Volume 1, Issue 1

December 2023

Drug Information Center Newsletter

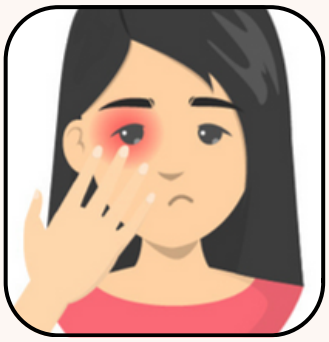
In this volume you will read

Glimpse about functions of DIC

Read more ...

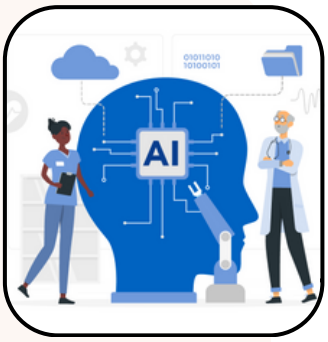
Advances in Ischemic stroke

Read more ...



Decoding the Mystery of Cluster Headache !!

Read more ...



Artificial Intelligence in Pharmacy Practice

Read more ...

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Functions of Drug Information Center (DIC)

1 Pharmaceutical Consulting

The primary function of a drug information center is to respond to enquiries on therapeutic drug use. The DIC is concerned with providing information when there is a knowledge gap, or when the question requires more thorough research.

AWARENESS

2 Awareness campaigns

Increasing the attention of the people towards the most recent and common health issues.

Preparing events to spread the awareness and knowledge towards most recent medical and pharmaceutical concerns.

3 Education and Training

Providing information to health professionals and the public is part of continuing health education. Training graduate and undergraduate students to understand the scope and functions of DIC.

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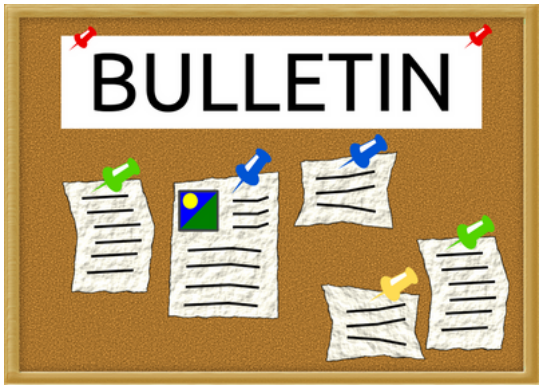
Functions of Drug Information Center (DIC)

4 Dissemination of Information

DIC deliver information in the form of drug monographs, bulletins and websites.



Research 5

The nature of enquiries received can be used to plan research programs within the DIC. Research plan include pharmaco-epidemiology, drug utilization studies and pharmacovigilance.

6 Pharmacovigilance

DIC-related programs which monitor adverse drug reactions. Enquiries about a potential adverse reaction can lead to reports of suspected reactions and research may be required to assess the likelihood adverse reactions for subsequent patient management.

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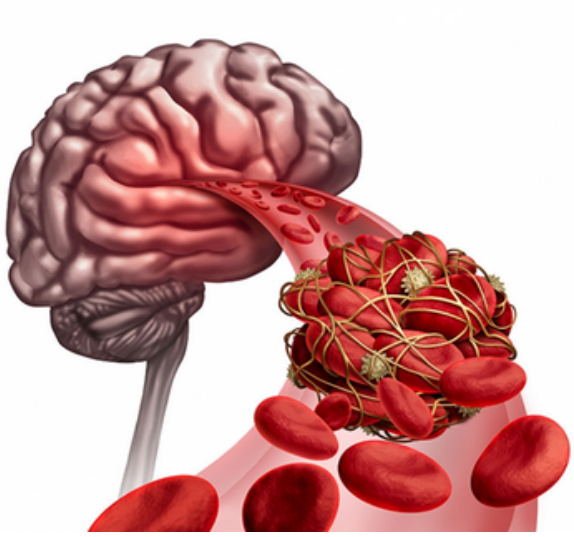
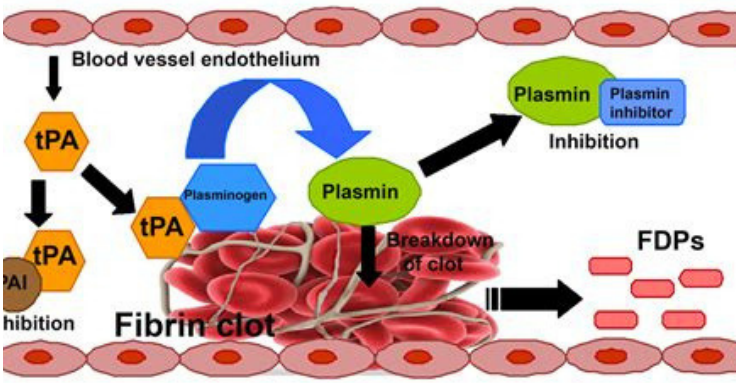
ADVANCES IN TO ISCHEMIC STROKE

