare provider, especially the first time.
- Because ear infections can clear up on their own, it is advisable to wait for a few days before starting antibiotics.
- To reduce pain, have child rest in an upright position. Hot or cold compresses held against the ear may help ease pain.
- May use OTC pain medicine to relieve pain

To apply ear drops:

1. Put the bottle in warm water if the medicine is kept in the refrigerator. Cold drops in the ear are uncomfortable.
2. Have child lay down on a flat surface. Gently hold child's head to one side.
3. Remove any drainage from the ear with a clean tissue or cotton swab. Clean only the outer ear. Don't put the cotton swab into the ear.
4. Straighten the ear canal by gently pulling the earlobe up and back.
5. Keep the dropper a half-inch above the ear canal. This will keep the dropper from becoming contaminated. Put the drops against the side of the ear canal.
6. Have child stay lying down for 2 to 3 minutes. This gives time for the medicine to enter the ear canal. If child doesn't have pain, gently massage the outer ear near the opening.
7. Wipe any extra medicine away from the outer ear with a clean cotton ball.

To help prevent future infections:

- Don't smoke near child. Even second-hand smoke raises the risk for ear infections in children.
- Make sure child gets all appropriate vaccines such as annual flu vaccine and 7-valent pneumococcal conjugate (PCV7) vaccine. Studies show that this vaccine protects against a number of the most common bacteria that cause ear infections
- Never put an infant down for a nap, or for the night, with a bottle Reduce use of pacifiers.
- If you breastfeed, continue until child is 6 to 12 months of age.

Reference: *https://www.pharmacytimes.com/view/p2p_otitismedia*

Formulary Updates ***(Visit Shifa Intranet Home Page—click Medication Updates for details)***

Brand	Generic	Class	Indications
Dura lock C (30%) 5 ml	Trisodium citrate	Anticoagulant	To maintaining patency of Hemodialysis Catheters
Menorin 0.3 mg tablet	Conjugated-Oestrogens	Estrogen Derivative	Hormonal replacement therapy
Linvesta 5 mg tablet	Linagliptin	Antidiabetic Agent	type 2 Diabetes mellitus
Testiva (1% gel) 5 g sachet	Testosterone 1%	Androgen	Hypogonadism, male (primary or hypogonadotropic)

Looking for Valuable Feedback

We want to bring to you valuable, updated and interesting information via Pharmacy Newsletter, so please spare some time to provide valuable feedback in the form of comments or suggestions. Its newsletter and with help we'll make it better!

Contact us to get ***e-copy or hard copy of newsletter*** *or to give* ***comments/suggestions*** *via email at :* ***drug.information@shifa.com.pk***

Thank you.