



PHARMACY BULLETIN

Shifa International Hospitals Ltd.

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Remdesivir and COVID-19

Rehan Anjum Asst. Manager Clinical Pharmacy

Remdesivir may reduce risk for hospital re-admission by as much as 16% among immunocompromised COVID-19 patients, according to studies presented at ECCMID 2023: the European Congress of Clinical Microbiology & Infectious Diseases, held in Copenhagen, Denmark (abstract O0427).

The researchers reviewed claims data in the HealthVerity database from May 1, 2020 to Nov. 30, 2022 and included patients with immunocompromised conditions, such as cancer, transplant and HIV, who were hospitalized with a primary diagnosis of COVID-19. They were placed in either the group receiving at least one dose of remdesivir during their hospital stay or the matched comparator group. The researchers matched 4,664 immunocompromised patients with 2,332 other patients in each of the two groups.

At day 30, there were 1,722 readmissions in the comparator group versus 1,572 in the remdesivir group. At day 60, there were 1,762 readmissions in the comparator group and 1,614 in the remdesivir group.

In this analysis, immunocompromised individuals with COVID-19 who were treated with remdesivir during the index hospitalization showed a 16% reduction across the entire study period at 30 and 60 days relative to the comparator.

The REDPINE trial, a phase 3 multicenter, parallel-group, double-blind, placebo-controlled study, included 243 hospitalized adults with confirmed COVID-19 and renal impairment. Participants included 90 patients (37%) with acute kidney injury (AKI), 64 (26%) with chronic kidney disease (CKD) and 89 (37%) with end-stage kidney disease (ESKD) requiring hemodialysis.

Researchers randomly assigned patients to receive remdesivir (n=163) or placebo (n=80), in addition to standard of care. No additional adverse reactions to remdesivir were observed in 163 hospitalized patients with AKI (n=60), CKD (n=44) or ESKD (n=59) on hemodialysis receiving remdesivir for up to five days.

Another analysis showed effectiveness of remdesivir in reducing COVID-19-associated mortality for patients living with cancer (poster LB074). Researchers evaluated 7,482 cancer patients hospitalized with COVID-19 who received remdesivir in the first two days of admission. At day 28, people with cancer who received remdesivir had a significantly lower risk for mortality than cancer patients without the drug ($P < 0.0001$).

Reference: Abstract Number 06786. Presented at the 33rd European Congress of Clinical Microbiology and Infectious Diseases (ECCMID)

Safety Precautions with Remdesivir:

1. Discontinue remdesivir if:
 - ALT >10 times the upper normal limit, or
 - ALT elevation AND signs or symptoms of liver inflammation
2. Never give as IM injection, only give as IV infusion over 30-120 mins
3. For peads weighing 3.5 – 40 kg: use remdesivir lyophilized powder for injection only—not the liquid form (to avoid cyclodextrin related toxicity)





“Hazardous drugs (HDs), are medications that have the potential to cause harm to individuals who handle or are exposed to them”. Despite their potential risks and toxic properties, these drugs are necessary for their therapeutic benefits, particularly in cancer and certain autoimmune diseases. The potential risks associated with HDs such as possibility of secondary cancers, adverse health effects, harm to the unborn child etc., necessitate adherence to proper handling protocols.

Safety tips for the safe handling of hazardous drugs at home:

1. **Education and training:** healthcare providers must give proper education and training to the patients regarding the risks associated, safe handling, precautions and disposal of HDs. **Patient must be educated about safe storage, administration, spill management and disposing of soiled material and used/leftover HDs.**
2. **Personal protective equipment (PPE):** If a person other than the patient is helping them in HD’s administration, educate them to wear the proper PPE, such as gloves, gowns/aprons (esp. with liquid HDs), masks etc. **Do not touch the medicine with bare hands and avoid exposure to skin/body parts. Avoid inhaling dust or fumes by working in a well-ventilated area.**
3. **Storage:** Store HDs as per pharmacy or manufacturer’s instructions (room temperature or in fridge), in a designated area away from children, pets, and food/water. **Hot and humid areas are not suitable places for medicine storage e.g. inside car, bathrooms, kitchen etc.**
4. **Handling & Preparation:** Use a designated counter/table to prepare the medicine for administration, avoid using kitchen or food preparation areas. **Clean the area after medicine preparation with soap and water to prevent cross-contamination, esp. if any spill has occurred.** (also see spill and disposal below)
5. **Administration:** If patient is self-administering the drug, carefully follow the prescribed dosage and administration instructions provided by the healthcare provider. Also see pharmacy label for instructions or call **Shifa Drug Information Center for help (051-846 3977; 8:30am-5pm)**
6. **Spill management & Disposal:** Use gloves and other PPEs before cleaning the spill. Avoid body exposure. Dispose-off the contaminated/soiled materials in a sealed sturdy plastic bags. Items to be reused must be washed several times with detergent and water and are stored separately in closed container/bags until washed.
7. **Personal Safety:** After handling HDs, thoroughly wash hands with soap and water. Avoid touching your face, eyes, or mouth before washing your hands.



