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Recent Development of Pharmacovigilance System in India

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Abstract

Recently India has developing in many aspects such as monitoring and reporting of adverse drug reaction. Pharmacovigilance programme introduced in India for better pharmaceutical care to improve patient safety. Creating awareness is crucial to enhance for better clinical practice. Numerous of the adverse drug reactions were reported like Metformin, Olanzapine etc. Healthcare professionals, other healthcare professionals and non-healthcare professionals are attentively participating in monitoring and reporting of ADRs via enhancing rational use of medications and genuine treatment pattern. These consequences decrease the failure of treatment and progress in the medication adherence.

Keywords: Adverse drug reaction; PvPI; IPC; PCI; CDSCO; ICSR

Introduction

India has a vast genetic and ethnic variability with different disease prevalence. Numerous Pharmaceutical products are available in the market to prevent or control the several disease conditions. Currently, new drugs are being introduced into the market like vaccines, high tech pharma products. Drugs which were commercial and continue to be available in the Indian market were banned for their proven adverse effects. Even some medications are still using due to the benefits outweighs its risks**.** The burden of adverse drug reactions in the global scenario is high and it results in morbidity, mortality and extra-cost to the public [1].

Adverse drug reaction simplify that any causal relationship between the drug and the event is suspected/this implies that there is a suspected relatedness to the administered drug. Off-label use, OTC drug use (India ranks 11th position in the global for OTC drug use), drug misuse, drug overuse, medication error includes prescribing error, dispensing error, administration error and drug abuse are also tend to cause adverse drug reaction [2].

Types of Adverse Drug Reaction

Type-A (Augmented): Commonest (up to 70%), Dose dependent, severity increases with the dose. It can be preventable in the most part by slow administration and lower the dose. Predictable by the pharmacological mechanisms, e.g., Insulin induces hypoglycemia, hypotension by beta-blockers, and NSAIDs induced gastric ulcers.

Type-B (Bizarre): serious, rare, unpredictable, idiosyncratic, genetically determined, mechanisms are unknown, unrelated to the dose and it could be fatal; e.g., aplastic anaemia caused by Chloramphenicol, Anaesthetics induced neuroleptic malignant syndrome and antipsychotics and hepatitis caused by halothane.

Type-C (Continuous drug use): Occurs as a result of continuous drug use, maybe irreversible, unexpected, unpredictable, e.g., tardive dyskinesias due to Antipsychotics, Anticholinergic medications dementia.

Type-D (Delayed): Delayed occurrence of ADRs, even after the cessation of treatment, e.g., ophthalmopathy after Chloroquine, corneal opacities after Thioridazine and pulmonary/peritoneal fibrosis after Methyserzide.

Type-E (End of dose): Withdrawal reactions e.g., hypertension and restlessness caused by Opiate abstainer, seizures on alcohol or benzodiazepines withdrawal, Alpha-blockers (Prazosin) or ACE inhibitors induced hypotension.

Type-F (Failure of therapy): Results from the inadequate treatment e.g., accelerated hypertension because of inefficient control [3].

Adverse drug reactions are so high due to the high number of drugs prescribed (polypharmacy), the ever increasing number of new drugs in the market, irrational use of drugs and the lacking of a formal system for monitoring adverse drug reactions.

Adverse drug reaction could be serious or non-serious. Serious adverse drug reaction includes death, life-threatening, patient hospitalization or prolongation of existing hospitalization, significant disability and congenital anomaly or birth defect. Monitoring of medicines is an integral part of clinical practice [4].

Challenges of Adverse Drug Reaction Reporting System in India

Inadequate knowledge regarding the drugs and process of adverse drug reaction includes what to report, how to report and where to report, inability link to the ADR with the drug, confident, communication skills, awareness about PV programme, time, connectivity, financial incentives, legal aspects, apprehension that the serious ADRs are already documented when a drug is introduced in to the market, that a single report would make no difference and ignorance [5,6].

Process for Reporting Adverse Drug Reaction in India

Use of multi-modal practices, poor patient compliance are the factor also requires ADRs monitoring and reporting. Pharmacovigilance is becoming increasingly important due to the potentially harmful effects of drugs on patient's health. The awareness regarding ADRs monitoring and reporting is steadily increasing in India [7].

Aim of the Pharmacovigilance includes detection, monitoring and

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reporting of adverse drug reaction includes severe either non severe and expected or unexpected mainly for the post- marketing drugs, it is essential to identify the risk factor which leads to development of adverse drug reactions. Types of adverse drug reactions are assisting to detecting the incidence and prevalence of adverse drug reactions or by using WHO scale/Naranjo scale.

Currently India has been planning to estimate the pharmacoeconomic data related to ADRs, example., what extent ADRs are related to cause hospital admissions, prolonged hospital stay, total cost (direct or indirect) involved in the management of ADRs and cost that is incurred by the hospital and the nation also, total extent of morbidity and mortality due to adverse drug reactions.

Later do the systematic analysis to obtain data and these are circulate to the health agencies, regulatory authorities, pharmaceutical companies, physicians, Pharmacist and other health care professionals (e.g. Nurses, dentists, and paramedics, etc.), so that the safety of drugs and modification of the prescribing patterns can be ensured.

