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VOLUME III

2024 PHARMA CONNECT

2024 Chest Pain - MI Registry NCDR

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PHARMACOVIGILANCE AND THE CRUCIAL ROLE OF PHARMACISTS

AUTHOR SUMAIRA KHAN | HEAD OF PHARMACY DEPARTMENT

Pharmacovigilance, the science and activities related to the detection, assessment, understanding and prevention of adverse effects or any other drug-related problems, is a critical component of healthcare systems worldwide. Its primary aim is to ensure the safety & efficacy of pharmaceutical products, thereby protecting patients from potential harm and enhancing therapeutic outcomes. At the heart of this endeavor lies the indispensable role of pharmacists, who serve as the frontline guardians in the pharmacovigilance landscape.

THE ROLE OF PHARMACISTS

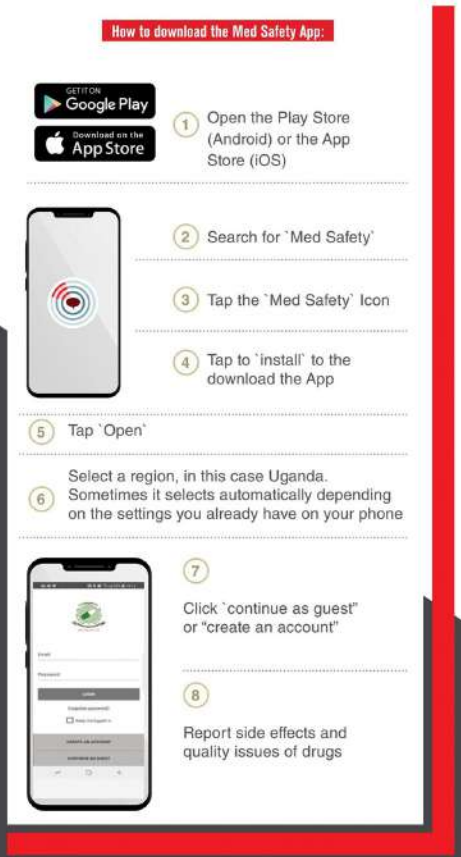
The changing role of the pharmacist from the traditional 'drug dispenser' concept towards 'pharmaceutical care provider' expanded the role of pharmacists. On a global scale, major improvements can be made and the extent of Adverse Drug Reactions (ADR) & other drug-related problems underreporting can be considerably reduced by actively involving. An important clinical responsibility of the pharmacist is in the early detection of ADRs and other drug-related problems as well as monitoring the effectiveness of medicines.

The pharmacist, as a part of the healthcare team, is a source of both information and critical evaluation of drug information. The pharmacist's expertise is vital to the application of the safety profile of a medicine to the needs of a particular patient. An effective approach in pharmacovigilance requires the use of modern informatics. FIP recognizes that pharmacists are a key part of the post-approval environment

MED SAFETY APP
BY DRUG REGULATORY AUTHORITY PAKISTAN

The Drug Regulatory Authority of Pakistan has launched the MED Safety app for healthcare professionals and consumers. It is crucial to raise awareness among these groups about the importance of updating information and reporting adverse reactions to ensure patient safety.

Ensuring the safety of patients is a shared responsibility.



Reference | https://www.fip.org/file/1464

DILI DEMYSTIFIED
FROM DIAGNOSIS TO TREATMENT

AUTHOR AMNAH JAHANGIR | CLINICAL PHARMACIST

WHAT IS DILI

Drug-induced liver injury (DILI) is liver damage caused by medication, herbs or dietary supplements. It is divided into intrinsic and idiosyncratic types. Intrinsic DILI is dose-dependent and predictable involving drugs like acetaminophen. Idiosyncratic DILI is unpredictable, rare & involves a variety of drugs.

CLINICAL MANIFESTATIONS

DILI can be asymptomatic, detected only through routine liver tests, or symptomatic with manifestations such as fatigue, nausea, abdominal pain, fever, rash and adenopathy. Severe cases may present with portal hypertension, ascites, variceal bleeding, or liver decompensation.

DIFFERENTIAL DIAGNOSIS

DILI is classified based on aminotransferase (ALT, AST) and alkaline phosphatase (ALP) levels. ALT is more specific to liver tissue. Elevated ALP should be confirmed with gamma-glutamyl transferase (GGTP) to ensure liver origin. The R value helps differentiate the type of liver injury i.e. hepatocellular, cholestatic, or mixed liver damage.

UNDERSTANDING THE R VALUE

The R value compares ALT and ALP levels to classify liver injury:
R= [ALT level ÷ ALT (ULN)] ÷ [ALP level ÷ ALP (ULN)]

- Hepatocellular Injury (R ≥ 5): Predominantly elevated ALT.
- Cholestatic Injury (R ≤ 2): Predominantly elevated ALP.
- Mixed Injury (2 < R < 5): Both ALT and ALP are elevated.