Reference: USP General Chapter <800> Hazardous Drugs - Handling in Healthcare Settings. Available at: <https://www.usp.org/compounding/general-chapter-hazardous-drugs-handling-healthcare>. Accessed on June 23, 2023.

Q. Do you know which medicines other than chemotherapeutic agents, are classified as hazardous drugs?

Ans: Examples are: Valganciclovir, Ganciclovir, Acitretin, Bosentan, Carbamazepine, Clonazepam, Clobazam, Clomiphene, Colchicine, Dinoprostone, Divalproex, Dutasteride, Entecavir, Finasteride, Fluconazole, Ivabradine, Leflunomide, Liraglutide, Miltefosine, Misoprostol, Oxytocin, Phenytoin, Spironolactone, Tacrolimus and many more.

(Please refer to CDC/NOISH for complete list, details and handling protocols—as applicable)

“World Health Day” Celebration at Shifa International Hospitals Ltd. Islamabad

Shifa International Hospital (SIH) observed **World Health Day**, a significant international occasion, on April 7th 2023 following the theme **‘Health for All’**. It served us as a reminder of the value of placing a high priority on our health and spreading knowledge about significant wellness concerns and gave us an opportunity to promote healthy lifestyles, work towards universal health coverage, and thank healthcare providers for their invaluable contributions to public health. The Pharmacy department at SIH engaged with the general public in counselling on their home medicines, the use of antibiotics and antibiotic resistance threat, diabetic education during Ramadan, medication safety and finally sending out well wishes as a way of spreading positivity. This occasion helped to **reflect, be inspired, and reinforce our dedication to enhancing the health and quality of life in the communities we serve!**



The Importance of Stewardship in Oncology: Enhancing Patient Outcomes and Reducing Financial Toxicity

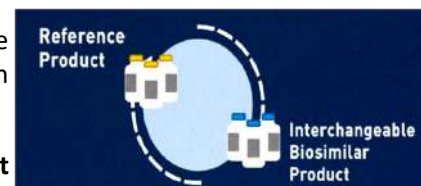
Naiha Tahir, Resident Pharmacist

Financial toxicity, characterized by the economic hardship experienced by patients due to the costs of cancer care, has profound implications for clinical outcomes. Research has shown that financial toxicity is associated with adverse consequences, including delayed presentation at advanced disease stages, increased healthcare expenses, higher morbidity, and elevated mortality rates. Acknowledging the detrimental impact of financial toxicity, healthcare professionals recognize the urgency of incorporating stewardship principles into oncology practices.



Drawing from the successful application of antibiotic stewardship in healthcare, **oncology stewardship focuses on optimizing care quality, enhancing access to treatment, and ensuring patient safety while curbing healthcare costs.** Various stewardship activities can be employed within the realm of oncology, such as employing molecular testing for targeted therapies, and standardizing drug ordering, administration, and monitoring processes. These activities promote efficiency, reduce waste, and improve patient care outcomes.

- One best practice in this regards is the **practice of rounding medication doses** to the nearest vial size when the difference falls within an established percentage. This approach minimizes drug waste and healthcare expenditures while maintaining accuracy during drug preparation. **The Hematology/Oncology Pharmacy Association (HOPA) has issued a position statement recommending the development of institution-specific policies that consider biologic and cytotoxic agents, as well as exceptions to dose rounding.**
- **Utilizing biosimilars:** Biosimilars offer significant cost savings compared to reference products, but their integration requires careful planning. Institutions must decide on interchangeability based on FDA definitions or through a therapeutic interchange process.
- Stewardship can facilitate the **transition of inpatient chemotherapy regimens to outpatient settings**, improving patient quality of life and reducing costs. However, the burden on patients traveling long distances for frequent visits and monitoring must be considered. Successful transitioning programs require a multidisciplinary approach, anticipating potential toxicities and ensuring seamless care coordination.
- Stewardship principles should guide the incorporation of **new oncology agents approved through the FDA's accelerated process.** Evaluating their benefits compared to existing therapies, practical application, formulary restrictions, and cost-effectiveness is essential. Balancing oncology stewardship with patient access to innovative therapies is a priority.



