PHARMACOVIGILANCE

Dr Apurv B Patel

2nd year resident

Department of Pharmacology

What is Pharmacovigilance ?

- Pharmakon (Greek) = Medicinal Substances
- Vigilia (Latin) = To keep watch

WHO Definition:

“ The science & activities relating to the detection, assessment, understanding & prevention of adverse effects or any other drug related problems.”

Key Steps:

1. **Detection**: Spotting and reporting ADRs.
2. **Assessment**: Analyzing the responsible drugs, their severity, and if the ADRs could be avoided.
3. **Understanding**: Learning how and why the ADRs happen.
4. **Prevention**: Using this knowledge to stop ADRs in the future.

Adverse event (AE):

- Any untoward medical occurrence that may present during treatment with a pharmaceutical product but which does **not** necessarily **have a causal relationship** with this treatment.

Adverse drug reaction (ADR):

- A noxious and unintended response that occurs at **doses** typically used in humans for disease **prevention**, **diagnosis**, **therapy** or the **modification** of physiological functions.

Classification of Adverse Drug Reaction:

Type	Feature	Example	Management
A(Dose related)	•Predictable •Related to pharmacological action •Low mortality	•Hypoglycemia by insulin	•Reduce dose •Withhold the drug •Symptomatic management
B(Non dose related)	•Unpredictable •Not related to pharmacological action •High mortality	•Hepatitis by halothane	•Withhold the drug •Avoid in future
C(Dose and Time related)	•Uncommon •Related to cumulative dose	•Hypothalamic pitutary adrenal axis suppression by corticosteroid	•Drug holiday •Withhold the drug
D(Time related)	•Uncommon •Usually dose related •Becomes apparent sometimes after use of drug	•Corneal opacities after thioridazine	•Often difficult to manage

Type	Feature	Example	Management
E(Withdrawal)	•Uncommon •Occurs after the withdrawal of drug	•Opiate withdrawal syndrome	•Reintroduce or •Withdraw slowly
F(Unexpected failure of therapy)	•Common •Often caused by drug interaction	•Oral contraceptive when used with Enzyme inducer	•Increase dosage

Medication Error

- Medication errors are mistakes occurring at any stage of **prescribing**, **transcribing**, **dispensing**, **administering**, **adhering** to, or **monitoring** drugs.

❖ **Examples:**

- Misreading or misinterpreting a prescription.
- Incorrect transcription of medical orders.

Teratogenicity

- A teratogen is any substance that can cause **developmental abnormalities** in a **fetus** during pregnancy.
- Teratogenicity is a serious adverse drug reaction.
- Prescribing these drugs during pregnancy should be avoided unless absolutely necessary.

❖ **Examples of Teratogens:**

- Thalidomide, Isotretinoin, Ergometrine, Phenytoin, Sodium-valproate,

High Alert Medications (HAMs)

- High Alert Medications are drugs with a higher risk of causing significant harm if used incorrectly.
- Small dosage changes or errors in administration can lead to serious or even life-threatening events.
- These medications require extra care during prescribing, dispensing, and administering.

❖ **Examples of High Alert Medications:**

- **Potassium Chloride**
  - If given undiluted or as an IV bolus, it can cause cardiac arrest.
  - Always dilute and administer via infusion.

- **Adrenaline**
  - If given concentrated or intravenously, it can cause fatal ventricular arrhythmias.

- **Neuromuscular Blocking Agents (e.g., Succinylcholine)**
  - Must be labeled as "Paralyzing Agent" to avoid accidental use, which can cause respiratory arrest.

- **Anticoagulants**
  - High risk of severe bleeding or fatal events if not managed properly.

- By recognizing and handling HAMs with caution, healthcare providers can minimize risks and enhance patient safety.

PHARMACOVIGILANCE PROGRAMME OF INDIA

- **2004-2008** : The National Pharmacovigilance Program (NPP) was launched by India's Central Health Minister in New Delhi, under the guidance of the Ministry of Health and Family Welfare and coordinated by the Central Drugs Standard Control Organization (CDSCO).

- The program was initiated with two zonal centers:

1) The South-West Zonal Centre at KEM, Mumbai

2) The North-East Zonal Centre at AIIMS, New Delhi.

