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EFFICACY OF SINGLE INHALER BUDESONIDE/FORMOTEROL IN ASTHMA MAINTENANCE AND RELIEF THERAPY

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Introduction:

Asthma is a chronic respiratory disease marked by airway inflammation and hyperresponsiveness, leading to symptoms like exacerbations and reduced lung function. Treatment aims to control symptoms with the minimum effective dosage of medication, often using inhaled corticosteroids (ICS) combined with long-acting beta2-agonists (LABA). Budesonide and formoterol are commonly used, with budesonide offering strong anti-inflammatory effects and formoterol acting rapidly against airway constriction. Recent strategies favor lower doses of steroids and combination therapies over higher doses, aiming to reduce side effects and improve control for severe cases, especially those less responsive to standard treatments.

METHODS AND MATERIALS:

Exacerbation prevention patients come from two double-blind, parallel-group investigations (Study A & Study B). Severe exacerbations were defined as a decrease in asthma control that required hospitalisation, ER treatment, or the use of oral corticosteroids for more than three days During a 2-week run-in period and throughout the 12-month randomised treatment period, participants in Study A received budesonide/formoterol 160/4.5 g bid. Patients in Study B were randomly assigned to one of three 6- month,

regimens after a 2-week run-in on ICS with terbutaline without LABA.

Study Design and analysis:

This 6-month, randomized, double-blind study assessed the effectiveness of maintenance budesonide-formoterol therapy in asthma patients. Out of 65 enrolled, 42 met the criteria and were randomized into three groups receiving maintenance budesonide-formoterol with varying as-needed regimens. Patients were assessed regularly, and analysis included 38 participants after exclusions due to protocol violations or missing data. The study design complied with Helsinki and Good Clinical Practice principles, with all patients providing informed consent. Patients in the study were randomly assigned to treatment groups with strict blinding to ensure unbiased results. The main objective was to compare budesonide-formoterol maintenance and reliever therapy versus fixed-dose budesonide-formoterol with terbutaline for acute symptom relief, using the time from randomization to the first severe asthma exacerbation as the primary outcome measure.

Result:

The study's first participant was enrolled. 42 patients were randomly assigned out of the 65 that were recruited in the trial. 11 patients (11%) were not randomly assigned because they did not meet the eligibility criteria, 5 had an adverse event, 3 were lost to follow-up, and 4 were dropped for other reasons. All randomised patients who provided any data following randomisation were included in the entire analysis set. Before they quit the research, two randomly assigned patients' data were not obtained. As a result, the efficacy and safety evaluations covered 40 patients. Seven patients had one or more protocol deviations, with a similar distribution across groups. The average number of protocol deviations per patient was 02 (range 1–10), and none of the deviations warranted the data being excluded from the study.

Severe Asthma Exacerbations:

SMART therapy delayed the time to first severe exacerbation compared to fixed-dose regimens, showing a 33% reduction in hazard ratio versus salmeterol/fluticasone and a 26% reduction versus budesonide/formoterol. Both fixed-dose groups had no significant difference in time to first exacerbation. Overall, SMART reduced severe exacerbations and hospitalizations by 39%, but there was no statistically significant difference between the two fixed-dose budesonide/formoterol groups.

Discussion:

Main Findings:

SMART management reduced inhaled corticosteroid (ICS) dose by 59% while keeping bronchial hyperresponsiveness (BHR) stable in patients with mild-to-moderate asthma. Patients also showed improved peak expiratory flow (PEF) levels and were more satisfied with the ease of the SMART approach. The frequency of severe asthma exacerbations remained low, with no significant difference compared to usual care.

Conclusion:

In summary, we conclude that budesonide/formoterol maintenance and reliever therapy appears to be a well- tolerated and beneficial concept for the management of patients with mild-to-moderate asthma in primary care. It reduces the dose of inhaled corticosteroids needed and can be considered as a good alternative for guideline-based treat

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"MECHANISM OF PROTEIN STABILIZATION BY LIGAND BINDING IN CELLULAR THERMAL SHIFT ASSAY (CETSA) AND ITS IMPACT ON DRUG TARGET ENGAGEMENT STUDIES

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INTRODUCTION

The cellular thermal shift assay (CETSA) allows for the study of target engagement with a small molecule or biomolecule in intact cellular environments, linking observed phenotypic responses with a compound's molecular target. CETSA can support direct target engagement by detecting a thermodynamic (de)stabilization of a protein resulting from ligand binding that alters discrete bond energy and shifts the Gibbs free energy of the system. This shift in system energy can be detected by measuring the aggregation properties of the target protein when a thermal challenge is applied.

