Shifa International Hospitals Ltd.

A NEWSLETTER BY DEPARTMENT OF PHARMACY–Shifa (SIH)

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Inside this issue

Ketamine: High-Alert Drug, High-Impact Care

Ketamine is a designated **High Alert Medication** by the Institute for Safe Medication Practices (ISMP) as well as nationally by the Drug Regulatory Authority of Pakistan, (DRAP) highlighting the need for careful prescribing, administration, and monitoring.

Prescription Privileges: only physicians who are trained in the moderate-deep sedation, airway management and relevant rescue protocols should prescribe and use it.

Ketamine has both anesthetic and antidepressant properties, and is **widely utilized** across critical care, emergency, and perioperative settings in **procedural sedation, rapid sequence intubation, acute agitation, subanesthetic analgesia, refractory status epilepticus, and even treatment-resistant depression.**

Dosing should be individualized and titrated to clinical response, with IV bolus doses administered slowly over at least 30–60 seconds to minimize the risk of respiratory depression and apnea.

Special populations: no routine dose adjustment is required in renal impairment, although caution is advised with prolonged use due to accumulation of active metabolites. While ketamine is minimally affected by **dialysis**, careful monitoring remains essential in all critically ill patients.

Dose in Obese patients:

- Moderate obesity: use actual body weight (ABW)
- Severe obesity: use ideal body weight (IBW). Ensure consistent use of the chosen weight metric throughout therapy.

Adverse effects: emergence reactions (e.g., agitation, hallucinations), cardiovascular stimulation (increased blood pressure and heart rate), respiratory complications, and potential for dependence with long-term use. **Prolonged** or **repeated exposure** has also been linked to hepatobiliary toxicity and bladder dysfunction.

Contraindicated in patients where increases in blood pressure may be hazardous; **should be avoided** in infants under three months and in patients with known or suspected schizophrenia.

Administration: only by qualified nurse or doctor along with appropriate monitoring before, during and post administration (and recovery period). The discharge criteria must be met before releasing patient after procedure.

Reference: www.uptodate.com

Sepsis, Stewardship & Smart Pharmacology: What the Evidence Really Says

Aimen Faheem, Clinical Pharmacist ICU

🩹 **Sepsis, Stewardship & Smart Pharmacology: What the Evidence Really Says**

When it comes to managing sepsis in the ICU, every drug decision counts. The latest evidence reminds us that it's not just about *what* we prescribe but *when, how, and for how long*. Let's break down the most **powerful, evidence-backed pharmacological takeaways** that every pharmacist and clinician should keep on their radar.

1. Time is Life: Early Antibiotics Save Patients

In septic shock, antibiotics aren't just urgent they're **critical within the first hour**. Strong recommendations support immediate administration due to high mortality risk.

👉 **Takeaway:**

If sepsis is likely → don't delay.

If uncertain → reassess quickly (within 3 hours), but don't wait endlessly.

2. Start Broad… But Don't Stay There

Empiric broad-spectrum therapy is common but staying broad isn't.

- **Strong recommendation:** De-escalate once cultures are available

Goal: Narrow therapy or stop unnecessary antibiotics

👉 **Why it matters:**

De-escalation reduces resistance, toxicity, and even ICU stay.

3. How You Give Antibiotics Matters (A Lot!)

Not all dosing strategies are equal.

- **Prolonged/extended infusion of beta-lactams** reduces mortality (high-certainty evidence)

Always give a **loading dose first** to avoid delays in therapeutic levels

👉 **Clinical pearl:**

Same drug, better delivery = better outcomes.

4. Shorter is Smarter: Duration Matters

Longer antibiotic courses ≠ better outcomes.

- Evidence supports **shorter durations** (e.g., 7 vs 14 days) when source control is achieved

Procalcitonin + clinical judgment can guide safe discontinuation

👉 **Bottom line:**

Treat effectively—but stop as soon as safely possible.

5. Not Every Patient Needs "Extra Coverage"

More antibiotics ≠ better care.

Routine **anti-anaerobic coverage is NOT recommended** unless indicated

Avoid the reflex:

"Just in case" prescribing may actually harm patients.

6. Therapeutic Drug Monitoring: Precision Over Guesswork

TDM isn't for everyone but it shines in complex ICU cases.