Government of India initiated a Pharmacovigilance Programme of India (PvPI) for Assuring Drug Safety, under Central Drugs Standard Control Organisation (CDSCO). New Delhi has initiated a countrywide pharmacovigilance programme under the agency of Ministry of Health & Family Welfare. Government of India also maintain liaison with international Pharmacovigilance regulatory authority and review Periodic safety unit report (PSUR) of pharmaceutical analysis.

The PvPI programme is coordinated by the Indian Pharmacopoeia Commission (IPC) which is located at Ghaziabad to publish official documents, by adding new and updating existing monographs in the form of Indian Pharmacopoeia which results in improving quality of medicine.

In 2008 Pharmacy council of India (PCI) introduced Doctor of Pharmacy (Pharm D) programme, Clinical pharmacists are mainly determined in clinical oriented activities such as drug interaction monitoring, adverse drug monitoring and reporting, prescription analysis/ auditing and patient counseling for better pharmaceutical care by reducing therapeutic failure results in patient safety. In India one hundred and seventy nine adverse drug reactions (ADRs) monitoring centers were reported ADRs to NCC operating under the supervision of Steering Committee, which is under PvPI. Recommend procedures and guidelines for regulatory interventions are taken by India. It builds capacity to monitoring, surveillance collaboration with national health programme and WHO international drug monitoring programme. Healthcare professionals or patient can directly report to regional ADR monitoring centre later collected by IPC. Presently, PvPI established seven new district-level AMCs in eastern Uttar Pradesh, all aimed at generating omnibus data on safety of medicine at the grassroot level [8].

Recent studies shows in Raipur, India during one year total 232 individual case safety reports were (ICSRs) reported to Vigiflow 63.79% was found to be non-serious and 36.21% was serious [3]. Since 1998 PCI also the member of Uppsala monitoring centre. CDSCO is the regulatory bodies in India which record all forms of ADRs has been from the IPC. Process of ADRs in India via PvPI is shows in the Figure 1.

Hemovigilance launched in 10/Dec/2012 as an integral part of PvPI to track ADR/events and incidence associated with blood transfusion and blood product administration. It also refers to identifying trend and recommends best practice. Intervention requires improving patient care and safety while reducing the overall cost of health care system [9].

Minimum valid criteria to ADR report includes, patient identifier, e.g., initials, age or date of birth, gender, reporter details (name, profession, institution, contact details), name of suspected medicinal product (s) include drug name (brand or generic name), manufacturer, batch no/lot no, expiry date, dose used, route used, frequency, dates of therapy started and stopped, and indication of use, report de-

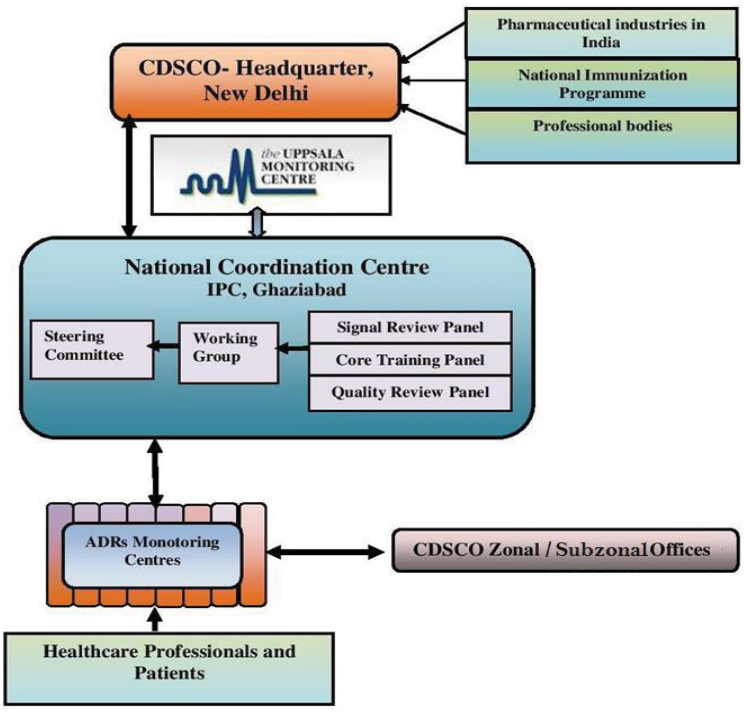

Figure 1: Flow of ADR reporting in India.

challenge (drug withdrawn) and re-challenge (re administered of drug after adverse drug reaction) and details of the suspected adverse drug reaction.

Report form also contain concomitant medication (drugs which are used or given at the same time as suspected drug), outcome of the events (recovered, not recovered or recovering). Doctors (Interns, House officers), nurses, pharmacist and residents also need to be more actively involved in reporting ADRs. all types of suspected ADRs irrespective of whether they are known or unknown, serious or non serious and solicited (clinical study) or unsolicited (spontaneous). In addition, the reporting ADRs due to lacking of efficacy, overdose, antibiotic resistance and suspected pharmaceutical defects (spurious and adulterated drugs) is recommended.