MOST COMMON DRUGS CAUSING DILI

Antimicrobials are the most common cause of idiosyncratic liver injury where herbal supplements also rank high, especially in regions like Asia. Other notable drugs include isoniazid, statins & immune modulating agents.

CLINICAL CARE OF DILI

Management involves identifying and discontinuing the offending drug. Monitoring liver function tests is crucial. Hy's Law and its recent refinements help predict severe outcomes. For patients with pre-existing liver conditions, careful differential diagnosis is essential to distinguish DILI from disease fluctuations. Ensuring comprehensive patient history and regular monitoring can aid in early detection and improved outcomes.

References
- *Hoofnagle & Bjornsson. N Engl J Med 2019; 381: 264-273*
- *Bénichou C. J Hepatol. 1990; 11: 272-6*
- *Fontana RJ, et al. Hepatology 2010;52:730-4*
- *Suk KT et al. Am J Gastroenterol 2012; 107; 1280-87*
- *Andrade RJ, et al. Gastroenterology 2005;129:512–21; Chalasani N, et al. Gastroenterology*

ISMP RECOMMENDATION FOR ARRANGING INSULIN

SHARED BY PALWASHAY IQBAL | IV STERILE AREA PHARMACIST

ISMP recommendation for arranging insulin in the order of duration of action in the refrigerator can really help in minimizing the dispensing error/medication errors of these high alert medicines.

This can help in minimizing mix-ups in similar looking ampoules of insulin and contribute to medication safety efforts.

TOPICAL PHENYTOIN USE IN HEALING DIABETIC FOOT ULCERS

AUTHOR UMME HANI | AMBULATORY CARE PHARMACIST

Foot ulcers, a prevalent complication of diabetes mellitus, are particularly concerning due to their rapid progression and challenging treatment. Various techniques have been explored for addressing diabetic foot ulcers. One innovative approach involves utilizing the side effect of phenytoin, namely gingival hyperplasia, to enhance wound healing.

Phenytoin, primarily known for its use in treating seizures, has shown promise in wound healing due to its side effect of gingival hyperplasia. The study reports a case where topical application of phenytoin on a diabetic foot ulcer resulted in significant improvement.

MECHANISM

The mechanism behind phenytoin's effectiveness lies in its ability to promote fibroblast proliferation, collagen deposition, granulation tissue formation, decreased bacterial contamination, reduced wound exudate formation, and up-regulation of growth factor receptors.

CONCLUSION

Diabetic foot ulcer can cause significant morbidity to the patient, if correctly managed, it can be treated effectively. Given the evident effectiveness of topical phenytoin in the promotion of wound healing as well as its availability, low cost, ease of use and safety, we strongly recommend its use as a treatment for diabetic ulcers.

References

- https://www.researchgate.net/publication/310591428_Efficacy_of_topical_phenytoin_in_healing_diabetic_foot_ulcer

- https://journals.lww.com/jcas/fulltext/2020/13030/role_of_phenytoin_in_diabetic_foot_ulcers.7.aspx#:~:text=They%20concluded%20that%20topical%20phenytoin,formation%2C%20and%20decreases%20bacterial%20contamination

DRUG INTERACTION
BETWEEN TIZANIDINE & CIPROFLOXACIN

A patient with UTI takes ciprofloxacin 500 mg twice daily as a definitive therapy. After 2 days he complained of back pain for which the physician prescribed Tizanidine 4 mg twice daily.

After 3 days of taking both drugs concurrently, the patient complained of hypotension, confusion and drowsiness that didn't relieve the physician's intervention.

After stopping Tizanidine and adding another muscle relaxant, the symptoms have significantly improved.

The reason was that Tizanidine is a CYP1A2 substrate and Ciprofloxacin is a CYP1A2 inhibitor increasing dose of Tizanidine significantly causing severe hypotension that may be fatal in some cases.

