

SAFETY FIRST WITH MEDICINES - ASK YOUR PHARMACIST :

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PROUD TO BE AN INDIAN PHARMACIST.

Objectives:

- Ψ To create awareness amongst the patients and general public regarding the **safe and rational use** of prescription | OTC and complementary medicines
- Ψ To build communications between the public and primary health care workers | Doctors |Nurses and **Pharmacists** and to **promote understanding of medicines and drug therapy** by the consumers.
- Ψ To **enhance the image of Pharmacists** as the **medication experts** and an integral part of the health care team, not just dispensers of medication [Role of Pharmacist in medication safety]

The Medicine Misuse:

- Ψ Using medicine in a way other than the one intended
- Ψ Giving your prescription medicine to someone else
- Ψ Taking too much or too little of a medicine
- Ψ Taking someone else's medicine
- Ψ Discontinuing use of medicine
- Ψ Taking medicine for a longer period of time than was prescribed
- Ψ Mixing medicine

Medication Errors can be fatal:

- Ψ 98,000 *killed* and 2,000,000 *injured* from hospital-caused drug errors & infections
Source: CDC 1998

- Ψ 1,000,000 “serious medication errors per year” ... “illegible handwriting, misplaced decimal points, and missed drug interactions and allergies.”
Source: *Wall Street Journal* / Institute of Medicine

Case History: The sad story of Josie King

To put a face to the statistics, here is a brief case of one family’s tragic experience with the epidemic of **pediatric patient safety errors**.

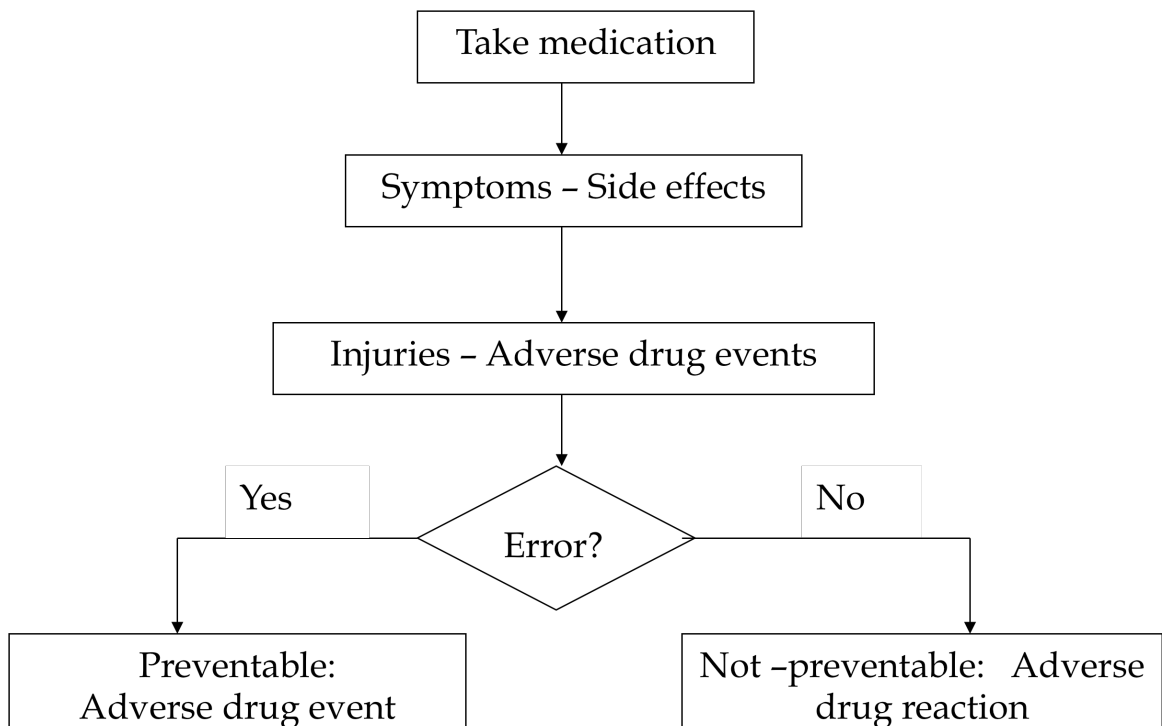
- Ψ At 18 months of age, Josie was hospitalized at the Johns Hopkins Children’s Center for 2nd degree burns from hot bath water.
2 weeks into successful recovery, she began showing signs of infection (vomiting, diarrhea, fever) with no conclusive source
- Ψ Central line was removed as potential source of infection; no other IV access started
- Ψ Mom noticed signs of intense thirst and lethargy, but was assured the vital signs and monitors indicated all systems “normal”
- Ψ Soon after, Josie suffered a cardiac arrest
- Ψ After a prolonged resuscitation process, she was resuscitated, but had suffered irreversible brain damage
- Ψ Was taken off life support 48 hours later and died
- Ψ Case Review Findings:
- Ψ Death was attributed to total breakdown of the healthcare system
- Ψ In Josie’s memory, the King family worked with the hospital to set up the [Josie King Pediatric Patient Safety Program](#)