- **July 2010** :The Pharmacovigilance Programme of India (PvPI) was initiated with AIIMS, New Delhi serving as the National Coordination Centre (NCC) for monitoring Adverse Drug Reactions (ADRs) in the country.

- On **15th April 2011**, the **NCC was shifted from AIIMS**, New Delhi, to the **Indian Pharmacopoeia Commission (IPC)** in Ghaziabad**.**

Objectives

1. Build a database of Adverse Drug Reactions (ADRs) for the Indian population.
2. Raise awareness about monitoring and reporting ADRs.
3. Ensure drug safety in the Indian market.
4. Promote a culture of ADR reporting among healthcare professionals and the public.
5. Establish a strong, sustainable ADR monitoring system in India.

Goals of Pharmacovigilance

1. Ensure safe and effective use of medicines.
2. Assess and share information about drug risks and benefits.
3. Educate and inform patients about drug safety.
4. Improve patient's quality of life.
5. Build patient's trust in healthcare providers.
6. Reduce healthcare costs.

Methods in Pharmacovigilance

1. **Spontaneous Reporting**: Healthcare professionals or patients voluntarily report adverse drug reactions (ADRs).
2. **Prescription Event Monitoring**: Tracks ADRs by monitoring prescriptions and events after drug use.
3. **Case Control Surveillance**: Compares patients with ADRs (cases) to those without (controls).
4. **Record Linkage**: Uses large databases and data mining to detect potential ADRs.

Why Report ADRs?

- Reporting ADRs is essential because:

1. **Incomplete Pre-Market Data**: Clinical trials involve limited patients and do not replicate real-world conditions. Rare or long-term ADRs might not appear.

2. **Special Populations**: Effects on children, elderly, pregnant women, or organ-specific toxicity often emerge post-marketing.

3. **Long-Term Safety**: ADRs may arise after prolonged use or in uncontrolled real-world settings.

What to Report?

- **Serious Adverse Drug Reactions (ADRs)** that result in:
  - Death
  - Life-threatening situations
  - Hospitalization (new or extended)
  - Disability (lasting or permanent)
  - Birth defects (congenital anomalies)

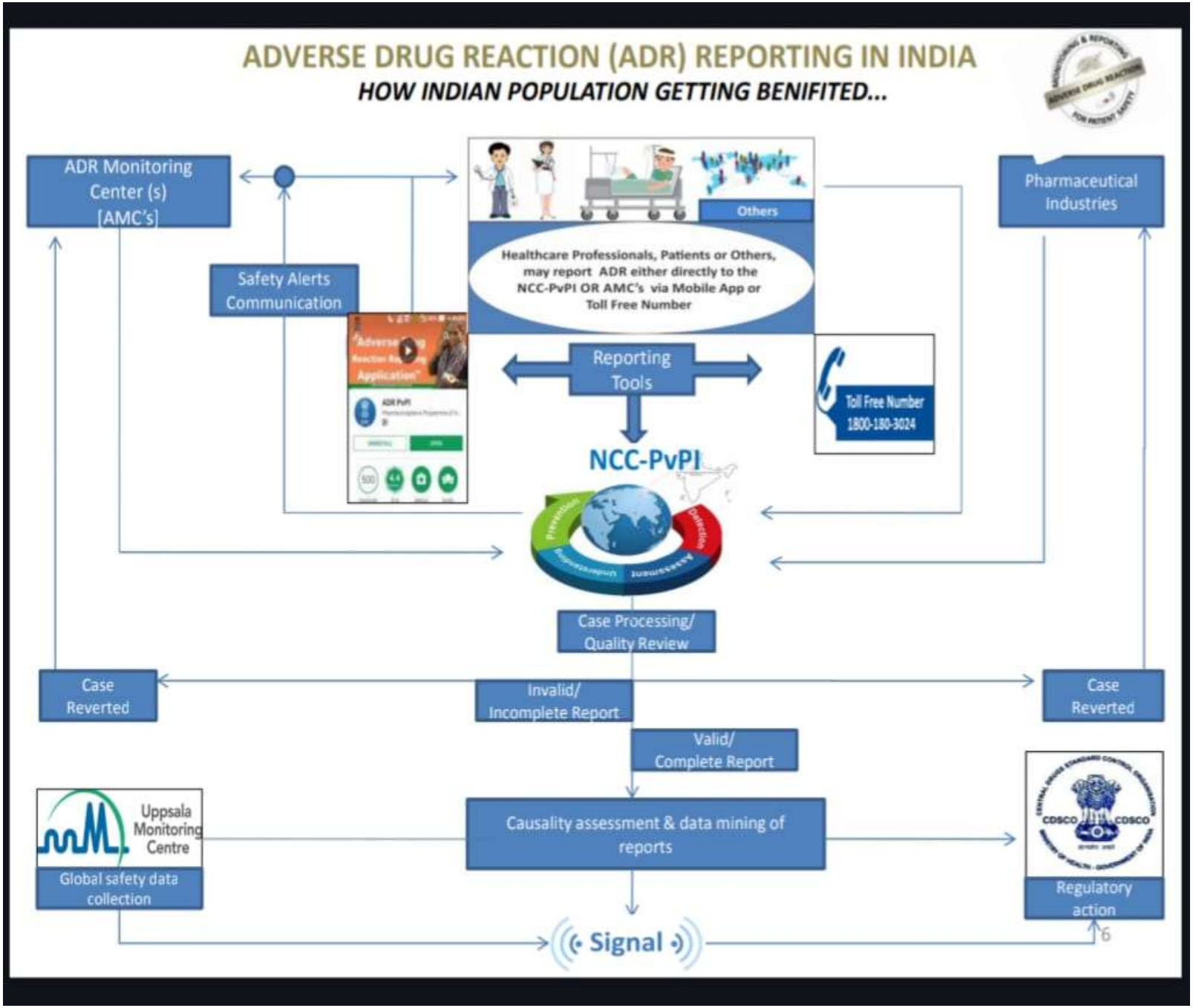
- **Non-Serious ADRs**, whether they are:
  - Known or unknown
  - Common or rare
  - Related to medicines, vaccines, or herbal products