The combination is CONTRAINDICATED

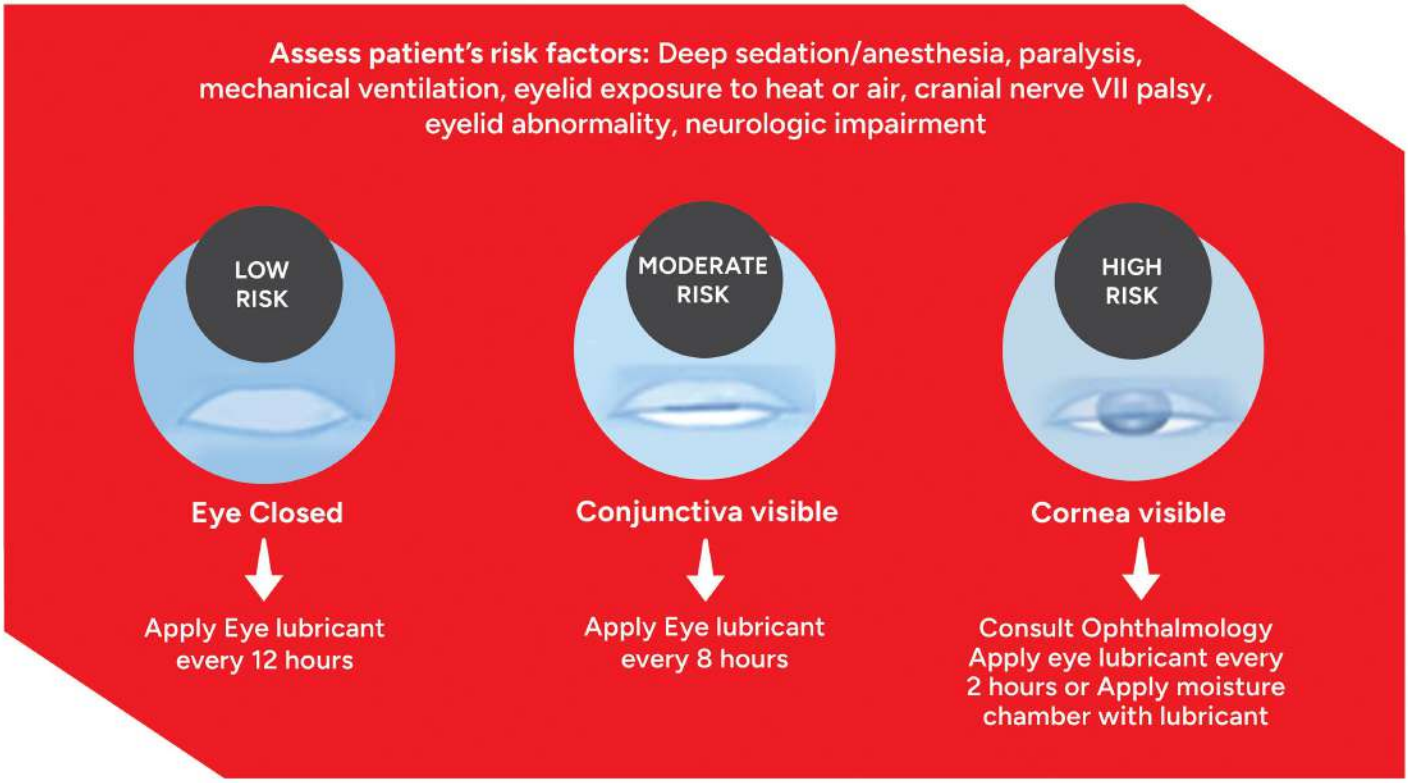
Reference
- *www.uptodate.com*

EYE CARE FOR PATIENTS IN CRITICAL UNITS

AUTHOR AREEBA NAYAB | CLINICAL PHARMACIST

Patients in critical care areas are at increased risk for developing ocular complications, most commonly as a result of excessive exposure and drying of the surface of the eye.Additionally, for patients who are terminally ill, proper eye care will help maintain the health of the corneal tissue and preserve the option of eye donation for the patient or the patient's family members.

Many critical care patients are sedated, both medically and as a result of their systemic illness. Sedation decreases the blink rate & predisposes the ocular surface to desiccation.Eye care with a lubricating ointment on a regular, set schedule can effectively reduce the prevalence of corneal abrasions in patients who are either paralyzed or heavily sedated & thus can help prevent serious complications such as corneal ulceration, infection, and visual loss.



In cases of significant exposure, whether from decreased blinking or poor lid closure, lubricant ointment should be applied every 4 hours. Prolapsed, chemotic conjunctiva can further worsen the exposure problems. Lubricating ointments are advised for eye care in such patients. A small amount of petroleum jelly on the skin of the brow, temples and cheeks will create a tighter seal by the plastic wrap, but still allow easy removal for inspection and application of ointment. The plastic wrap should be changed each shift to lessen the risk of infection.

References
- *https://corneas.org/userfiles/2453/Critical%20Care%20Unit%20Eye%20Care%20Dec%202021.pdf*
- *https://www.sciencedirect.com/science/article/abs/pii/S1546084316301857#preview-section-abstract*
- *https://pubmed.ncbi.nlm.nih.gov/10800604/*

FENTANYL INTERACTION WITH FLUCONAZOLE

Interaction with concomitant fluconazole (first report) leading to fatal respiratory insufficiency and circulatory failure.

CASE REPORT

A 46-year-old man receiving fentanyl for pain in his oral cavity developed fatal respiratory depression and circulatory failure during concomitant treatment with fluconazole for an oral fungal infection. The man, who had tonsillar cancer, started receiving transdermal fentanyl patch [Duragesic; 100 µg/h], which was increased to 150 µg/h over 1.5 months; his concomitant medication included lidocaine, paracetamol [acetaminophen] and metoclopramide.