Types of Medications:

- Prescription medications
 - Examples: blood pressure medications, blood thinners, antibiotics
- Over-the-Counter (OTC) or non-prescription medications
 - Examples: aspirin, acetaminophen, vitamins, cough medicine
- Dietary Supplements and Herbal remedies
 - Examples: calcium, vitamins, iron, glucosamine,
- Vaccines and immunizations

Some important definitions every Pharmacist must know:

- Side effect: an action of a drug other than the one for which it is being used.
- Adverse drug event (ADE): injury resulting from the medical use of a drug.
 - Preventable ADE: those that result from a medication error in prescribing, dispensing, administering, or monitoring
 - Nonpreventable ADE = Adverse drug reaction. An injury resulting from the medical use of a drug where no error is involved



Why Do We Need to Know About ADEs?

- Most common type of adverse event in hospital
- About 1/3 of drug-related hospitalizations and 1/2 drug-related deaths occur in people over age 60
- 3 to 10% of all hospital admissions for older patients are due to ADEs
- Reported incidence higher for older adults
 - 2 to 10% in younger adults
 - 20 to 25% in older adults

- In study of elderly veterans, 35% had at least one ADE in past year, and ¼ of those required visit to ER or a hospital admission

Why do we need to teach Indians about the safe use of medicine? Isn't it just common sense?

- Misuse of medicines is common
 - Acetaminophen overdose and liver failure
 - Use of adult formulations for children Eg. Most cough syrups in market are not tailored for Kids

How Do Drug Interactions Occur?

- An increase or decrease in any of the following:
 - Absorption
 - Distribution
 - Metabolism
 - Elimination

Drug Interactions Can Have Unintended Effects

- Decreasing the intended effects of the drug (drug is eliminated too fast) OR
- Increasing the negative effects of the drug (can lead to toxicity)

Drug-drug Interactions:

Patients taking:	Who ended up in hospital with:	Were:	To have taken this drug in past week:
Glyburide	Hypoglycemia	6 times more likely	Co-trimoxazole
Digoxin	Digoxin toxicity	12 times more likely	Clarithromycin
(ACE) inhibitor	Hyperkalemia	20 times more likely	Potassium-sparing diuretic

Drug Interaction Warnings:

<i>Antacids (drugs for relief of acid indigestion, heartburn, and/or sour stomach)</i>	<p>Ask a doctor or pharmacist before use if you are:</p> <ul style="list-style-type: none">▪ Allergic to milk or milk products if the product contains more than 5 grams lactose in a maximum daily dose▪ Taking a prescription drug <p>Ask a doctor before use if you have:</p> <ul style="list-style-type: none">▪ Kidney disease
<i>Antihistamines (drugs that temporarily relieve runny nose or reduce sneezing, itchy eyes or throat)</i>	<p>Ask a doctor or pharmacist before use if you are taking:</p> <ul style="list-style-type: none">▪ Sedatives or tranquilizers▪ A prescription drug for high blood pressure or depression <p>Ask a doctor before use if you have:</p> <ul style="list-style-type: none">▪ Glaucoma or difficulty in urination due to an enlarged prostate gland▪ Breathing problems, such as emphysema, chronic bronchitis, or asthma <p>When using this product:</p> <ul style="list-style-type: none">▪ Alcohol, sedatives, and tranquilizers may increase drowsiness▪ Avoid alcoholic beverages.

