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# Pharmacy Newsletter

Volume XIV, Issue # 1, 2024

Special Edition - Pharmacy Sterile Services

*Issued By:*

Drug Information Centre, SKMT

## P&TC Updates:

Pharmacy & Therapeutics Committee (P&TC) has approved the following drugs during 2024 at SKMCH&RC:

- **Daptomycin Injection**- as regular formulary item – Restricted by Service (ID)
- **Plerixafor Injection**- Approved single dose for 3 paediatric patients per year

DO YOUR PART TO MAKE HEALTHCARE SAFE,

**ONE INJECTION**

AT A TIME

1

ONE NEEDLE,  
ONE SYRINGE,  
ONLY ONE TIME.



# 2<sup>nd</sup> Pharmacy Practicum - Sterile Service 9<sup>th</sup> March 2024, SKMT Lahore Chapter



Bridging Professional Knowledge with Practice



30

60

Public & Private Hospitals Participated

Participants



3.75 HOURS



# International Women's Day 2024 – 8<sup>th</sup> March 2024

## Invest in Women: Accelerate Progress



*This theme aligned with "Accelerating the achievement of gender equality and the empowerment of all women and girls by addressing poverty and strengthening institutions and financing with a gender perspective"*



## Robotics arm addition of Radio-pharmacy

Radio-pharmacy at SKMCH & RC Lahore Pakistan has been recently equipped & upgraded with the Robotic arm for automated dispensing of PET/CT radiopharmaceuticals, in particular the cyclotron generated 18-F labelled 2-(18F) FDG. Scientists from Comecer (Italy) arrived on site for the said job. Special thanks to the Robotic arm's Italian commissioning team from Comecer Mr. Motollo Luigi & Mr. Bougoubha Hamza.

In addition to the upgrade in the automated dispensing system for the F18-FDG, radiopharmacy has also been recently equipped with the very first QC cubicle in Pakistan (USP, EP compliant quality control equipment including 02 HPLCs & GC-FID alongside 06 radio QC equipment embedded/integrated inside a shielded cabinet). Acknowledgment to the foreign commissioning nuclear engineers from Elysia Ray - EDH Turkey (Mr. Senol Beyaz & Mr. Ceyhun Yanic).

Congratulations to the SKM colleagues in particular MMD, department of pharmacy, and NM/Radio-pharmacy teammates for the sincere commissioning efforts and continuous support.



## Top Patient Safety Concern of 2024

ECRI and its affiliate, the Institute for Safe Medication Practices (ISMP), analysed a wide scope of data to identify the most pressing threats to patient safety, including scientific literature, patient safety events, concerns reported to or investigated by ECRI and ISMP, client research requests and queries, and other internal and external data sources.



ECRI's Top 10 Patient Safety Concerns for 2024 report includes recommendations for healthcare organizations to create organizational resilience to navigate the identified threats and strive for Total Systems Safety. ECRI researchers compiled the report by drawing on evidence-based research, data, and expert insights.

Studies show the pandemic disrupted the traditional hands-on, in-person educational experiences of new clinicians, an issue compounded by healthcare workforce shortages. According to ECRI experts, without sufficient preparation, support, and training throughout the transition into practice, new clinicians may be especially prone to loss of confidence, burnout, and reduced mindfulness around a culture of safety. The convergence of these factors can result in failures to address preventable harm or incidents that cause adverse events for patients, according to ECRI researchers.

The top 10 patient safety concerns for 2024 are:

1. Transitioning new clinicians from education to practice
2. Workarounds with barcode medication administration systems
3. Access to maternal and perinatal care
4. Unintended consequences of technology adoption
5. Physical and emotional well-being of healthcare workers
6. Complexity of preventing diagnostic error
7. Equitable care for people with physical and intellectual disabilities
8. Drug, supply, and equipment shortages
9. Misuse of parenteral syringes to administer oral liquid medications
10. Preventing patient falls



ECRI's experts identify several recommendations for these concerns, especially to better prepare new clinicians for practice, including collaborative partnerships among academic and healthcare institutions, robust transition-to-practice programs with intense preceptorships, and simulation-based education

## Zosurabalpin: the new prospective addition to the arsenal

In a recent report, Zampaloni et al. describe a novel tethered macrocyclic peptide (MCP) antibiotic, zosurabalpin, that disrupts the essential function of the LptB2FGC complex in Gram-negative bacteria and demonstrates efficacy against carbapenem-resistant *Acinetobacter baumannii* (CRAB). Its preclinical success suggests a substantial shift in treating antibiotic resistance, pending clinical trials to validate its effectiveness, pharmacokinetics, and resistance management.