Two weeks after fentanyl 150 µg/h initiation, he underwent percutaneous gastrostomy because of increasing dysphagia. After 8 days, He started receiving oral fluconazole 50 mg/day and 3 days later, he died at home during sleep.

Forensic analysis of the man's femoral blood revealed toxic concentration of fentanyl (0.017 µg/g) and high concentrations of fluconazole (2.4 µg/g), metoclopramide and lidocaine. An autopsy showed pulmonary congestion and brain oedema.

His death was attributed to circulatory failure and respiratory depression due to fentanyl intoxication. His fentanyl concentration was within the range of reported lethal fentanyl intoxications.

Reference
- Hallberg P, Martén L, Wadelius M.Possible fluconazole-fentanyl interaction - a case report. European Journal of Clinical Pharmacology 62: 491-492, No. 6, Jun 2006 - Sweden

IRON REPLACEMENT THERAPY IN HEART FAILURE

AUTHOR ALEENA KHAN | INPATIENT PHARMACIST

Every development in the field of heart health raises expectations for better results and a higher standard of living. The research provides a ray of hope for both patients and physicians by highlighting the critical importance of treating iron deficiency in HF.

In a recent clinical trial, "Iron Deficiency in Heart Failure: An Overview" the result was that Iron therapy is a critical intervention in the treatment of individuals with iron deficiency who have heart failure (HF). The scientist talked about how treating iron deficiency in people with heart failure might be clinically significant. They emphasize how crucial early detection and suitable treatment plans are to enhance quality of life.

Oral iron supplements and intravenous iron therapy are two of the treatment options for iron deficiency in HF that are discussed in this article. It talks about the evidence for various therapies and how they might affect the management of HF.

Patients with heart failure (HF) may benefit from iron therapy in several ways, such as

REDUCTION IN SYMPTOMS

Patients with heart failure may experience worsening of symptoms including exhaustion and dyspnea due to iron shortage. By increasing general energy and exercise tolerance, as well as by restoring iron levels, iron therapy may be able to reduce these symptoms.

DECREASED HOSPITALIZATIONS

As their symptoms worsen, Heart failure patients with iron deficiency frequently require more frequent hospital stays. By reducing the course of the disease and stabilizing the symptoms of heart failure, iron therapy may help lower the chance of hospital admissions.

ENHANCED QUALITY OF LIFE

Treatment can help HF patients live better lives by treating their iron deficit. Patients might feel more energized, happier & more generally well-off.

INCREASED EXERCISE CAPACITY

In patients with heart failure, iron treatment has been linked to increases in both functional status and exercise capacity. Patients may be able to carry out everyday tasks with more confidence and ease as a result.

POTENTIAL SURVIVAL BENEFIT

Research indicates that iron treatment may help HP patients live longer. Therapy may help reduce the incidence of unfavorable cardiovascular events & enhance long-term results by treating iron deficiency. All things considered; iron treatment is a promising intervention for heart failure patients who have low levels of iron in their bodies. It has the potential to improve quality of life, lower hospitalization rates, ease symptoms, increase exercise capacity and potentially even increase survival rates.

References

- *Stephan von Haehling, Nicole Ebner, Ruben Evertz, Piotr Ponikowski, and Stefan D. Anker, J Am Coll Cardiol HF. 2019 Jan, 7 (1) 36–46 - "Iron Deficiency in Heart Failure: An Overview."*
- *Crielaard B.J., Lammers T. and Rivella S. : "Targeting iron metabolism in drug discovery and delivery". Nat Rev Drug Discov 2017; 16: 400*
- *Graham FJ, Pellicori P, Kalra PR, et al. Intravenous iron in patients with heart failure and iron deficiency: An updated meta-analysis. Eur J Heart Fail. 2023;25(4):528– 537..*

ASSOCIATION OF ASTHMA AND OBESITY

AUTHOR AAKIF AHMED | TRAINEE PHARMACIST BATCH 2024-25

Obesity worsens the severity of asthma.