Protein Stabilization Mechanism

Ligand binding often restricts the conformational flexibility of the target protein, reinforcing interactions within its structure such as hydrogen bonds and hydrophobic cores that resist thermal

unfolding. This stabilization prevents aggregation or degradation during heat stress, allowing the folded protein population to remain intact at higher temperatures compared to unbound protein. The magnitude of the thermal shift correlates with binding affinity and drug efficacy

CETSA Experiment and Detection Methods

- Samples (cells or tissue lysates) are heated across a gradient of temperatures.
- Upon heating, unbound proteins denature and precipitate, while ligand-bound forms remain soluble.
- Soluble fractions are separated by centrifugation and analyzed for the protein of interest using Western blot, or proteome-wide via mass spectrometry (MS-CETSA).
- High-throughput CETSA (HT-CETSA) uses reporter technologies like NanoLuc to rapidly quantify thermal stabilization
- Real-time CETSA variants monitor stability changes dynamically in living cells.

Importance in Drug Discovery

CETSA is critical for confirming drug-target engagement early in development, ensuring compounds work on intended targets under relevant biological conditions. It aids in:

- Lead optimization by assessing binding potency in cellular contexts.
- Profiling off-target interactions to improve drug safety.
- Understanding drug resistance by monitoring changes in target stability

Comparative evaluation of CETSA, DARTS METHOD

Method	Sensitivity
CETSA	High (thermal stabilization)
DARTS	LOW(protease-dependent)

Drug–Target Engagement

CETSA and its variants;

are widely utilized to provide critical insights into the mechanisms of action and therapeutic potential of natural products

. **WB-CETSA**

:was used to confirm that curcumol binds to nucleolin, matrine binds to Src, and rapanone A binds to IMPDH2, which helped identify their respective anticancer and anti-inflammatory effects

MS-CETSA and TPP

:have been widely used for proteome-wide target identification, which enables the study of drug–protein interactions in a high-throughput manner.

CONCLUSION

The mechanism of protein stabilization by ligand binding in the Cellular Thermal Shift Assay (CETSA) provides a critical and direct measure of drug-target engagement

in living cells or tissues. Furthermore, CETSA applications extend beyond mere validation; they enable proteome-wide profiling of drug interactions, identification of off-target effects, and investigation of drug resistance mechanisms

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ULTRA-RAPID MANUFACTURING OF VACCINES USING RNA PLATFORMS

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Introduction:

Ultra-rapid RNA vaccine manufacturing represents one of the most transformative advancements in modern biopharmaceutical science. Unlike traditional vaccine development, which may require months or years, RNA platforms enable rapid design, scalable production, and accelerated clinical deployment. This capability proved critical during recent global health crises, demonstrating how RNA-based technologies can respond swiftly to emerging infectious threats. As research advances, RNA vaccine platforms continue to redefine speed, safety, and precision in immunization strategies. Fundamentals of RNA Vaccine Technology RNA vaccines use messenger RNA to instruct cells to produce specific antigens that trigger an immune response. This method eliminates the need to grow live viruses or complex biological cultures. Because the RNA sequence can be synthesized rapidly, vaccine candidates can be developed within days of identifying a pathogen's genetic code. This agility sets RNA vaccines apart as a leading platform for rapid epidemic response.

Advantages of Rapid Genetic Design and Sequence

Editing With RNA technology, scientists can quickly modify vaccine sequences to match evolving viral strains. This process is largely digital, relying on sequence data rather than lab-grown materials. The ability to instantly adapt vaccine designs improves responsiveness against variants, enhances vaccine durability, and accelerates regulatory timelines.