We Must Always Ask:

- Do the potential benefits outweigh the potential risks for this individual?
 - ▣ ACE Inhibitors are excellent for Diabetic Hypertensives –Side effect ~ Cough
 - ▣ Amlodipine, one of the best Calcium channel blocker –Side effects ~ Pedal Oedema

Age-Related Changes: Effects on Medications

- Total body water decreases → increased serum concentration of water-soluble drugs
- Change in body weight influences appropriate dosage and how long it stays in body:
 - ▣ More body fat → prolonged half-life
 - ▣ Less lean body mass → increased drug concentration
- Digestive system changes affect the speed of drugs getting into bloodstream

Drug Allergies – Anaphylaxis :

- Anaphylactic reaction: A severe allergic reaction that can be life-threatening!
- Rare responses but dangerous!
- Medical help is needed and should be sought immediately.

Anaphylaxis Symptoms:

- Itching
- Feeling warm
- Flushing
- Wheezing
- Dizziness or lightheadedness
- Swelling in the throat
- Irregular heartbeat
- Nausea and vomiting
- Diarrhea
- Abdominal cramping

Most Common Culprits:

- Penicillin-related antibiotics are the #1 most common – and penicillin allergies kill 400 people in the U.S. every year!
- Sulfa drugs
- Anti-seizure drugs
- Allopurinol (a drug for gout)
- Drugs for heart rhythm problems
- Local anesthetics

Common Symptoms From ADEs:

- Confusion
- Nausea
- Decreased balance

- Change in bowel pattern
- Sedation
- Orthostatic hypotension

Classifications of ADEs:

- Significant –falls without fractures, oversedation, rashes, hemorrhages not requiring transfusion or hospitalization without hypotension
- Serious – falls with fractures, hemorrhages requiring transfusions or hospitalization without hypotension
- Life-threatening – hemorrhage with associated hypotension, liver failure, hypoglycemic (low blood sugar) encephalopathy (brain disorder)
- Fatal

Taking Insulin:

- People with diabetes have a problem with **high blood sugar**, so they may have to take **insulin**. Too much insulin can cause **low blood sugar**. Try to give the person a fast-acting sugar such as glucose. If it gets too low, the person may die. **This is an emergency! Get help right away!**

Cholesterol-Lowering Drugs :

Can be very beneficial for a lot of people BUT...Can have dangerous side effects:

- Myositis, a severe muscle inflammation
- Can develop into Rhabdomyolysis [Breakdown of Skeletal Muscle] , which can be fatal

Dangers of OTC Pain Relievers :

- Acetaminophen – too much can lead to liver damage, especially if person takes 3+ alcoholic drinks a day
- NSAID – stomach bleeding. Increased risk:
 - Are over 60
 - Take prescription blood thinners (example, Coumadin)
 - Have previous stomach ulcers or other bleeding problems
 - Take steroid medications or other NSAIDs

“The Three Rs” –for Consumers of OTC medicines:

- Respect* that OTCs are serious medicine and must be taken with care.

- All medications have *Risks* as well as benefits.
- Take *Responsibility* for learning about how to take medications safely. If in any doubt, ask healthcare provider first.

Is this Safety ?



- Is he in a position to answer questions related to drug safety ?



Medications: Safety First!

- Check the potential side-effects so one can keep an eye out for them, including signs buildup of the drug to toxic levels (for instance jaundice).
- Many medicines may cause dizziness. Make sure to know how you react to a medicine before driving, operating machines, or doing anything else that could endanger oneself if not fully alert.
- Adhere to precautions about harmful drug interactions.
- Taking two drugs together can elevate side-effects, or have other unintended effects.