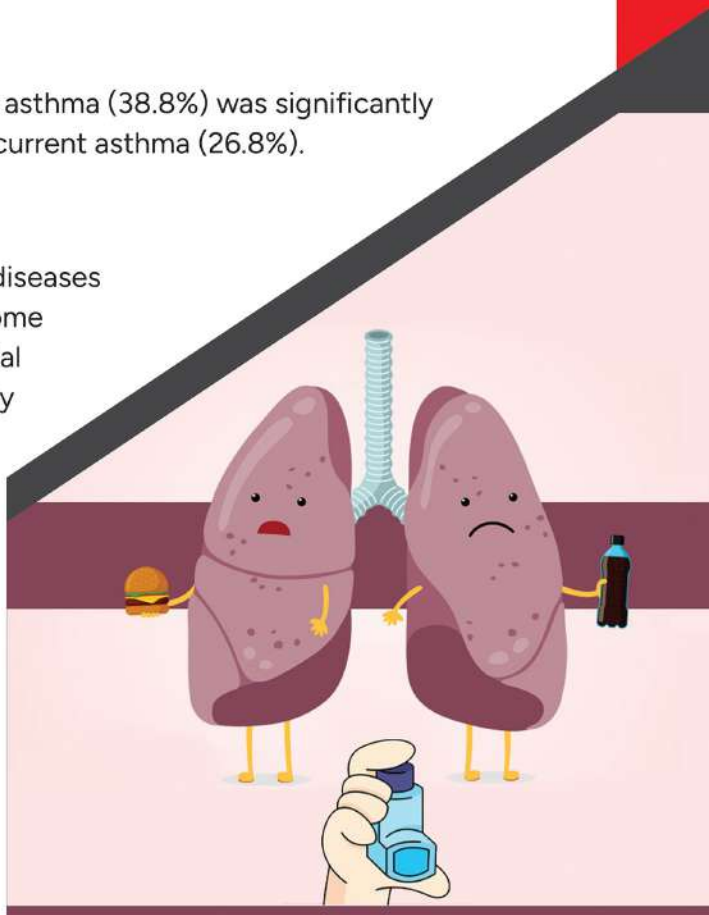
This finding was more strongly observed among women than men. Obesity and overweight are associated with a poorer control of asthma.

According to BMI, obese asthmatics had 6 times more frequent emergency visits, 5 times more frequent hospitalizations for asthma related complaints, increased missed work days and greater dose of inhaled corticosteroids (1025µg/day vs. 759µg/day of beclomethasone equivalent).

The obesity rate among adults with Current asthma (38.8%) was significantly higher than the rate Among adults without current asthma (26.8%).

Both asthma and obesity are multifactorial diseases with hereditary predisposition; therefore, some studies have attempted to establish potential genetic or ethnic features of asthma-obesity comorbidity.

Childhood obesity is known to be a risk factor for asthma. On investigating this risk factor, it was found that an early postnatal overweight induced by maternal HFD during lactation leads to early-onset obesity. It has been reported in children 12-16.