**Ref:** Zampaloni C, Mattei P, Bleicher K, Winther L, Thäte C, Bucher C, Adam JM, Alanine A, Amrein KE, Baidin V, Bieniossek C. A novel antibiotic class targeting the lipopolysaccharide transporter. *Nature*. 2024 Jan 3:1-6.

## Ezetrol (Ezetimibe) and the Risks of Drug-Induced Liver Injury and Severe Cutaneous Adverse Reactions

Ezetimibe is indicated, as a supplement to diet and to change lifestyle to lower the level of cholesterol and other fats. It is used to treat primary hypercholesterolemia with other statins or in combination with fenofibrate. Ezetimibe is recommended for use in adults and children 10 years and older. According to recent studies, it has been identified that there are certain adverse reactions associated with ezetimibe like, ezetimibe can cause serious side effects including drug-induced liver injury, and serious skin reactions such as Stevens-Johnson syndrome, toxic epidermal necrolysis, and drug reaction with eosinophilic and systemic symptoms. Therefore, Patients taking Ezetimibe alone or with a statin or fenofibrate may need to have blood tests done before and during treatment to check and monitor the health of their liver Healthcare professionals are also advised to instruct patients to immediately contact a medical advice if they experience symptoms of liver injury. Liver function should be evaluated if liver injury is suspected.

## Update on FDA's ongoing evaluation of reports of Glucagon-like peptide 1 receptor agonists.

The U.S. Food and Drug Administration has been evaluating reports of suicidal thoughts or actions in patients treated with a class of medicines called Glucagon-like peptide 1 receptor agonists. These medicines improve blood sugar levels and reduce the risk of heart disease. In a preliminary evaluation, FDA has not found any significant evidence that the use of these medicines causes suicidal thoughts or actions. They conducted detailed reviews of reports received in FDA event reporting system. However, due to limited data, they demonstrate that there is no clear relationship of suicidal action with the use of GLP-1 RAs. On one hand, patients who are using GLP-1 RAs medicines should consult their healthcare provider if they want to stop the medicine or if they have suicidal thoughts or actions. On the other hand, healthcare professionals should also monitor patients using GLP-1 RAs to report any unusual changes in mood or depression.



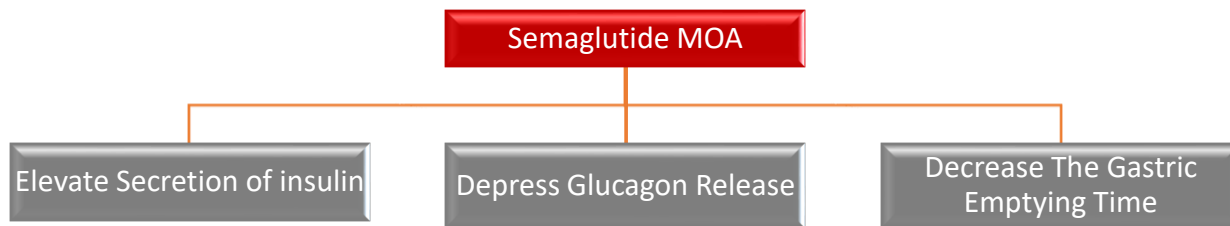
## Risk of Severe Hypocalcemia in Patients on Dialysis

Denosumab is a prescription medicine used to treat Postmenopausal women with osteoporosis at high risk for bone fracture. Denosumab was later used to treat men with osteoporosis and Glucocorticoid-induced osteoporosis. Denosumab works by blocking a protein called Receptor activator of nuclear factor kappa beta (RANK) and helps prevent bone cells called osteoclasts from breaking down in the body. Denosumab injection is administered once every 6 months. Increase risk of hypocalcemia in patients with advanced kidney disease. The patient may experience any symptoms of hypocalcemia such as tingling or numbness in arms, legs, and hands, Painful muscle cramps, Lung spasms, vomiting, seizure, and irregular heart rhythm. When Denosumab is used in these patients add adequate calcium and vitamin D supplements and frequently monitor levels of calcium in blood which may help decrease the severity of these risks. Advise patients on dialysis to immediately seek help if they experience any symptoms of hypocalcemia. FDA studies investigating the risk of hypocalcemia suggest that patients on dialysis treated with denosumab are at subsequent risk for severe symptomatic and

asymptomatic hypocalcemia resulting in serious harm including hospitalization, life-threatening events, and Death.