Suggested for **selected patients** based on PK/PD variability

👉 **Ideal for:**

Critically ill, altered pharmacokinetics, or resistant infections.

7. Prophylaxis: Use It Right

Even supportive pharmacology matters:

- **VTE prophylaxis (LMWH preferred)** → strong recommendation

Stress ulcer prophylaxis (PPIs) → only in at-risk patients

👉 **Key reminder:**

Prophylaxis is beneficial but only when justified.

💧 **8. Fluids Are Pharmacology Too**

- **Crystalloids = first-line (strong evidence)**

Avoid starches (strong evidence)

👉 Yes even fluids follow evidence-based prescribing!

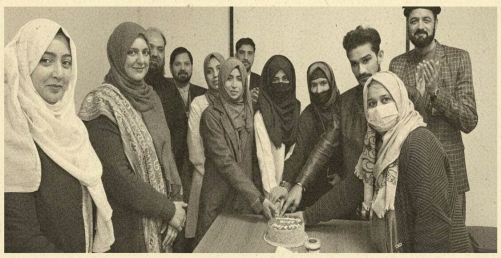
🎯 **The Big Picture: Stewardship Starts at the Bedside**

Across all recommendations, one theme stands out:

👉 **Initiate early. Reassess frequently. De-escalate confidently.**

Sepsis management isn't just about aggressive treatment it's about **precision, timing, and restraint**. And that's where pharmacists play a game-changing role.

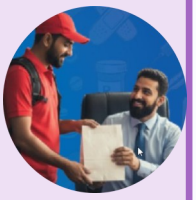
Reference: www.uptodate.com



"Med-2-Desk" Pharmacy Hits 1000 Orders in 70 Days!

Revolutionay Service Transforms Office Medicine Delivery

Meds-to-Desk Service | Serving the service providers!



Shifa Hospital Islamabad's 5000+ staff can now access medicines for self or their family members without leaving their duties!

Shifa Pharmacy's **Meds-to-Desk Service** lets staff order OTC or prescribed meds online. A dedicated pharmacist reviews orders and dispatches meds directly to their work desk.

No more pharmacy queues, no compromised patient care!

⇒ This service has boosted convenience for staff and freed up pharmacy counters for patients and customers.

A New Era in Liver Care: Semaglutide for MASH

Syeda Noor ul Huda, Clinical Pharmacist , Critical Care

Metabolic dysfunction-associated steatohepatitis (MASH) is rapidly emerging as one of the leading causes of chronic liver disease worldwide, closely tied to the growing epidemics of obesity and metabolic syndrome. While lifestyle modification remains the cornerstone of management, achieving and sustaining meaningful weight loss is often challenging in real-world practice.

So, what happens when lifestyle interventions fall short?
Originally developed for diabetes and now widely used for obesity, **Semaglutide** belongs to the class of GLP-1 receptor agonists. These agents not only promote weight loss but also exert beneficial metabolic and anti-inflammatory effects—making them particularly promising in MASH..

What Does the Evidence Say? Recent high-quality data have shifted the conversation from *potential benefit* to *clinical impact*:

In a large randomized controlled trial involving ~800 patients with MASH and stage 2–3 fibrosis, semaglutide demonstrated:

Improvement in liver fibrosis (37% vs 22% with placebo) and Resolution of steatohepatitis. These findings are significant because fibrosis stage is the strongest predictor of long-term outcomes in MASH.

This marks a critical advancement moving beyond symptom control to **disease modification**.
Current recommendations suggest:

- For patients with **MASH and ≥ stage 2 fibrosis**
- Who **do not achieve weight loss goals with lifestyle measures alone**
- **GLP-1–based therapy is suggested (Grade 2C)**

While this is a *conditional recommendation*, the growing body of evidence is rapidly strengthening its clinical relevance.
In a landmark development, the **U.S. Food and Drug Administration** approved semaglutide in **August 2025** for the treatment of MASH. This represents one of the first pharmacologic approvals specifically targeting this condition signaling a major shift in how we approach fatty liver disease. Patient selection remains key. Semaglutide is not a substitute for lifestyle modification but rather a **powerful adjunct when lifestyle alone is insufficient**.

Reference: www.uptodate.com

Updated dyslipidemia guidelines: This marks an important shift toward **risk-based, individualized cardiovascular prevention**, integrating newer tools such as the PREVENT calculator for more accurate estimation of atherosclerotic cardiovascular disease (ASCVD) risk.