Ischemic stroke is a neurodegenerative disorder and a leading cause of adult death and disability. Focal Cerebral ischemia is the primary cause of ischemic stroke and indicates a reduction of blood flow to specific brain regions that usually occurs due to occlusion of cerebral artery by thrombus or embolism (1). Every year, more than 7,095,000 people worldwide have a stroke,
87% of which are ischemic stroke (2). $63,3B was the stroke cost worldwide from 2018 - 2019 (3)



The only The U.S. Food and Drug Administration (FDA)-approved treatment for ischemic stroke is the early use of fibrinolytic drug, Recombinant tissue plasminogen activator (rtPA), which allow blood reperfusion to the brain.



In 2021, the FDA approved the MicroTransponder Vivistim Paired VNS System (Vivistim System), a first-of-its-kind, drug-free rehabilitation system intended to treat moderate to severe upper extremity motor deficits associated with chronic ischemic stroke —a stroke caused by a blockage of blood flow to the brain with long-lasting symptoms—using vagus nerve stimulation (VNS).

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Decoding the Mystery of Cluster Headache

Cluster headaches, an unbearable and relatively rare neurological condition, affect approximately one in 1,000 U.S. adults, with a higher prevalence in men aged 20 to 40. These headaches are notorious for their intensity, they cause severe unilateral temporal or periorbital pain, with autonomic symptoms in the nose, eyes, and face, including ipsilateral conjunctival injection, lacrimation, and nasal congestion. Cluster headaches are classified into chronic and episodic forms distinguished by the duration and frequency of episodes, table 1.

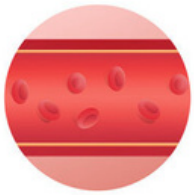
Table 1. Diagnostic Criteria for Cluster Headache

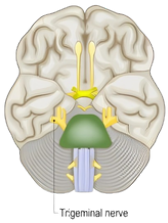
Feature	*Criteria*
Associated symptoms	At least one ipsilateral symptom in the eye, nose, or face; restlessness or agitation
Duration	15 to 180 minutes (untreated)*
Frequency	One episode every other day to eight episodes per day*
Location	Unilateral in temporal or periorbital area
Pain quality	Severe, "suicide headache"*

NOTE: *At least five episodes are required for diagnosis. Symptoms cannot be attributed to another condition.*

**—Exceptions are allowed if they occur in less than one-half of instances.*

While the pathophysiology of cluster headaches remains elusive, various factors such as vascular dilation, trigeminal nerve stimulation, and genetic components are implicated. Studies suggest a familial predisposition, with a 14 to 39-fold increased risk for those with a first-degree relative suffering from cluster headaches.





Managing cluster headaches necessitates a multifaceted approach. Patient education, trigger avoidance, and lifestyle modification are all of high importance.

For acute treatment, first-line therapies include sumatriptan and zolmitriptan, alongside high-flow oxygen. Prophylactic measures involving verapamil and lithium prove effective, with deep brain stimulation emerging as an option for refractory cases.