Who Can Report?

- **Healthcare Professionals**:
  - Doctors, interns, dentists, pharmacists, nurses, and healthcare workers.

- **Patients/Consumers**:
  - Can report ADRs using the “ADR Reporting Form for Consumers," available in local languages.

- Everyone is encouraged to report ADRs to improve drug safety and protect patients.


ADVERSE DRUG REACTION (ADR) REPORTING IN INDIA
HOW INDIAN POPULATION GETTING BENIFITED...
ADR Monitoring Center (s) [AMC's]
Safety Alerts Communication
Others
Healthcare Professionals, Patients or Others, may report ADR either directly to the NCC-PvPI OR AMC's via Mobile App or Toll Free Number
Pharmaceutical Industries
Reporting Tools
Toll Free Number 1800-180-3024
NCC-PvPI
Case Processing/ Quality Review
Case Reverted
Invalid/ Incomplete Report
Case Reverted
Valid/ Complete Report
Uppsala Monitoring Centre
Global safety data collection
Causality assessment & data mining of reports
CDSCO
Regulatory action
Signal

Connect & Contact us

ADR Reporting Form

- An ADR Reporting Form is used to document and notify any suspected adverse drug reactions (ADRs).

Key Details to Include:

- **Patient Information**:
  - Initials, age, gender, weight.
- **Description of ADR**:
  - Nature, severity, location, start date, outcome, and any test results.

Initial Case ❑	Follow-up Case ❑

A. PATIENT INFORMATION *

1. Patient Initials:	**2.** Age or date of birth:
3. Gender: M ❑ F ❑ Other ❑	**4.**Weight (in Kg.)

B. SUSPECTED ADVERSE REACTION *

5. Event / Reaction start date (dd/mm/yyyy)	
6. Event / Reaction stop date (dd/mm/yyyy)	

7. Describe Event/Reaction management with details , if any

- **Suspected Drug**:
  - Name, manufacturer, dose, route, start/stop dates, and reason for use.
- **Other Drugs Used**:
  - Include prescription, self-medication, and herbal products.
- **Medical History**:
  - Past illnesses, allergies, or conditions related to the reaction.
- **Reporter’s Details**:
  - Name, contact information (address, email, phone).