These updates, developed by the American College of Cardiology and the American Heart Association, provide clearer direction on when to initiate and intensify lipid-lowering therapy, with revised thresholds and a stronger emphasis on early intervention. Taking these guidelines as a reference, the following is a brief comparison of various pharmacologic treatment options used in the management of dyslipidemia, highlighting their roles in optimizing patient outcomes.

Class	Common Drugs	LDL ↓	TG ↓	HDL ↑	Key Benefits	Major Limitations / Concerns	Best Use Case
Statins	Atorvastatin, Rosuvastatin	★★★★ (↓30–60%)	★★	★	Strongest evidence for ↓ CV events & mortality	Myopathy, ↑ LFTs	**First-line** for most patients
Ezetimibe	Ezetimibe	★★ (↓15–20%)	★	★	Well tolerated, oral, additive with statins	Modest effect alone	Add-on or statin intolerance
PCSK9 inhibitors	Alirocumab, Evolocumab	★★★★★ (↓50–70%)	★★	★★	Powerful LDL reduction, ↓ CV events	Expensive, injectable	High-risk / refractory cases
Bempedoic acid	Bempedoic acid	★★ (↓15–25%)	★	★	Oral, useful in statin intolerance	↑ uric acid, tendon rupture (rare)	Statin-intolerant patients
Fibrates	Fenofibrate, Gemfibrozil	★	★★★★ (↓30–50%)	★★	Best for high triglycerides	Myopathy (with statins), ↑ LFTs	**Severe hypertriglyceridemia**
Omega-3 fatty acids	Fish oil (EPA/DHA), Icosapent ethyl	★	★★★ (↓20–40%)	★	↓ TG, CV benefit (EPA-specific)	Variable formulations	High TG, CV risk reduction
Niacin (Vitamin B3)	Niacin	★★	★★	★★★	Raises HDL significantly	Flushing, hepatotoxicity	Limited use now
Bile acid sequestrants	Cholestyramine, Colesevelam	★★ (↓15–25%)	! May ↑ TG	★	Safe in pregnancy	GI intolerance, drug interactions	Alternative in statin intolerance

Reference: www.uptodate.com

Advancing AMR Efforts: Shifa–Fleming Fund AMS Project Completed

January 2026 marks the successful completion of the **Fleming Fund–sponsored, year-long Antimicrobial Stewardship (AMS) and Infection Prevention & Control (IPC) implementation project** across **five tertiary care public hospitals in Pakistan** (Karachi ×2, one each in Multan, Peshawar, and Gilgit).

Key highlights of the project include:

- Onsite **Master Trainers' training at Shifa**
- **Pre- and post-training knowledge assessments**
- Implementation of targeted **AMS and IPC KPIs** (e.g., ID rounds, IV-to-oral switch, guideline adherence)
- Establishment and activation of **AMS and IPC committees** at participating hospitals
- Initiation of structured **training and awareness programs** for AMS and IPC

Key departments at **Shifa International Hospitals Limited** including **Pharmacy, Infectious Diseases physicians, Microbiology, and the Infection Control** played a pivotal role in leading this initiative, ensuring continuous engagement through **rigorous onsite and virtual follow-ups** throughout the year.

Special thanks to **Shifa Management, Shifa SCOPE, and DAI Pakistan** for their invaluable support in the successful execution of this project.

CONGRATS on your milestone

Ms. Fizza Afzal,
Clinical Pharmacist Transplant,
Now **ASHP Certified Clinical Pharmacy Basics**

Ms. Samina Latif,
Charge Pharmacist Compounding,
Now **ASHP certified** in **compounded sterile preparations**

Mr. Ali Hassan,
Resident Pharmacist,
Has attained the **SIDP certification**.

Their accomplishments reflect a strong commitment to professional excellence and continuous learning

Shifa Pharmacy Team | Contributing in Education & Awareness

Ms Bushra Anjum, Charge Clinical Pharmacist (Oncology & Hematology) and Pharmacovigilance Focal Person at Shifa, was an invited speaker in the seminar organized by Riphah International University, Islamabad. She shared expertise in talk titled: **"Medication Safety & Pharmacovigilance in Clinical Pharmacies: Preventing Harm Before It Happens".**
Key highlights of the session included: The critical role of **adverse drug reaction (ADR) reporting** in patient safety, The pharmacist's role in identifying ADR trends and implementing measures **Practical, implementable strategies** for improving medication safety in routine clinical practice etc.