Scalable Manufacturing Through Modular RNA Production

RNA vaccines are produced using modular bioreactor systems capable of generating millions of doses in compact facilities. These systems use enzymatic synthesis rather than traditional cell-based manufacturing, making them easier to scale. The modular structure also allows rapid expansion of manufacturing capacity during global emergencies.

Lipid Nanoparticles as Key Delivery Systems

Lipid nanoparticles (LNPs) protect fragile RNA molecules from degradation and transport them safely into human cells. LNP formulations can be optimized for stability, targeted delivery, and enhanced immune activation. Their compatibility with large-scale production makes them essential for successful RNA vaccine deployment.

Quality Control and Rapid Analytical Testing

Ultra-rapid vaccine manufacturing requires equally fast quality assurance. Automated systems enable real-time analysis of RNA purity, LNP structure, and sterility. These advanced analytics shorten release times without compromising safety. Integration of AI-driven monitoring tools further improves consistency and reliability in high-speed production.

Global Deployment and Manufacturing Flexibility

RNA manufacturing facilities can be deployed worldwide more easily than traditional vaccine plants. Compact production units and modular setup allow nations to establish local manufacturing for emergency response. This decentralization strengthens global vaccine equity and pandemic preparedness.

Applications Beyond Infectious Disease Vaccines

RNA platforms are now being investigated for cancer vaccines, autoimmune disorders, genetic therapies, and personalized medicine. The speed and flexibility of RNA design enable patient-specific vaccine development, particularly in oncology, where individualized tumor antigens are targeted.

Regulatory Adaptations for Ultra-Rapid Manufacturing

Regulators worldwide are developing new frameworks to support RNA-based vaccine innovation. Adaptive licensing, rolling data submissions, and accelerated approval pathways enable safer and faster review processes. These evolving regulations ensure rapid access while maintaining strict safety standards.

Future Prospects and Advancements in RNA Technology

Future developments in RNA vaccines will include self-amplifying RNA, thermostable formulations, needle-free delivery systems, and AI-driven antigen design. These innovations aim to enhance efficacy, durability, and accessibility, paving the way for next-generation immunization strategies.

Conclusion

RNA vaccine platforms have revolutionized the speed and flexibility of global vaccine development. Their ability to rapidly adapt to emerging pathogens, combined with scalable manufacturing and strong safety profiles, makes them a cornerstone of future immunization strategies. As scientific breakthroughs continue, RNA vaccines will play a vital role in combating infectious diseases and advancing personalized medicine.

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THE EFFECT OF PROPHYLACTIC ANTIBIOTICS IN IMMUNOSUPPRESSED PATIENTS UNDERGOING ANTERIOR NASAL

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Introduction

Spontaneous epistaxis is a common emergency department presentation, often requiring anterior nasal packing (ANP). Traditionally, prophylactic antibiotics are prescribed to prevent complications such as sinusitis, otitis media, facial cellulitis, and the rare but serious toxic shock syndrome (TSS).

However, growing evidence suggests that routine antibiotic use may not provide meaningful benefit and may expose patients to unnecessary adverse drug events (ADEs).

This newsletter reviews recent research evaluating the effectiveness of prophylactic antibiotics specifically in immunosuppressed patients, a population assumed to be at higher risk of infections.

Study Overview: Prophylactic Antibiotics in ANP

A retrospective propensity score–matched cohort study (2004–2024) analyzed adults with immunosuppressive conditions who presented with spontaneous epistaxis and underwent ANP. Patients were grouped based on whether they received antibiotics within 24 hours of the ED visit.

- **Study Groups**
- Intervention group (antibiotics): 1118 patients
- Control group (no antibiotics): 1118 patients
- Majority in both groups were males (~58%)
- Primary Outcome

30-day clinically significant infections:

- Toxic shock syndrome
- Facial cellulitis
- Otitis media
- Sinusitis
- Secondary Outcome

30-day adverse drug events (ADEs):

- Diarrhea
- Clostridium difficile infection
- Penicillin-related events
- Unspecified ADEs

Key Findings

1. Infection Rates
Control: 6.4%
Antibiotic group: 7.4%
No significant reduction in infection risk (P = .25).
Toxic shock syndrome:
0% in control vs 0.9% in antibiotic group.
2. Adverse Drug Events
Control: 19.7%
Antibiotic group: 22.1%
Higher ADEs with antibiotics, but not statistically significant (P = .09).
3. C. difficile Infection & Diarrhea
No meaningful difference between groups.