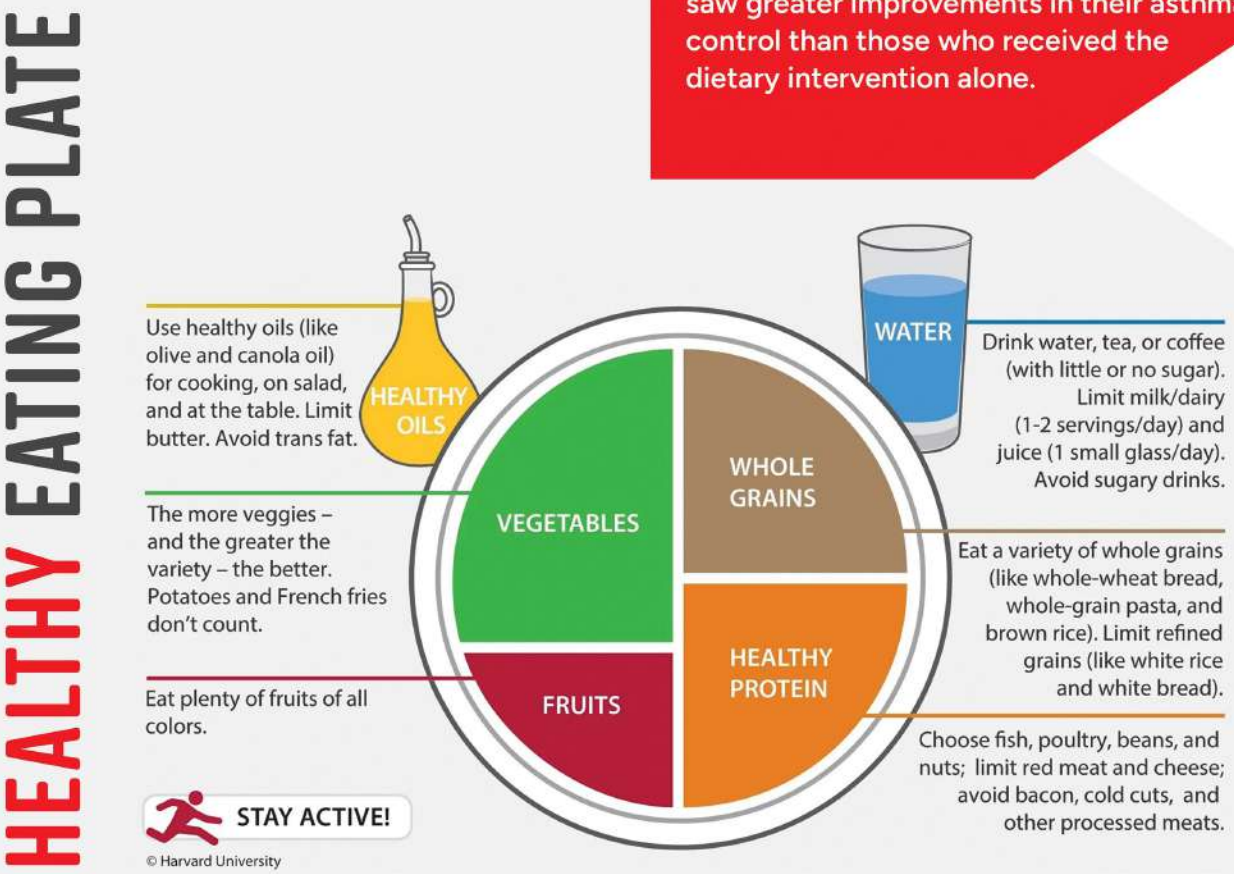


Weight Gain can Make Asthma Worse

However, the fact that not every obese asthmatic is equally affected by weight gain highlights the many challenges and complexities in understanding this association. The factors that determine susceptibility may not depend on being obese alone, but rather the interactions with other pheno-typical characteristics, such as age of asthma onset, gender and race.

Certainly, extra weight around the chest and abdomen might constrict the lungs and make it more difficult to breathe. It's probably a lot more complicated than that though. Fat tissue produces inflammatory substances that might affect the lungs.

Exercise likely contributes to better asthma control in people with obesity and asthma. When dietary intervention alone was compared to dietary intervention plus exercise, patients who underwent dietary intervention plus exercise saw greater improvements in their asthma control than those who received the dietary intervention alone.



References

- *https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4153179/*
- *https://www.cdc.gov/asthma/asthma_stats/asthma_obesity.htm*
- *https://thorax.bmj.com/content/56/2/133*
- *https://www.jacionline.org/article/S0091-6749(20)31167-2/fulltext*
- *https://www.hsps.harvard.edu.pk*
- *https://www.lung.org/blog/the-link-between-asthma-weight*
- *https://asthmarp.biomedcentral.com/articles/10.1186/s40733-015-0001-7*

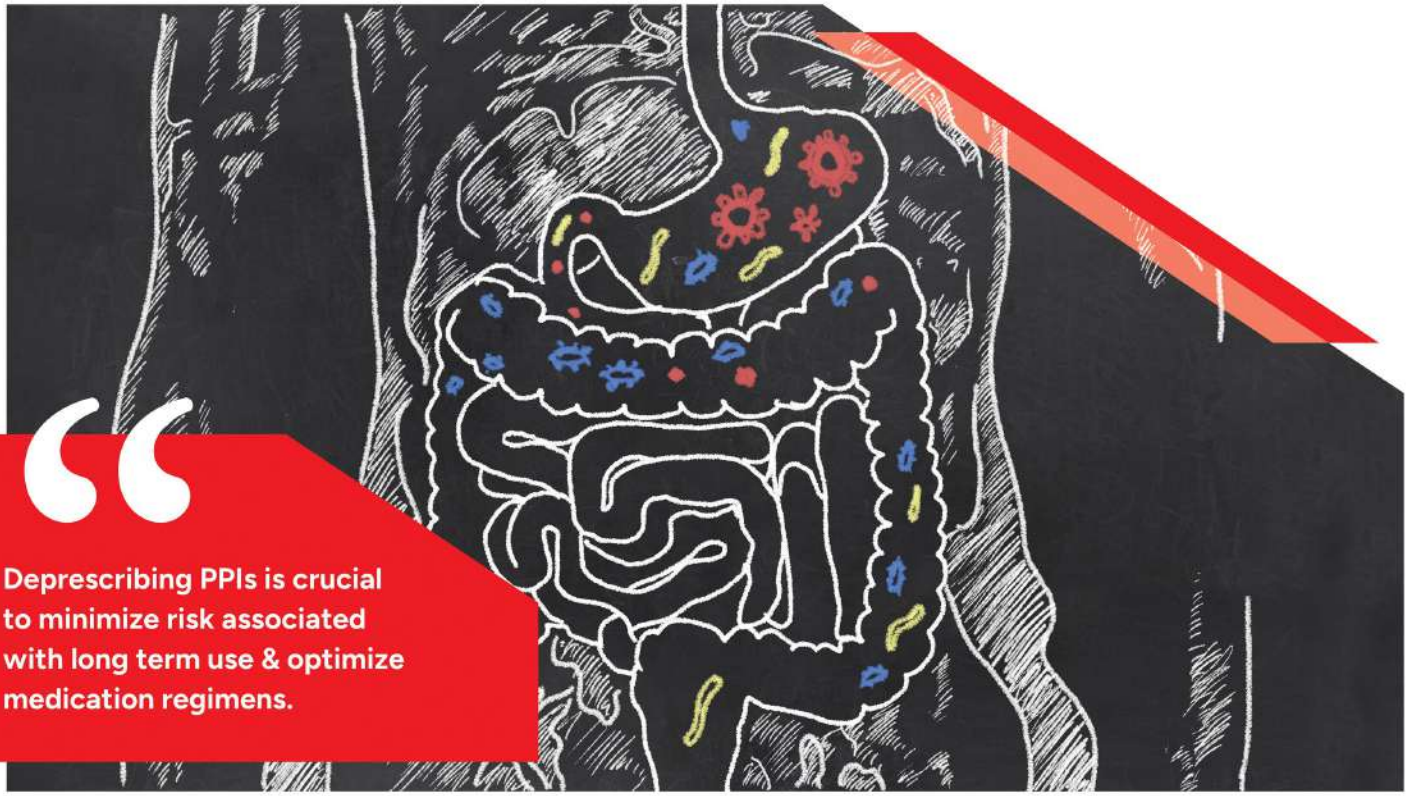
DEPRESCRIBING OF PROTON PUMP INHIBITORS (PPIS)