Riphah International University Students & Faculty visited Shifa International Hospital, Pharmacy Department to learn about hospital pharmacy and medication best practices. **Mr. Faisal Aziz Sandeela** (Senior Manager Pharmacy) welcomed the participants and discussed key elements of medication safety. **M. Gulzaib** showcased pharmacy operations aligned with international standards. **Ms. Sundus Maria** shared insights on DPIC services and clinical pharmacy practices. The students were engaged and enthusiastic!
We look forward to hosting such events, promoting knowledge sharing and professional development.

Ms Salwa Ahsan, Chief Pharmaceutical Officer Shifa participated as a speaker and panelist in 5th PACE summit, hosted in Karachi in February 2026. She discussed the topic **"Strengthening Academia–Practice Partnership Transforming Patient-Centered Pharmacy Care" -** followed by panel discussion

Shifa Pharmacy Team comprising of **Mr Farhan Jilani (Manager Pharmacy), Ms. Bushra Anjum** and **Ms. Shinza Arshad** (Clinical Pharmacists Heam/Oncology) also attended the summit as invited guests.

Ms Salwa Ahsan was invited by the National University of Medical Sciences (NUMS) to deliver **hands-on workshop** on the critical topic of **medication safety** for participants of the **6-month Certificate Course in Healthcare Quality and Patient Safety**.

As highlighted by the WHO:

- **1 in 20 patients** receiving healthcare experiences medication-related harm. While **1 in 4 of these** suffers serious injury and **up to 50% of such harm is preventable!**

This underscores that medication safety is not merely a topic of discussion, but a **vital discipline, both a science and an art focused on safeguarding patients and preventing avoidable harm from adverse drug events (ADEs/ADRs)**.

Shifa team participated in a **job fair** hosted by Margalla Institute of Health Sciences. **Mr. Aziz Ullah Khan** (Asst. Manager, OPD Pharmacy) and **Ms. Shinza Arshad** (Clinical Pharmacist Oncology) lead the career counseling session with students and graduates.
They highlighted training opportunities at Shifa, including 2 weeks observerships, 6 weeks internships, and 1-year residency programs, and discussed potential career pathways for pharmacists within hospital.
The session aimed to support students in making informed career decisions, and the Shifa team was well received and have proudly contributed to aspiring pharmacists' career guidance.

Fish Oil in Dialysis: Small Capsule, Big Cardiovascular Impact?

Zikra Zulfiqar, Clinical Pharmacist, NICU

Cardiovascular disease (CVD) remains the leading cause of death in patients on maintenance dialysis. Despite advances in renal care, these patients continue to face an alarmingly high risk of myocardial infarction, stroke, and vascular complications.

So the question is can something as simple as fish oil make a difference?

Fish oil supplements, rich in omega-3 fatty acids (EPA and DHA), have long been associated with cardiovascular benefits in the general population. Their **anti-inflammatory, anti-thrombotic, and anti-arrhythmic properties** make them particularly appealing in high-risk groups like patients undergoing dialysis.

Emerging clinical evidence supports a role for fish oil in this population:

In a large randomized controlled trial involving **>1200 patients on maintenance hemodialysis**, high-dose fish oil supplementation showed: **Reduced serious cardiovascular events** (0.31 vs 0.61 per 1000 patient-days compared to placebo)

Events included:

- Cardiovascular death
- Nonfatal myocardial infarction
- Nonfatal stroke
- Peripheral vascular disease requiring amputation

Follow-up duration: **~3.5 years**

Interestingly, the benefit was observed in both: Patients **with prior cardiovascular disease** and Patients **without prior cardiovascular disease.**

While the reduction in cardiovascular events is encouraging: **No statistically significant reduction in all-cause mortality** was observed

This highlights an important nuance fish oil may **reduce events**, but not necessarily **overall mortality** (at least based on current data). In a population where cardiovascular risk is exceptionally high, fish oil offers a **simple, relatively safe adjunctive strategy** to reduce serious cardiovascular events. While it may not be a miracle solution, it represents a **promising addition to the preventive toolkit** in dialysis care.