- Also, occasionally a medication will list precautions concerning certain foods. For instance, heart/blood pressure medications and the immunosuppressant cyclosporine warn patients not to take them with grapefruit juice.
- Do not use outdated medicines. The drug can break down into dangerous compounds.
- Swallow pills whole unless they are designated as "chewable".
- Do not crush tablets or remove the contents from capsules. To do so may raise toxicity.
- One should not share medication with family members for whom it has not been prescribed, even if they appear to have the same illness.

Medication: Take As Directed!

- The pharmacist should issue an information sheet detailing how to take the medicine correctly for any medication dispensed. If necessary, request these written instructions.
- Make sure to ask for an explanation of any terms or instructions that were not understood.
- It may help to bring along a family member or friend who can take down what the doctor says and ask for clarification, especially if one is feeling too ill to pay attention or ask questions.

For maximize absorption of the drug:

- Take the medicine with food if directed to do so (also aids in preventing irritation of the stomach), or take it on an empty stomach if that is what is advised.
- For instance, while some antibiotics (such as Macroclant) should be taken with food, tetracyclines and penicillins are best taken on an empty stomach.
- Even milk can keep a medicine from working effectively.
- Chewing tablets or emptying capsules may prevent the drug from working properly, by altering timing of absorption, thereby influencing blood levels.
- Shake liquid medicines to mix fully.
- Read and comply with the drug interactions; do not take the drug along with (or within the dictated time interval of) other medications that interfere with its effects.
- Taking two drugs together can either interfere with their action.
- Do not take outdated products, since drugs are apt to lose potency as they age.
- If the medicine has changed in color or taste, discard it.

- Store medicines correctly to preserve them optimally, or they may lose potency.
- Store away from heat and direct light.
- Do not store the capsule or tablet form of antibiotics in the medicine cabinet. (The moisture in bathrooms breaks down the medicine.)
- Check whether it should be refrigerated (not the same as frozen).
- Take medications on the recommended schedule, which is designed to maintain the proper blood level of the drug.
- Keep taking the medication for the full prescribed regimen, even if feeling better.
- Not finishing the entire prescription may jeopardize treatment.
- In the case of antibiotics, taking only a partial prescription can lead to harmful antibiotic resistance.

Reduction in adverse events:

- Using pharmacists for medication reconciliation at admission has produced a **98%** drop in related adverse events.
- Another study found that discharge counseling by pharmacists cut preventable post-discharge adverse events from **10% to 1%**.

Your Pharmacist: A Partner in Drug Safety

Pharmacists are medication experts, checking each prescription to help ensure that:

- The information provided by the prescriber is complete.
- The new medication will not interact with anything else they know you are taking.
- The medication and dosage are safe with any medical conditions that they are aware you may have.
- You understand how to take and store the medication properly.
- Warn you of possible harmful drug interactions or allergies.
- Tell you about potential side effects.
- Advise you on foods, drinks, or activities to avoid while taking a certain medication, or on what to do if you miss a dose.

It would be good for Indian healthcare if every Pharmacist read, understand and practice the following Pharmacist's Oath.

PHARMACIST'S OATH

- I Swear by the code of Ethics of Pharmacy Council of India in relation to the community and shall act as an integral part of health care team.
- I shall uphold the laws and standards governing my profession.
- I shall strive to perfect and enlarge my knowledge to contribute to the advancement of pharmacy and public health.
- I shall follow the system, which I consider best for pharmaceutical care and counseling of patients.
- I shall Endeavour to discover and manufacture drugs of quality to alleviate sufferings of humanity.
- I shall hold in confidence the knowledge gained about the patients in connection with professional practice and never divulge unless compelled to do so by the law.
- I shall associate with organizations having their objectives for betterment of the profession of Pharmacy and make contribution to carry out the work of those organizations.
- While I continue to keep this Oath in violated, may it be granted to me to enjoy life and the practice of pharmacy respected by all, at all times!
- Should I trespass and violate this oath, may the reverse be my lot!

For any queries mail to; hello@sivakumarbellan.com

Thanks for your patient reading.