Implications in Clinical Practice

The study suggests that routine prophylactic antibiotic use after ANP provides no meaningful protective benefit, even in immunosuppressed patients.

Key Clinical Points

- Infection rate (~6%) is lower than the ADE rate (~20%).
- Antibiotics did not prevent toxic shock syndrome.
- Clinicians should rely on objective indicators of immunosuppression before prescribing antibiotics.
- Unnecessary antibiotic use increases the risk of:
- Drug reactions

Conclusion

The use of prophylactic antibiotics in immunosuppressed individuals undergoing anterior nasal packing does not reduce the incidence of clinically significant infections and may expose patients to avoidable adverse drug events.
Clinicians should adopt a more selective and evidence-based approach when deciding on antibiotic therapy, focusing on clear clinical indicators rather than routine prescribing.

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MANAGEMENT OF ARRHYTHMIAS DURING PREGNANCY: THE STATE OF THE ART

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Introduction

Arrhythmias during pregnancy are a clinically important challenge, requiring coordination between cardiology, electrophysiology, obstetrics, neonatology, and genetics. Pregnant women undergo major physiological changes—expanded blood volume, increased cardiac output, hormonal shifts—which can unmask or exacerbate underlying electrical instability. Although high-quality randomized trials in this population are limited, recent consensus statements synthesize available evidence and offer unified diagnostic and management recommendations.
This article summarizes the key guidance and evidence behind the evaluation and treatment of arrhythmias in pregnancy.

Common Arrhythmias in Pregnancy

Palpitations are the most common cardiac symptom reported during pregnancy. Despite this, only about 10% of symptomatic patients actually show an arrhythmia on ECG or ambulatory monitoring.Most rhythm disturbances encountered are benign:

- Sinus tachycardia
- Premature atrial and premature ventricular contractions
- Supraventricular tachycardia (SVT) — most common clinically significant arrhythmia
- Atrial fibrillation — increasingly seen due to higher maternal age
- Ventricular tachycardia, ventricular fibrillation, high-degree AV block — uncommon; usually in patients with structural or congenital heart disease
- Wearables and smart devices are detecting more mild rhythm abnormalities, but most lack pathological significance.

Diagnostic Approach

- The consensus emphasizes that basic clinical evaluation remains the foundation, not invasive studies.
- Recommended Initial Workup
- Detailed history and physical examination
- Resting 12-lead ECG
- Targeted laboratory tests: thyroid function, hemoglobin level, electrolytes
- Echocardiography when structural or electrical abnormalities are suspected
- Ambulatory Monitoring

Indicated when:

- Symptoms are recurrent or concerning
- Baseline ECG is inconclusive
- Underlying heart disease is suspected

Management of Atrial Fibrillation in Pregnancy

Atrial fibrillation (AF) is the most common arrhythmia encountered clinically and is becoming more frequent in pregnancy due

to increasing maternal age.

1. Acute Management

- Hemodynamically Unstable AF
- Immediate electrical cardioversion is first-line
- Cardioversion is safe in pregnancy
- Same energy levels as nonpregnant adults

Pad placement guidance:

- Defibrillation (VT/VF): sternal–apical
- Cardioversion (AF/SVT): anterior–posterior
- Avoid proximity to uterus and breast tissue; direct current through cardiac mass
- Hemodynamically Stable AF

First-line medications:

- IV beta-blockers
- Safe overall

Caveats:

- Labetalol & atenolol → risk of fetal growth restriction
- Nadolol → excreted in breast milk

Second-line options:

- IV calcium channel blockers
- Digoxin
- Combination therapy when needed
- Calcium channel blockers may cause vasodilation and uterine relaxation, so monitor carefully.

If medications fail:

- Ibutilide or flecainide (Class 2a recommendation)
- Electrical cardioversion remains appropriate

Last-resort options (Class 2b):

- Amiodarone
- Catheter ablation (only in experienced centers using minimal radiation)

Chronic Management and Follow-Up

- Many women do not require long-term antiarrhythmic therapy after acute stabilization.