C. SUSPECTED MEDICATION(S) *

S. No.	8. Name (Brand/ Generic)	Manufacturer (if known)	Batch No. / Lot No.	Expiry Date (if known)	Dose	Route	Frequency	Therapy Dates		Indication	Causality Assessment
								Date Started	Date Stopped		
i											
ii											
iii											
iv#											

9. Action taken after reaction (*please tick*)

S. No. as per C	Drug withdrawn	Dose increased	Dose reduced	Dose not changed	Not applicable	Unknown
i						
ii						
iii						
iv						

10. Reaction reappeared after reintroduction of suspected medication (*please tick*)

Yes	No	Effect unknown	Dose (if re-introduced)

11. Concomitant medical product including self-medication and herbal remedies with therapy dates (Exclude those used to treat reaction)

S. No.	Name (Brand / Generic)	Dose	Route	Frequency (OD, BD, etc.)	Therapy Dates		Indication
					Date Started	Date Stopped	
i							
ii							
iii#							

Additional Information :

D. REPORTER DETAILS *

16. Name & Address : _____

_____

Pin : _____ Email : _____

Contact No- : _____

Occupation : _____ Signature : _____

17. Date of this report (dd/mm/yyyy) :

Signature and Name of Receiving Personnel :

Confidentiality : The patient's identity is held in strict confidence and protected to the fullest extent. Submission of a report does not constitute an admission that medical personnel or manufacturer or the product caused or contributed to the reaction. Submission of an ADR report does not have any legal implication on the reporter.

Use separate page for more information

* Mandatory Fields for suspected ADR Reporting Form

How to Fill an ADR Reporting Form

- **Patient Information**:
  - Record basic details for identification (initials, age, gender, weight).

- **Adverse Reaction Details**:
  - Describe the reaction, including its start and recovery dates.
  - Note severity and any investigations performed.

- **Suspected Medications**:
  - List the names of drugs thought to cause the ADR.
  - Include dosage, route, frequency, duration, and purpose.

- **Intervention Details**:
  - Record any actions taken by the doctor after detecting the ADR.

- **Other Medications**:
  - Document all additional drugs, including herbal medicines, with details.

- **Lab Data**:
  - Note relevant test results confirming the ADR, including dates.

- **Medical and Drug History**:
  - Include past drug use, allergies, and previous medical conditions.

- **Seriousness of the ADR**:

  - Specify if the ADR caused:

    - **Death** (mention date).
    - **Life-threatening event**.
    - **Hospitalization** (new or extended).

- **Types of Reporting Forms**

- **White Form**: Used in India (IPC, NCC, Ghaziabad).
- **Yellow Form**: Used in the United Kingdom.
- **MedWatch**: Used in the United States (US FDA).

Outcomes to Note (Point No. 15)

1. **Fatal**: If the patient died due to the ADR.
2. **Continuing**: If the reaction remains the same.
3. **Recovering**: If the patient is improving but not fully recovered.
4. **Recovered**: If the patient has fully recovered.
5. **Unknown**: If the outcome is not known.
6. **Other**: If it doesn’t fit any of the above categories.

FOR AMC / NCC USE ONLY

Reg. No. / IPD No. / OPD No. / CR No. :

AMC Report No. :

Worldwide Unique No. :

12. Relevant investigations with dates :

13. Relevant medical / medication history (e.g. allergies, pregnancy, addiction, hepatic, renal dysfunction etc.)

14. Seriousness of the reaction : No❑ if Yes ❑ (*please tick anyone*)

❑Death (dd/mm/yyyy) ❑Congenital-anomaly

❑Life threatening ❑Disability

❑Hospitalization-Initial/Prolonged ❑Other Medically important

15. Outcome:

❑Recovered ❑Recovering ❑Not Recovered

❑Fatal ❑Recovered with sequelae ❑Unknown

D. REPORTER DETAILS *

16. Name & Address : _____

Pin : _____ Email : _____

Contact No· : _____

Occupation : _____ Signature : _____

17. Date of this report (dd/mm/yyyy) :

- Reporter Information: To check validity of the report. (Point No. 16)

- Causality assessment: Refer WHO causality assessment scale.

Causality Assessment of ADRs

- Causality assessment helps determine if a drug caused the adverse reaction based on:

1. **Timing**: The reaction occurred after taking the drug.
2. **Pharmacology**: Known effects of the drug match the reaction.
3. **Medical Plausibility**: Signs, symptoms, lab tests, or findings support the link.
4. **Other Causes**: Other potential causes are ruled out.