What are the Key elements of biosimilar formulary review?

It include evaluation of **clinical parameters** (indications, clinical data, immunogenicity); **product characteristics** (nomenclature, supply chain, packaging/labeling), **and institutional considerations** (substitution, pharmacovigilance, cost/reimbursement, patient/provider education, tracking and information system implications).

Reference: Ventola CL. Evaluation of Biosimilars for Formulary Inclusion: Factors for Consideration by P&T Committees. P T. 2015 Oct;40(10):680-9. PMID: 26535024; PMCID: PMC4606858.

We are excited to announce that Salwa Ahsan, Chief of Pharmacy, has recently obtained the esteemed **Certified Pharmacy Executive Leader CPELSM** certification from the **American Society of Health-System Pharmacists (ASHP) - USA**. She has not only become part of the first international cohort for this course but also holds the distinction of being the first Pakistani pharmacist to attain this prestigious certification.

Achievement of the CPEL credential is based on demonstration of validated professional and leadership competencies in professionalism, leading people, leading the pharmacy enterprise, and leading within and across complex healthcare systems.

Ms. Salwa Ahsan is PharmD, and also holds degree in MBA-Health & Hospital Management and is certified in Medication Safety and Pharmacy Informatics from ASHP-ISMP (USA).



Summer Safety: Protecting Yourself from Extreme Heat

Adnan Khan, Staff Pharmacist

As the summer heat intensifies, it's crucial to be aware of the potential risks associated with extreme temperatures. Heat stroke is the most serious heat-related illness. It occurs when the body can no longer control its temperature: the body's temperature rises rapidly, the sweating mechanism fails, and the body is unable to cool down. When heat stroke occurs, the body temperature can rise to 106°F or higher within 10 to 15 minutes. It requires prompt attention and proper management. One must know effective management of heat stroke and protecting yourself and others during hot weather.



Recognize the Signs:

Heat stroke occurs when the body's temperature regulation system becomes overwhelmed, leading to a dangerously high body temperature. It's important to recognize the signs and symptoms of heat stroke, including:

High body temperature (above 39.4°C)	Rapid heartbeat and breathing	Hot, dry skin or profuse sweating
Headache, dizziness, or confusion	Nausea and vomiting	Muscle cramps or weakness
Fainting or loss of consciousness		

Act Promptly:

If you suspect someone is experiencing heat stroke, immediate action is crucial, delaying treatment can be life-threatening. Follow these steps:

1. **Call emergency services:** call local emergency number. Describe the symptoms and provide the exact location.
2. **Move to a cool, shaded area:** move the person to a shaded or air-conditioned space to lower their body temperature.
3. **Remove excess clothing:** Loosen or remove any tight or unnecessary clothing to aid in the cooling process.
4. **Cool the body:** Apply cool water or wet towels to the person's skin, or fan them to facilitate evaporation and cooling.
5. **Encourage hydration:** Offer sips of cool water if the person is conscious and able to drink.
6. **Monitor vital signs:** Keep a close eye on their breathing, pulse, and consciousness level until medical help arrives.

Prevention is Key: Preventing heat stroke is always better than treating it. Here are some preventive measures to beat the heat:

- ◆ **Stay hydrated:** Drink plenty of fluids, even if you don't feel thirsty.
- ◆ **Dress appropriately:** Wear loose-fitting, lightweight, and light-colored clothing that allows air circulation.
- ◆ **Seek shade and avoid direct sunlight:** When outdoors, find shade or use an umbrella to protect yourself from direct sun exposure.
- ◆ **Limit outdoor activities:** Minimize physical exertion during the hottest parts of the day, typically between 10 a.m. and 4 p.m.
- ◆ **Do Not Leave Children in Cars:** Cars can quickly heat up to dangerous temperatures, even with a window cracked open.
- ◆ **Use sunscreen:** Apply sunscreen with a high SPF to protect your skin from harmful UV rays.
- ◆ **Stay informed:** Pay attention to weather forecasts and heat advisories in your area, and plan your activities accordingly.