Should be performed in centers with:

- Low-radiation protocols
- 3D electroanatomical mapping
- Skilled electrophysiologists familiar with pregnancy-specific risks

Conclusion

Management of arrhythmias in pregnancy demands a structured, evidence-driven approach. Most rhythm disturbances are benign, but clinically significant arrhythmias—especially SVT and AF—require careful risk assessment and appropriate therapy. Cardioversion is safe, beta-blockers remain first-line, and more invasive procedures should be reserved for refractory cases in specialized centers. Despite limited randomized data, the multidisciplinary consensus guidance provides a unified, practical framework for clinicians managing these complex cases.

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FITUSIRAN: A BREAKTHROUGH PROPHYLACTIC THERAPY FOR HEMOPHILIA

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Introduction

Fitusiran, marketed as Qfitlia, is a first-of-its-kind therapy approved in 2025 for hemophilia A and B, offering a paradigm shift in how bleeding episodes are prevented.Unlike traditional factor-replacement therapies, fitusiran works by reducing antithrombin, thereby increasing thrombin generation and restoring balance in the coagulation system.

Mechanism of Action

Fitusiran is a small interfering RNA (siRNA) therapeutic.It targets antithrombin (AT), a key natural inhibitor of clotting, reducing its levels in the plasma."Lower AT levels → more thrombin generation → better clot formation → fewer bleeding episodes."The drug is delivered via subcutaneous injection.

Clinical Use & Dosing

• Indication: Routine prophylaxis to prevent or reduce bleeding in patients (≥ 12 years) with hemophilia A or B, with or without factor VIII or IX inhibitors. • Starting dose: 50 mg SC every 2 months. • Monitoring: Uses the INNOVANCE Antithrombin assay (FDA-cleared) to guide dose adjustments. • Target AT activity: 15%–35%, to balance efficacy and safety.

Clinical Trial Evidence & Efficacy

• Based on phase 3 "ATLAS" trials and their open-label extension (ATLAS-OLE) involving 177 patients.In clinical studies, fitusiran significantly reduced annualized bleeding rates (ABR): ~71% reduction in ABR in patients without inhibitors. ~73% reduction in ABR in patients with inhibitors. • Long-term data support maintenance of efficacy when dosing is adjusted based on AT levels.

Safety Profile & Risks

• Boxed Warning: Risk of thrombotic events, gallbladder disease (like cholecystitis, gallstones), and hepatotoxicity. • Liver monitoring: Liver function tests (LFTs) are required — monthly for at least the first 6 months. • Most common side effects: Viral infections, nasopharyngitis, bacterial infections. • To reduce risk: The dosing is individualized (not fixed) to maintain AT in the target range.

Advantages & Clinical Implications

• Low dosing frequency: Six injections per year (once every two months) — this is a big improvement over many factor therapies. • Broad applicability: Works in hemophilia A and B, regardless of whether patients have inhibitors. • Novel therapeutic modality: It's the first siRNA therapy for hemophilia, harnessing RNAi to modulate the coagulation system. • Patient quality of life: Reduced bleeding, less frequent injections — potential for better adherence and lifestyle.

Challenges & Considerations for Pharmacy Practice

• Monitoring: Pharmacists must understand and counsel about AT assay (INNOVANCE) to guide dose adjustments. • Risk management: Educating patients on signs of thrombosis, gallbladder issues, and liver problems. • Cost & access: As a first-in-class therapy, cost may be high; pharmacists can help with patient support, insurance navigation. • Patient education: Since it doesn't replace factor, patients should know how to manage breakthrough bleeds and how the therapy fits in with their existing treatment.

Conclusion

Fitusiran (Qfitlia) is a landmark in hemophilia management — by lowering antithrombin via RNA interference, it offers a less frequent, highly effective prophylactic option for patients. It's a perfect example of how modern molecular medicine (siRNA) is transforming traditional disease treatment paradigms.