AUTHOR RABIA SAMI | TRAINEE PHARMACIST BATCH 2024-25

Polypharmacy poses a growing challenge in primary healthcare settings worldwide. Deprescribing is a controlled strategy to reduce or cease medications that could harm or lack efficacy, aiming to manage potential issues associated with polypharmacy and enhance patient well-being. This approach for deprescribing PPI typically involves several key steps to guide clinicians in making informed decisions tailored to individual patient requirements.

It includes assessment of indications for prescribing the PPI and to ensure that the patient still requires the medication for that indication and it's appropriate for continued use. Assessment of potential risks associated with prolonged PPI use, such as increased risk of infections (e.g., C. difficile), fractures, and nutrient deficiencies. Assessing the patient's individual risk factors & susceptibility to these adverse effects. Identify patients suitable for deprescribing based on their clinical status, comorbidities & medication history. Patients with certain conditions, such as Barrett's esophagus or severe esophagitis, may not be appropriate candidates for deprescribing.

Engage in shared decision-making with the patient to discuss the potential benefits and risks of deprescribing PPIs. Ensure that the patient understands the rationale behind the decision and is actively involved in the process. Select an appropriate deprescribing strategy based on the patient's clinical profile which may include abrupt discontinuation of PPI without dose reduction or transitioning to on-demand use, tapering regimen by reducing the dose of the PPI over time to minimize the risk of rebound acid hyper secretion and symptom recurrence. Taking the PPI only when needed to manage symptoms, rather than on a daily basis. Transitioning from PPI to histamine H2-receptor antagonists (H2RA's).



Deprescribing PPIs is crucial to minimize risk associated with long term use & optimize medication regimens.

References

- Haastrup, P. F., Thompson, W., Søndergaard, J., & Jarbøl, D. E. (2018). Side Effects of Long-Term Proton Pump Inhibitor Use: A Review. Basic & clinical pharmacology & toxicology, 123(2), 114–121. https://doi.org/10.1111/bcpt.13023

- By the 2019 American Geriatrics Society Beers Criteria® Update Expert Panel (2019). American Geriatrics Society 2019 Updated AGS Beers Criteria® for Potentially Inappropriate Medication Use in Older Adults. Journal of the American Geriatrics Society, 67(4), 674–694. https://doi.org/10.1111/jgs.15767

SIGNIFICANT INTERVENTION
(FIRST QUARTER 2024)

INTERVENTION 01

Well done!!! Muhammad Nehal Nadir (IPD Pharmacist) for making a very significant intervention on an Inpatient prescription with Levosulpiride and Furosemide.

DETAILS

Risk Rating X: Avoid combination

SUMMARY

Loop Diuretics may enhance the adverse/toxic effect of Levosulpiride.
The levosulpiride labeling cautions not to combine levosulpiride with drugs that can cause electrolyte abnormalities. Although neither specific drugs nor details regarding the potential interaction are described, loop diuretics have strong associations with a risk for hypokalemia, hypomagnesaemia and hypocalcaemia. The reason for the concern is likely the potential for levosulpiride to prolong the QT interval and the possible risk for precipitation of dangerous arrhythmias and electrolyte abnormalities such as hypokalemia and hypomagnesaemia likely increase such risks.

INTERVENTION 02

Well done!!! Areeba Nayab (Clinical Pharmacist) for making a very significant intervention on Atorvastatin while reviewing Inpatient profile who is Hepatitis C positive.