Heat stroke is a serious condition that demands immediate attention. By recognizing the signs, acting promptly, and following preventive measures, we can effectively manage heat stroke and reduce its impact. Stay safe, stay cool! Content source: National Center for Environmental Health (NCEH), Agency for Toxic Substances and Disease Registry (ATSDR)



PUBLICATIONS FROM SHIFA PHARMACY

Anticancer Medicines in Pakistan: An analysis of essential medicines lists.

Sundus Shukar, Rehan Anjum, Caijun Yang
Journal of Oncology Pharmacy Practice. 2023;0(0).
DOI:10.1177/10781552231167809

Minocycline-induced diplopia in Philadelphia chromosome-positive acute lymphoblastic leukemia (Ph+ALL): A case report.

Zeeshan Khattak, Muhammad Mir, Danyal Ghani, et al.
Authorea. April 18, 2023.
DOI: 10.22541/1.168178508.81933058/v1

Congratulations



Muneeba Aftab

Department of Pharmacy SIH is proud to share that, Muneeba Aftab is certified in 'Oncology Pharmacotherapy and application of biosimilars' from The International Society of Oncology Pharmacy Practitioners (ISOPP).



Meropenem Continuous Infusion In Critically Ill Patients

Maria Farooq (Resident Pharmacist)

Meropenem is a widely prescribed β -lactam antibiotic. A study was done to see whether giving meropenem continuously to critically ill sepsis patients improve mortality and the spread of bacteria that are widely or pan-drug resistant when compared to giving it only occasionally. A randomised, double-blind clinical trial that enrolled patients in 31 intensive care units at 26 hospitals in 4 nations (Croatia, Italy, Kazakhstan, and Russia) who were critically ill and had sepsis or septic shock and had been administered meropenem. A total of 607 patients were monitored for 28 days for the primary outcome, followed up for 90 days for mortality. Both the continuous treatment group (127 of 303 patients) and the intermittent administration group (127 of 304 patients) had death rates of 42% at 90 days. Continuous meropenem medication did not enhance the composite outcome of mortality and the emergence of pandrug-resistant or extensively drug-resistant bacteria at day 28 in critically sick sepsis patients as compared to intermittent delivery.

Reference: <https://jamanetwork.com/journals/jama/article-abstract/2806400>



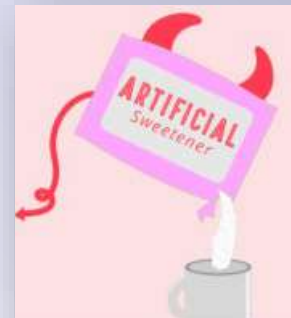
Pharmacists of Armed Forces Bone Marrow Transplant Centre (AFBMT) got training at the Department of Pharmacy Services - Shifa

WHO declares artificial sweetener aspartame a potential carcinogen

Almas Zahid (Resident Pharmacist)

Non-nutritive sweeteners (NNS) are naturally occurring, plant-derived products, while others are synthetic ("artificial"). With 75% of the market share for sweeteners, **aspartame** is the NNS that is most frequently used. Moreover, it is particularly dangerous for consumption by people with phenylketonuria given that it is catabolized to phenylalanine among other compounds. Here are some common foods and beverages that contain aspartame:

- Zero-sugar or diet sodas
- Some sugar-free squashes, chewing gums
- Certain low-fat yogurts, breakfast cereals
- Reduced-sugar condiments, such as ketchup
- Tabletop sweeteners
- Gelatin



Last month, the WHO

published guidelines advising consumers not to use non-sugar sweeteners for weight control. The sweetener will soon be classified International Agency for Research on Cancer (IARC), research arm at WHO as "possibly carcinogenic to humans". A recent study also discovered that sucralose-6-acetate, a chemical formed when sucrose is consumed, can damage DNA and increase gene activity linked to inflammation and cancer. Reference: <https://www.who.int/news/item/14-07-2023-aspartame-hazard-and-risk-assessment-results-released>

The Total Parenteral Nutrition (TPN) is one of the critical services offered by Shifa pharmacy to both admitted and Home Care patients in the region. Since the number of pharmacies offering this service is very minimal, Shifa Pharmacy extends support to other institutions in capacity building of their staff in this aspect. **We have facilitated 5-days training of 2 pharmacists in TPN services from the AFBMT in July 2023.**

Training was led by Sundus Ayub (Certified TPN and compounding, Charge Pharmacist) of Shifa Pharmacy department.