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TRANSFORMING PHARMACOGENOMICS WITH AI AND CRISPR: THE NEXT FRONTIER IN PERSONALIZED TREATMENT

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Introduction

Precision medicine is rapidly evolving from a theoretical concept to a clinical reality. The convergence of pharmacogenomics, artificial intelligence (AI), and CRISPR genome editing marks a transformative moment in healthcare, enabling more accurate diagnoses, targeted therapies, and reduced adverse drug reactions. Pharmacogenomics—the study of how genetic variations affect drug response—is already reshaping oncology, mental health, cardiology, and metabolic disorders. With the advancement of CRISPR and AI-driven analytics, precision medicine is entering a new era defined by predictive models, real-time decision support, and personalized gene-editing therapies. This newsletter synthesizes insights from current scientific literature, highlighting how these technologies intertwine to create a powerful framework for future medical practice.

Pharmacogenomics – The (Genetic) Key to Tailored Therapy

Pharmacogenomics provides clinicians with actionable genetic data that predicts whether a patient will respond effectively to

a drug, experience toxicity, or require dose modifications. Variants in drug-metabolizing enzymes especially within the CYP450 superfamily are among the most clinically significant determinants of drug response.

1. Genetic Variability and Drug Metabolism Drug metabolism differs widely across individuals due to: • Single nucleotide polymorphisms (SNPs) • Copy number variations (CNVs) • Epigenetic modifications These variations influence pharmacokinetics (how the body processes a drug) and pharmacodynamics (how the drug affects the body). Examples include: • CYP2D6 → Determines metabolism of tamoxifen, opioids, antidepressants. → Ultra rapid metabolizers risk toxicity; poor metabolizers risk therapeutic failure. • CYP2C19 → Critical for activating clopidogrel. → Loss-of-function alleles lead to reduced drug activation and increased cardiovascular risk. • UGT1A1 → Polymorphisms significantly affect irinotecan toxicity. → UGT1A1*28 increases risk of severe neutropenia.

2. Somatic Genetics & Targeted Cancer Therapy

In oncology, tumor-specific mutations determine treatment eligibility for several targeted therapies: Gene Mutation Drug and it's Clinical Role HER2 amplification Trastuzumab- Predicts response in breast/gastric cancers BCR-ABL fusion Imatinib- First successful targeted therapy in CML EGFR mutations Erlotinib, Osimertinib- Essential in targeted lung cancer therapy BRAF V600 mutations Vemurafenib, Dabrafenib- Melanoma treatment These companion diagnostics represent the earliest integration of genomics into clinical drug selection and remain foundational models for precision therapy.

AI & CRISPR – Accelerating the Future of Precision Medicine

AI and CRISPR are rapidly expanding the potential of pharmacogenomics, from identifying genetic markers to enabling personalized gene correction. Artificial Intelligence: Powering Predictive Medicine AI revolutionizes pharmacogenomics through: 1. High-speed Biomarker Discovery Machine learning analyzes massive genomic datasets to identify variants that influence drug response. AI tools outperform traditional statistical methods by: • Recognizing complex nonlinear interactions • Predicting metabolizer phenotypes • Identifying rare variants with high clinical significance 2. Drug Response Prediction AI models can forecast: • Who will benefit from a specific therapy • Who is at risk for severe adverse drug reactions • Optimal drug/dose combinations These predictions are already being incorporated into clinical decision-support.

CRISPR Gene Editing:

Beyond Prediction to Direct Intervention CRISPR-Cas systems provide precise genome manipulation, enabling treatment strategies that go beyond selecting drugs—toward correcting disease-causing genes. 3. Gene Repair in Metabolic & Oncologic Disorders 1. CRISPR-Cas9 - DNA system that targets Gene knockout, correction 2. CRISPR-Cas12 - ss/dsDNA System that targets Diagnostics, high-specificity editing 3. CRISPR-Cas13 – RNA system that targets Viral RNA targeting, transcript regulation CRISPR can: • Repair oncogenic mutations • Enhance immunotherapy by editing T-cells • Correct metabolic disorders driven by single-gene defects AI assists CRISPR by: • Designing more accurate guide RNAs • Reducing off-target activity • Optimizing delivery mechanisms