W.H.O. Categories for ADR Causality

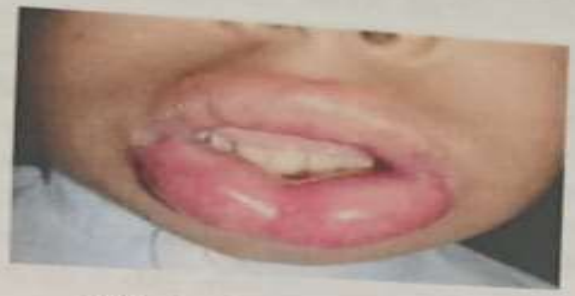
1. **Definite/Certain**: Strong evidence linking the drug to the reaction.
2. **Probable/Likely**: Likely caused by the drug but not fully confirmed.
3. **Possible**: Could be caused by the drug, but other factors are also likely.
4. **Unlikely**: Unrelated to the drug.
5. **Conditional/Unclassified**: Incomplete information.
6. **Unassessable/Unclassified**: Cannot be assessed due to missing data.

Possible Interventions for ADRs

- If an ADR is suspected, the healthcare provider may:

- ✓ **Stop or Reduce the Dose** (De-challenge).
- ✓ **Switch to Another Medication**.
- ✓ **Continue the Drug with Modifications**: Adjust dosage or timing.
- ✓ **Manage the ADR**: Use another medication to treat the reaction.
- ✓ **Identify Drug Interactions**: Check for interactions with other medicines.
- ✓ **Advise the Patient**: Weigh risks vs. benefits before continuing.

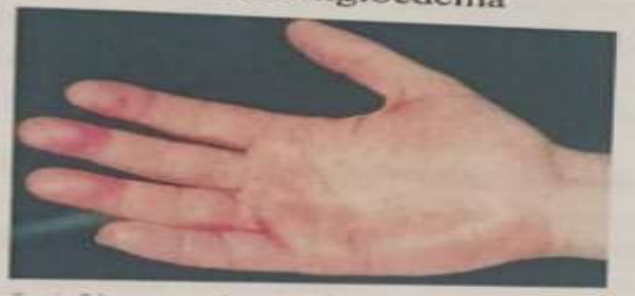
5.1: Alopecia



5.2: Angioedema

5.3: Cleft lip

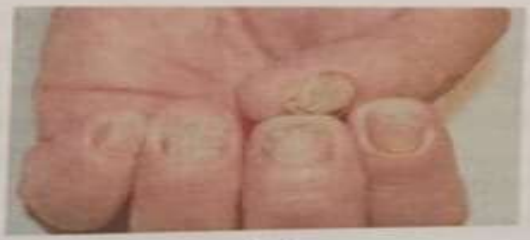
5.4: Congenital anomaly
Phocomelia



5.5: Erythema

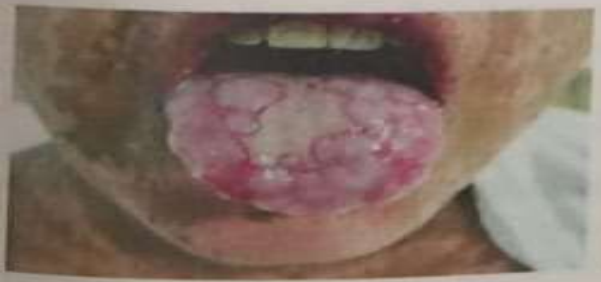
5.6: Hirsutism

5.7: Gingival hyperplasia



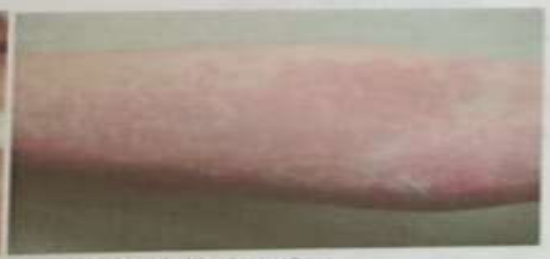
5.8: Nail bed changes

5.9: Retinopathy



.10: Steven Johnson Syndrome

5.11: Toxic epidermal necrolysis



5.11: Urticaria


Thank You!