Updated Beers Criteria for drug prescribing in older adults (July 2023)

Sana Asghar, Resident Pharmacist

The Beers criteria have been repeatedly updated, most recently in 2023, and are available on the American Geriatrics Society website.

Selected changes in the 2023 update are described below:

- Avoid use of **rivaroxaban** for long-term treatment of nonvalvular atrial fibrillation or venous thromboembolism (VTE), due to higher risk of bleeding in older adults than other direct-acting oral anticoagulants (DOACs).
- Avoid **warfarin** as initial therapy for VTE or nonvalvular atrial fibrillation unless alternatives (eg, DOACs) are contraindicated or there are substantial barriers to their use (eg, formulary restrictions).
- Avoid **sulfonylureas** as first- or second-line monotherapy or add on-therapy due to higher risk of cardiovascular events, all-cause mortality, and hypoglycemia than alternative choices. If a sulfonylurea must be used, then a short-acting agent is preferred.
- Avoid the initiation of **oral or transdermal estrogen** in older women. Topical vaginal estrogen remains appropriate as treatment for symptomatic vaginal atrophy or urinary tract infection prophylaxis. De-prescribing should be considered for older women already using nonvaginal estrogen replacement.
- Avoid initiating **aspirin** for primary prevention of cardiovascular disease. Consider de-prescribing aspirin in older patients already taking it for primary prevention.

Reference: <https://agsjournals.onlinelibrary.wiley.com/doi/10.1111/jgs.18372> (Accessed on June 06, 2023).



Safe Storage of Medications During Heat Waves:

Huba Gulzar, Resident Pharmacist

Heat waves can be dangerous for people, but they can also be dangerous for medications. High temperatures can cause medications to lose their potency or even become harmful. This is why it is important for pharmacies to store medications properly during heat waves.



Here are some tips for safe storage of medications during heat waves in pharmacies:

- **Store medications properly.** Follow the recommended storage conditions indicated on the packaging. Most medications should be stored below 25°C, while cold-chain products require stricter control between 2°C and 8°C.
- **Address temperature excursions promptly.** If the temperature in a pharmacy's storage areas exceeds the recommended range, take action immediately to cool the area or move the medications to a cooler location.
- **Handle deliveries with care.** When delivering or receiving shipments, prioritize cold-chain products. Store them in the fridge promptly to avoid heat exposure.

Do You Know?

According to the CDC, **60,000 children** are taken to the emergency room every year for unintentionally taking a dose of medication. Children often find pills on the ground or in a purse or diaper bag. **Keep them out of reach of children!**

- **Monitor and manage stock levels.** Regularly monitor stock levels, keeping them low and rotating inventory effectively. This minimizes the risk of medications being exposed to high temperatures for prolonged periods.
- **Ensure functional temperature monitoring systems.** Verify that temperature monitoring systems are in proper working order. This enables prompt detection of temperature excursions or equipment malfunctions.
- **Educate patients on cold-chain medicines.** Advise patients who use cold-chain medications to use a fridge thermometer and regularly check their appliances during a heat wave. This helps maintain the recommended storage temperature.
- **Have a backup plan in place.** If the power goes out or the air conditioning fails, have a backup plan to avoid medicines exposure to high temperatures. E.g. using a generator, UPS or moving the medications to a cooler location.
- **Train staff on heat wave procedures.** Make sure that all staff members are trained on the proper procedures for storing and handling medications during heat waves. This will help to ensure that everyone is on the same page and that medications are not accidentally exposed to high temperatures.
- **Communicate with patients.** If there is a heat wave, let patients know how to keep their medications safe. This could include advising them to store their medications in a cool, dry place or to bring them to the pharmacy for safekeeping.

Q. We have a power breakdown in our area and no electricity, can I keep my Insulin in freezer?

Ans. During such scenarios try to keep your insulin as cool as possible with ice for example, but **Do Not freeze it.** Insulin that has been frozen can break down and will be less or ineffective.



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

Brand	Generic	Class	Indications
Lipomax	Liposomal Iron Supple-	Iron Supplement (Nutraceutical)	Iron deficiency anemia
Orelox	Cefpodoxime	Third-generation cephalosporin	Infectious Diseases
Decitabine	Decitabine	Nucleoside metabolic inhibitors	AML, Myelodysplastic syndromes
AMIS-100	Amisulpride	2nd-generation (atypical) antipsychotic	Schizophrenic disorders

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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.



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