• Challenges & Ethical Considerations The benefits of AI-driven pharmacogenomics and CRISPR come with challenges: • Algorithmic bias in AI predictions • Off-target effects in gene editing • Data privacy risks in genomic datasets • Regulatory gaps governing gene modification technologies Ensuring global equity in access to these advancements remains a major concern. Uses of Pharmacogenomics (PGx) • Predicts individual drug response based on genetic variations. • Prevents adverse drug reactions by identifying high-risk genetic profiles. • Optimizes drug dosing to ensure safe and effective therapy. • Guides selection of targeted therapies using specific gene mutations. • Improves overall treatment efficacy through personalized medication planning. • Supports AI-driven precision medicine using genomic data for predictions. • Enables personalized gene-editing approaches through CRISPR-based interventions.

Role of the Pharmacist in Pharmacogenomics

Pharmacists play a crucial role in interpreting pharmacogenomic test results, identifying clinically significant gene–drug interactions, and optimizing medication selection and dosing to enhance therapeutic outcomes. They help prevent avoidable adverse drug reactions by adjusting doses for poor, intermediate, or ultra rapid metabolizers. Pharmacists also collaborate with clinicians to integrate PGx data into electronic health records, educate patients, and support AI-driven decision systems. Their expertise ensures safe, effective, and personalized medication use based on each patient's genetic profile. Conclusion The convergence of pharmacogenomics, AI, and CRISPR marks a transformative era in personalized medicine. These technologies collaboratively: • Enhance drug response precision • Reduce toxicity • Enable targeted cancer therapies • Support gene-corrective treatments • Accelerate data-driven clinical decision-making As regulatory frameworks and bioethical safeguards continue to advance, this synergy will shape the future of patient-specific treatment across all fields of medicine.

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DEPARTMAENTAL ACTIVITIES

2nd ECPCON – PHARMANEXT GLOBAL 2025

The conference on "A Convergence of Innovation, Integration, and Educational Progress in Pharmacy" brought together leading experts who highlighted how technology, global perspectives, and advanced pharmacological science are reshaping pharmacy education and practice. Distinguished sessions included Dr. Sunil Ramesh Chaudhary's insights on transforming clinical research through virtual trials and artificial intelligence to enable more efficient, patient-centric studies; Mr. R. Rajaguru's discussion of formulation development challenges in resource-limited African settings and the importance of low-cost, innovative solutions for global healthcare; Dr. R. Vadivelan's exploration of precision medicine, pharmacogenomics, and targeted therapies with a strong emphasis on student engagement in translational research; and Dr. C. S. Kandasamy's focus on ethnopharmacology and herbal research as a bridge between traditional knowledge and modern scientific validation. Together, these sessions underscored the vital role of innovation, cross-border collaboration, and education in advancing the future of pharmacy.

One-day National Workshop on "AI & Academia: Integrating Artificial Intelligence Tools for Enhancing Academic and Research Writing"

The Management, Principal, Staff, and Students of The Erode College of Pharmacy, Erode take great pride in congratulating Dr. C. Kannan, Associate Professor, Department of Pharmacy Practice, for his remarkable achievement in successfully serving as a resource person in the One-day National Workshop on "AI & Academia: Integrating Artificial Intelligence Tools for Enhancing Academic and Research Writing" held at Kerala.

His outstanding contribution and dedication in promoting the application of Artificial Intelligence in Pharmacy Education is highly commendable. His active participation in this prestigious workshop reflects his commitment to academic growth, continuous learning, and advancement in pharmacy education.

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World Alzheimer's Day 2025 – Awareness Programme

The Department of Pharmacy Practice, The Erode College of Pharmacy, proudly organized an Awareness Programme on World Alzheimer's Day 2025 on 26th September at the Drug & Poison Information Centre, Tiruppur.

✨Theme: "Time to Act on Dementia, Time to Act on Alzheimer's"
👉A call to raise awareness, improve early diagnosis, and support patients & families with compassion.
Key Takeaways for Students:
✔️Stronger understanding of Alzheimer's disease & its social impact.
✔️Hands-on learning through teamwork & interactive discussions.
✔️Bridging classroom knowledge with real healthcare needs.
✔️Reinforcing the pharmacist's role in patient-centered care.