## Semaglutide: Breaking Boundaries; A Bold Step in Shielding Heart from Adversities Along with the Management of Type-2 DM

Incretin-based therapies, also known as GLP-1 RA, comprise medications bearing the suffix "tide" such as liraglutide, dulaglutide, semaglutide, and others. These drugs are suitable for use as monotherapy or alongside insulin in the management of T2-DM. However, they should not be combined with DPP-4 inhibitors (Gliptins) due to their similar MOA. GLP-1 RA functions as mimics of GLP-1 and is used in type-2 diabetes by insulinotropic action in a glucose-dependent manner. GLP-1 RA has the potential to reduce HBA1C by 0.5%.



The FDA has approved Semaglutide (Wegovy) S/C injection to lower the risk of cardiovascular mortality and heart attack in adults diagnosed with cardiovascular disease (a group of heart and blood vessel disorders). It's also approved for individuals who are overweight or have obesity, categorized by BMI (Class-1 obesity: 30-34.9 kg/m<sup>2</sup>, Class-2 obesity: 35-39.9 kg/m<sup>2</sup>, Class-3 obesity: ≥ 40 kg/m<sup>2</sup>) when combined with a calorie-controlled diet and increased physical activity.

Research investigating the safety and efficacy of semaglutide (Wegovy) for its new indication revealed a 6.5% reduction in major adverse cardiovascular events among participants receiving semaglutide (Wegovy).

Semaglutide carries a black box warning regarding thyroid C-cell tumors and should be avoided in patients with a history of medullary thyroid carcinoma. It is related to adverse effects such as hypotension, weight loss, raised HR, anorexia, and pancreatitis. Other potential complications include gallbladder issues, AKI, hypersensitivity reactions, gastrointestinal discomfort (including nausea, diarrhoea, vomiting, abdominal pain, dyspepsia, and heartburn), diabetic retinopathy, and risk of suicidal thoughts or behaviours.

Generic	Brand	ROA	Strength	Frequency	Uses
Semaglutide	Wegovy	S/C	0.25mg 0.5mg 1mg 1.7mg 2.4mg dose pen	Weekly	<ul style="list-style-type: none"> <li>Management of Type-2 DM</li> <li>Reduce the risk of heart attack, stroke, cardiovascular deaths in obese adults along with a reduced caloric diet + increased physical activity.</li> <li>Used for weight loss</li> </ul>

**Key Words:** DM= Diabetes Mellitus, GLP-1 RA= Glucagon-like peptide-1 receptor agonists, DPP-4 inhibitors= Dipeptidyl peptidase 4 Inhibitors, MOA= Mechanism of Action, HBA1C= Glycated Haemoglobin, FDA= Food and Drug Administration, S/C= Subcutaneous, BMI= Body Mass Index, HR= Heart Rate, AKI= Acute Kidney Injury, ROA= Route of Administration.

**Ref:** Tanne J H. Wegovy: FDA approves weight loss drug to cut cardiovascular risk *BMJ* 2024; 384:q642 doi:10.1136/bmj.q642, Pieter Martens, Chantal Mathieu & Thomas Vanassche (2023) The use of glucagon-like-peptide-1 receptor agonist in the cardiology practice, *Acta Cardiologica*, 78:5, 552-564, DOI: [10.1080/00015385.2022.2076307](https://doi.org/10.1080/00015385.2022.2076307)

## A Clinical Review of *S. Aureus* Bacteremia

*S. aureus* is a Gram-positive, facultatively anaerobic coccus. *S. aureus* toxins have the ability to lyse leukocytes and elude host defence systems. The gastrointestinal tract, skin, and mucous membranes are all colonized by *S. aureus*. Although many *S. aureus* carriers do not become sick, colonization frequently comes before infection. The common cause of bloodstream infection is *S. aureus*. The clinical presentations of patients with *S. aureus* bacteremia vary; some have a sustained bloodstream infection exacerbated by embolic events, while others are asymptomatic with incidentally diagnosed primary bacteremia. Although the exact mechanism of *S. aureus* illness is unknown, it is believed to be mediated by the interaction between pathogen virulence factors and host vulnerability.

When treating patients with *S. aureus* bacteremia, the following actions ought to be taken appropriate anti-staphylococcal therapy, screening echocardiography, assessment for metastatic phenomena and source control, decision on duration of antimicrobial therapy, and ID consultation.