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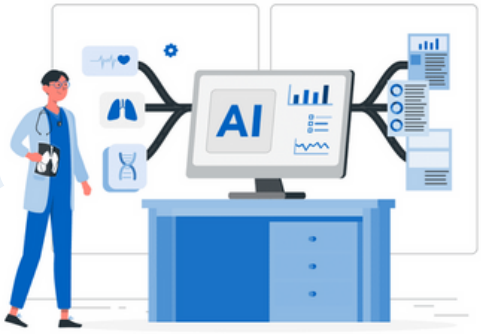
Artificial Intelligence in Pharmacy Practice

Artificial intelligence (AI) is a transformative technology used in various sectors including healthcare and pharmacy practice. AI significantly improves medication management services, supports telemedicine initiatives, and provides pharmacists with tools and systems to make accurate and evidence-based clinical decisions.



Pharmacy practice is an integral part of the healthcare system, which provides various activities such as medication reconciliation, medication review, medication therapy management (MTM), providing drug information, patient education, adverse drug reaction (ADR) monitoring, and inter-professional collaborations.

Dose Recommendation System incorporates data from multiple sources, such as safety and effectiveness metrics, electronic health records, disease details, treatment history, and patient feedback. These systems improve treatment efficacy, chronic disease care, and chemotherapy dosing precision while minimizing side effects.

Drug-drug interactions (DDIs) are a significant cause of ADRs, which raise healthcare costs. AI databases such as DrugBank, SIDER, TWO SIDES, Kyoto Encyclopedia of Genes and Genomes (KEGG), Lexicomp, and Micromedex help in predicting and solving this problem.

Electronic health record (EHR) algorithm software improves clinical decisions by detecting any drug deviation from its appropriate use pattern. It also aids in drug selection decisions by indicating which patients are unlikely to experience ADRs from a specific drug via automated classification.

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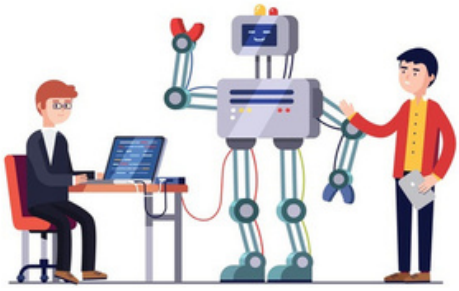
The prevalence of comorbid conditions and polypharmacy among elderly patients puts them at risk of potentially inappropriate prescribing (PIP) especially when administered drugs whose risks outweigh benefits. There are currently several criteria for assessing and evaluating post-event PIP, including the Beers criteria and the STOPP/START criteria, resulting in reducing the risk of ADR.

Inappropriate medication (PIMs)

Clinical decision support system (CDSS) matches individual patient information and health data to a computerized clinical knowledge base in a CDSS and then presents patient-specific assessments and recommendations to the clinician for making a decision. This technology enables pharmacists to sift through data and intervene to prevent medication errors, reduce patient complications, and save money.

The implementation of a **robotic dispensing system** operated by pharmacy support staff in community pharmacies helps in many aspects: 1) Preparing prescribed medicines. 2) Powdered medications. 3) A bar-coded medication dispensing support system with personal digital assistance.



Medication Adherence

Approximately half of patients with chronic diseases do not take their medications as prescribed, resulting in increased morbidity and mortality. For patients, AI may be a useful tool for providing guidance on how and when to take a medication, aiding in patient education, and promoting medication adherence.

We propose "**pharmacointelligence**," i.e., the integration of AI/ ML and similar advanced technologies into pharmacy practice with the sole aim of improving patient care and safety.

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Editorial board

Authors

Dr. Mohamed Ibrahim

Lecturer of Pharmacology, MUST University.

Dr. Shireen Mohsen

Lecturer of Clinical Pharmacy, MUST University.

Ph. Mariam Mohamed

Tele-pharmacy specialist.
Clinical Pharmacy Master's student.

Ph. Rehab Abdelhamid

Community pharmacist.
Bioinformatics scholar at EgCombio.