SUMMARY

Hepatotoxicity is more commonly associated with atorvastatin than pravastatin, rosuvastatin and simvastatin. Statins are associated with increased serum transaminases and hepatotoxicity. Asymptomatic transient or persistent increases both <3 or >3 times the ULN in serum transaminases may occur with all statins; the increase in ALT is typically greater than the increase in AST. Additionally, there are postmarketing reports of fatal and nonfatal hepatic failure, consisting of a cholestatic/mixed pattern (more common with atorvastatin) or hepatocellular pattern. Drug-induced autoimmune hepatitis has also been documented.

PUBLICATION
(FIRST QUARTER 2024)

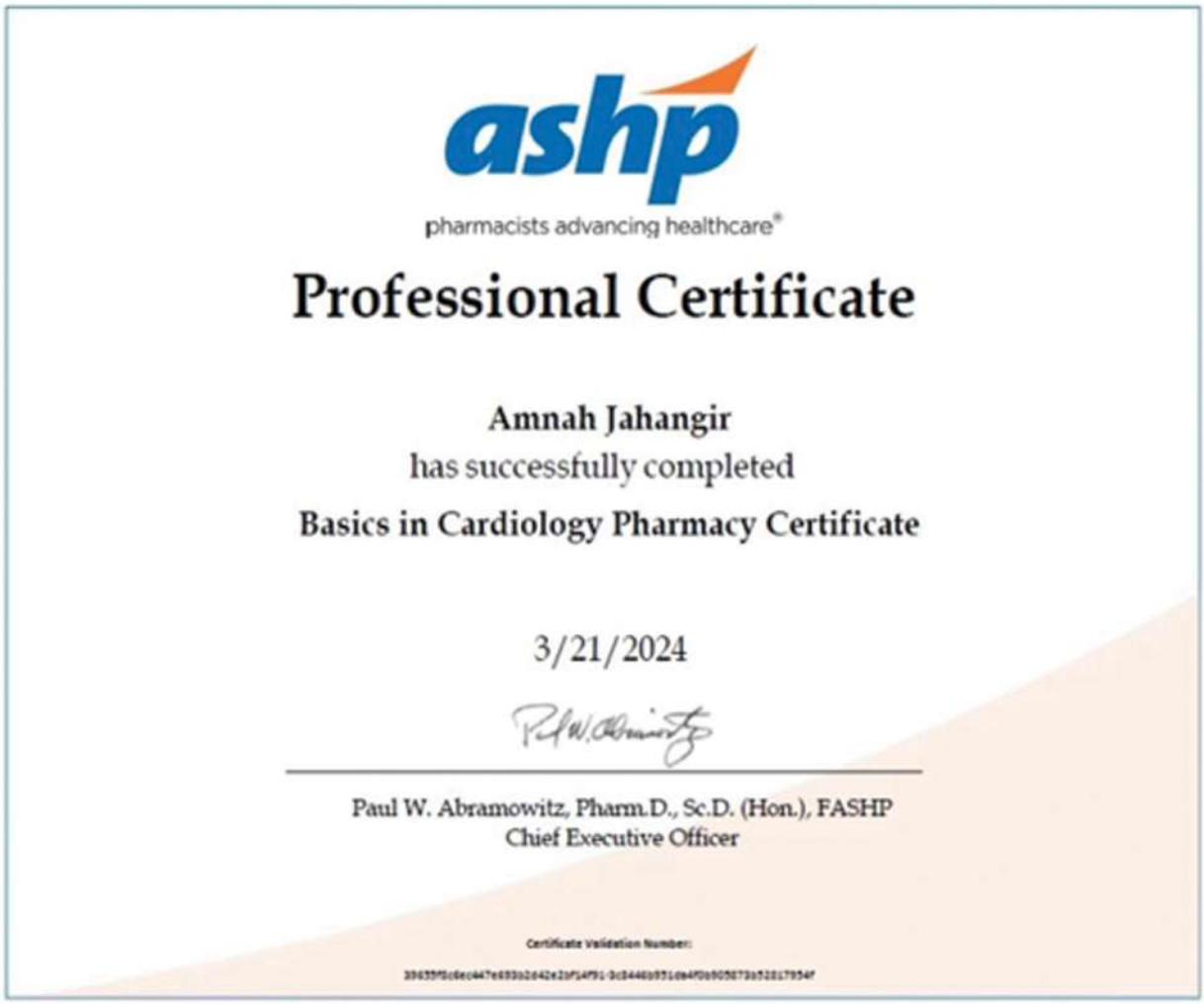
FORUM
National Antimicrobial Stewardship (AMS) Summit by Getz Pharma

AUTHOR
Rph Munazza Quraishi

TITLE OF ABSTRACT
Effectiveness of Antimicrobial Stewardship Program in reducing antimicrobial consumption in specialize cardiac care hospital

CERTIFICATIONS

Tabba heart institute is privileged that they have very well trained and certified professionals and resources. Recent years we have 1 certified pharmacist named Amnah Jahangir who cleared ASHP accredited **"Basics in cardiology pharmacy"** certificate.



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