When *S. aureus* is detected in blood cultures, it is rarely regarded as non-pathogenic. Blood culture positive time may be used to predict staphylococcal bacteremia speciation, severity, and etiology. When compared to MSSA, bacteremia involving MRSA is linked to worse clinical outcomes, due to increased drug resistance and virulence. When treating *S. aureus* bacteremia, empiric antibiotic selection is essential. Regarding MSSA bacteremia, vancomycin monotherapy is linked to less favourable clinical results than anti-staphylococcal beta-lactams. For MSSA bacteremia, anti-staphylococcal penicillin or cefazolin is the recommended and clinically better option than broad-spectrum antibiotics with antistaphylococcal coverage. Although non-first generation cephalosporins and piperacillin/tazobactam have efficacy against MSSA, their usage in MSSA bacteremia is linked to worse results.

It was once thought that cefazolin was less effective than anti-staphylococcal penicillin's at penetrating the central nervous system. However, a rising corpus of pharmacokinetic research is challenging this conventional wisdom and emphasizing that cefazolin is a treatment option that can be used to treat MSSA bacteremia that involves the central nervous system.

Intravenous vancomycin or daptomycin are appropriate for MRSA bacteremia. Historically, it was believed that serum vancomycin concentrations should be reached at vancomycin trough concentrations of 15-20 mg/L in order to eliminate MRSA. To reduce vancomycin toxicity, current guidelines advise targeting an area under the curve (AUC) over 24 hours to MIC (AUC/MIC) between 400 and 600 mg/h/L (assuming a vancomycin MIC of 1 mg/L). Vancomycin's known drawbacks have led to the use of daptomycin as an antistaphylococcal treatment for MRSA bacteremia. When treating MRSA bacteremia, daptomycin is a suitable drug that may offer advantages over vancomycin for isolates with MIC  $\geq 2$ .

Fifth generation cephalosporins, ceftaroline, and ceftobiprole, have been licensed to treat skin and soft tissue infections and community-acquired pneumonia. They exhibit in vitro activity against MRSA.

To confirm the length of therapy and document the eradication of germs, repeat blood cultures are required. Intravenous anti-staphylococcal therapy must be administered for a minimum of two weeks following the initial negative blood cultures. When a deep infection, such as endocarditis or osteomyelitis, is present, six weeks of therapy are advised.

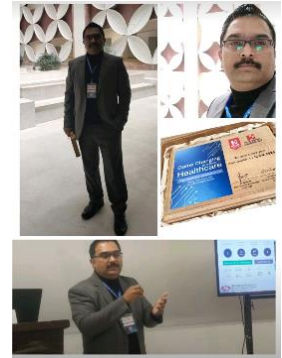
Given its link to better results, ID expert consulting is advised in all cases of *S. aureus* bacteremia.

**Ref:** Lam JC, Stokes W. The golden grapes of wrath—*Staphylococcus aureus* bacteremia: a clinical review. *The American Journal of Medicine*. 2023 Jan 1;136(1):19-26.

# Sharing is Caring

## Session on Pharmacy Services Beyond Dispensing at ICON 2024

Mr. Omar Akhlaq Bhutta, Associate Director Pharmacy SKMT, presented the session on 'Pharmacy Services beyond Dispensing', at ICON 2024 hosted by Indus Hospital, Lahore, aimed at equipping the audience with the services of pharmacy in this new era. Pharmacy being an integral part of the healthcare system has a major role beyond just dispensing. This session helps explore the evolving role of pharmacy services. Exploring innovative approaches, expanding responsibilities, and collaborative healthcare initiatives.



## Webinar On Future Pharmacy Leadership

The online webinar, moderated by Mr. Rehan Anjum at Shifa International Hospital, Islamabad, featured Mr. Omar Akhlaq Bhutta's insightful presentation as a speaker on "Preparing the Next Generation of Pharmacy Leaders - Living Life of Jalebi". His engaging talk offered valuable perspectives for future pharmacy leadership and challenges faced by new generation of professional pharmacists. He shared important insights into developing the right mindset to excel in a career in Pakistan.



## Talk on medication management to Pharmacy students

Mr. Omar Akhlaq Bhutta, Associate Director Pharmacy, shared his expertise to enlighten pharmacy students at Riphah International University, on the critical domain of medication management with a distinguished background and extensive experience in the field. As the guest lecturer, he offered invaluable insights that will undoubtedly enrich students' understanding of effective medication utilization and patient-centric care.