Reference: www.uptodate.com

Pharmacovigilance Update: Adverse Drug Reactions (ADRs)

Bushra Anjum, Charge Clinical Pharmacist, Oncology/BMT

In the quarter 4 of 2025, a total of **100 Adverse Drug Reactions (ADRs)** were reported in Shifa, reflecting sustained efforts to strengthen pharmacovigilance and reinforce a culture of patient safety within the hospital.
Among the reported ADRs, **immune system disorders**, including hypersensitivity and infusion-related reactions, remained the most common. These reactions were primarily associated with **antimicrobials, contrast agents, chemotherapeutics & immunomodulators**.

Other notable ADRs included:

• **Renal and urinary reactions** (18%), mainly acute kidney injury, (Vancomycin, Iohexol, Carboplatin, Cefixime, Colistimethate sodium, and Amphotericin B) requiring careful renal monitoring.
• **Neurological reactions** (7%), i.e. peripheral neuropathy, seizures, and CNS depression, associated with Carboplatin, Moxifloxacin, Bortezomib, Tacrolimus, and Nalbuphine.
• **Hepatobiliary reactions** (3%), i.e. drug-induced liver injury, hyperbilirubinemia, and transaminitis, linked with Cefixime, Ceftriaxone, Azithromycin, and Atorvastatin.
• **Cardiac reactions** (3%), such as tachycardia, observed with Vancomycin, Salbutamol, and Amphotericin B.
• **Electrolyte and metabolic abnormalities** (3%), including hypokalemia and metabolic disturbances, associated with Amphotericin B, Cotrimoxazole, and Magnesium Sulfate.

Overall, Q4 2025 demonstrates strong ADR detection, timely management, and proactive prevention, highlighting the effectiveness of our pharmacovigilance program in promoting a culture of medication safety.

UPDATE

Formulary Updates

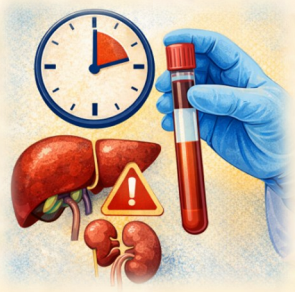
New Generic Added	Brand Name	Dosage Form	Strength	Indication
Infliximab	Remsima	Injection	120mg	Autoimmune Disorders
Vibegron	Virbeg	Tablet	75mg	Overactive bladder
Daptomycin	Daptomycin	Injection	500mg	Gram-positive infections
Papaverine	Paparin	Injection	60mg/2ml	Vascular spasm and Vasospasm
Beclomethasone + Formoterol	Form Brez	MDI	100 & 200 + 6 mcg	Asthma/COPD
Daprudostat	Jesdustat	Tablet	2, 4, 6 mg	CKD anemia
Azelastine + Fluticasone	Flutiaze	Nasal Spray	187mcg	Allergic rhinitis
Elagolix	Higolix	Tablet	150, 200 mg	Endometriosis

Tacrolimus TDM: Small Numbers, Big Impact

Fizza Afzal, Clinical Pharmacist , Liver Transplant

Therapeutic drug monitoring (TDM) of Tacrolimus is essential to guide dose adjustment, assess adherence, prevent toxicity, and reduce the risk of Organ transplant rejection. Monitoring should be performed using **whole blood concentrations**, with emphasis on **trough levels (C_0)**. For oral therapy, trough samples are typically drawn within 30 minutes prior to the next dose. The frequency of monitoring varies based on transplant type, time since transplantation, and the patient's clinical status, making individualized assessment crucial.

Timing of trough level measurement depends on the formulation: for **immediate-release tacrolimus**, levels are obtained approximately 12 hours after the previous dose or just before the next dose, while for **extended-release formulations**, levels should be drawn immediately prior to the next dose, with steady state achieved in about 7 days requiring at least two trough levels during the first week of therapy.



Clinicians should also be aware of potential inaccuracies; falsely elevated levels may occur in infected liver transplant patients due to assay interference or when samples are drawn from IV lines previously used for tacrolimus infusion. Careful attention to sampling technique and timing is therefore critical for accurate interpretation and optimal patient management.

Looking for Valuable Feedback

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30 YEAR OF EXCELLENCE