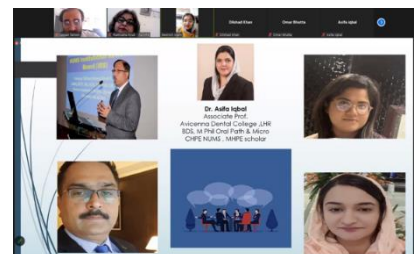
## Salbia Shereen at the University of Central Punjab

Salbia Shereen is a proud UCP alumna and an accomplished Staff Pharmacist at SKMCH & RC Lahore. In collaboration with the UCP Alumni Relations office, she delivered an engaging alumni talk at the University of Central Punjab to the bright young minds from the Punjab Group of Colleges. She encouraged attendees to take their work seriously, emphasizing that dedication and commitment pave the way for success. Salbia highlighted the importance of networking for career growth, urging everyone to build meaningful connections. Her insights left a lasting impact on all who attended.



## Talk at NUMS on Good Pharmacy Practices

Mr. Omar Akhlaq Bhutta was part of the online webinar organised by the National University of Medical Sciences, Rawalpindi. He highlights the aspects of current good pharmacy practices and future challenges in the professional field. The online audience actively participated in the session and Mr. Omar addressed all the questions that were raised related to the implementation of good pharmacy practices in Pakistan.





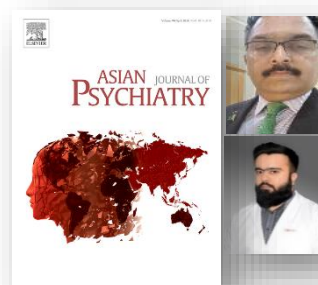
## Publications

In recent times, the following research publications, collaborated & submitted by pharmacists of SKMCH& RC, Lahore, and Peshawar, have been accepted and published online, in well-reputed international journals:

**Adeel Siddiqui, Maria Tanveer, Omar Akhlaq Bhutta, Ali Ahmed.** Bolstering Healthcare Resilience in Pakistan: The Role of Chief Wellness Officers, Asian Journal of Psychiatry, 2024, 104037, ISSN 1876-2018, <https://doi.org/10.1016/j.aip.2024.104037>.

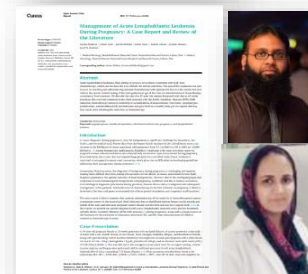
(<https://www.sciencedirect.com/science/article/pii/S1876201824001308>)

**(Impact Factor 9.5)**



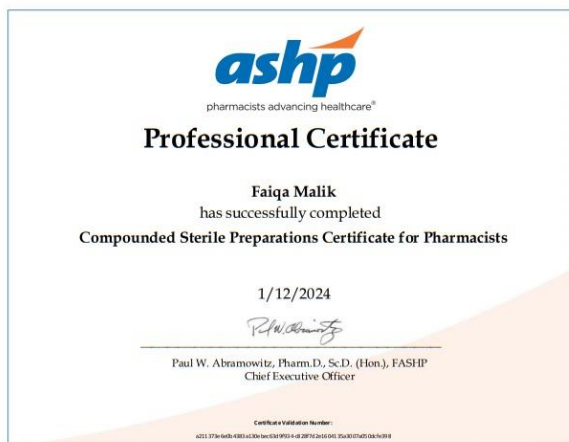
**Saleha Nadeem, Ehsan Elahi, Imran Iftikhar, Sobia Umar, Bushra Ahsan, Usman Ahmad, and Syed W. Bokhari.** "Management of Acute Lymphoblastic Leukemia During Pregnancy: A Case Report and Review of the Literature." Cureus 16, no. 1 (2024).

**(Impact Factor 1.2)**



## Board of Pharmacy Specialities

### Compounded Sterile Preparations Pharmacy Specialty Certification



Ms. Faiqa Malik, Assistant Manager Pharmacy, at Shaukat Khanum Memorial Cancer Hospital & Research Centre, Lahore, has passed the Board of Pharmacy Specialities (BPS) exam for Sterile Compounding and is our new Board Certified Sterile Compounding Pharmacist (BCSCP).

Link to the BPS page for further guidance is available online:

- Compounded Sterile Preparations Pharmacy Specialty Certification. Board of Pharmacy Specialities. BPS. 2023. Information available from: <https://bpsweb.org/compounded-sterile-preparations-pharmacy/>



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