All serious death and life threatened, birth defect should be reported within seven calendar days, serious spontaneous cases within 15 calendar days and non serious spontaneous cases should be reported within 90 days [10]. Suspected adverse drug reaction reporting form is shown in Figure 2. It is available in the official website of Indian pharmacopeia commission (www.ipc.gov.in). It is used to report adverse drug reactions which have been appeared in community. Moreover, CDSCO (www.cdsco.nic.in) website available it makes easy less time consume to the reporter and this form can be directly mail to pvpi@ipcindia.net or ipclab@vsnl.net. Reporter can further call to toll-free helpline (1800-180-3024) from 9:00 am to 5:30 pm in weekdays [11].

NCC-PvPI collaborates with WHO-UMC in order to participate in drug international monitoring programme. Software such as Vigiflow (web based ICSR management system specially designed for use by national centre in the WHO programme for international drug monitoring), Vigibase (WHO global ICSR database consists report of adverse drug reaction received from member of countries since 1968), Vigimine (launched in 2008, new development in vigisearch compare statistical data), Vigimed (part of UMC collaboration portal), Vigisearch (powerful search tools that provide access to all case reports in Vigibase), Vigilyze (powerful search and analyze tools that provided access to more than 8 million ICSRs in Vigibase) are provided by WHO-UMC to achieve the objective of PvPI in a more efficient way. India has become the first country to report over one lack ICSRs to Vigiflow. Currently, India is the 7th largest contributor to the UMC's international drug safety database (Vigibase) [12]. PvPI conducted comparative study which was mainly related to the risk of serious reaction to the patient induced due to the drugs. It has taken steps to improve the safety of the medication by database drugs which are causing serious hazard to the patients [13]. Current comparative status of Global drug alerts with PvPI database for drugs is shown in Table 1 [14,15].

Version-1.2

SUSPECTED ADVERSE DRUG REACTION REPORTING FORM

For VOLUNTARY reporting of Adverse Drug Reactions by Healthcare Professionals

INDIAN PHARMACOPOEIA COMMISSION
(National Coordination Centre-Pharmacovigilance Programme of India)
Ministry of Health & Family Welfare, Government of India
Sector-23, Raj Nagar, Ghaziabad-201002

FOR AMC/NCC USE ONLY
AMC Report No. :
Worldwide Unique No. :

Report Type ☐ Initial ☐ Follow up

A. PATIENT INFORMATION
1. Patient Initials _____
2. Age at time of Event or Date of Birth _____
3. M ☐ F ☐ Other ☐
4. Weight_____Kgs

B. SUSPECTED ADVERSE REACTION
5. Date of reaction started (dd/mm/yyyy)
6. Date of recovery (dd/mm/yyyy)
7. Describe reaction or problem

12. Relevant tests/ laboratory data with dates
13. Relevant medical/ medication history (e.g. allergies, race, pregnancy, smoking, alcohol use, hepatic/renal dysfunction etc.)
14. Seriousness of the reaction: No ☐ if Yes ☐ (please tick anyone)
☐ Death (dd/mm/yyyy) ☐ Congenital-anomaly
☐ Life threatening ☐ Required intervention to Prevent permanent impairment/damage
☐ Hospitalization/Prolonged
☐ Disability ☐ Other (specify)
15. Outcomes
☐ Recovered ☐ Recovering ☐ Not recovered
☐ Fatal ☐ Recovered with sequelae ☐ Unknown

C. SUSPECTED MEDICATION(S)

S.No	8. Name (Brand/Generic)	Manufacturer (if known)	Batch No. / Lot No.	Exp. Date (if known)	Dose used	Route used	Frequency (OD, BD etc.)	Therapy dates: Date started	Therapy dates: Date stopped	Indication	Causality Assessment
i											
ii											
iii											
iv											

S.No as per C	9. Action Taken (please tick) Drug withdrawn	Dose increased	Dose reduced	Dose not changed	Not applicable	Unknown	10. Reaction reappeared after reintroduction (please tick) Yes	No	Effect unknown	Dose (if reintroduced)
i										
ii										
iii										
iv										

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 used	Route used	Frequency (OD, BD, etc.)	Therapy dates: Date started	Therapy dates: Date stopped	Indication
i							
ii							
iii							

Additional Information:

D. REPORTER DETAILS
16. Name and Professional Address:_____
_____
Pin:_____E-mail_____
Tel. No. (with STD code)_____
Occupation:_____ Signature:_____
17. Date of this report (dd/mm/yyyy):

Confidentiality: The patient's identity is held in strict confidence and protected to the fullest extent. Programme staff is not expected to and will not disclose the reporter's identity in response to a request from the public. Submission of a report does not constitute an admission that medical personnel or manufacturer or the product caused or contributed to the reaction.

Figure 2: Suspected adverse drug reaction reporting form.

Drugs	Risk warning	International status	India status
Chlorhexidine antiseptic non-prescription topical product	Serious Allergic reaction	Serious allergic anaphylactic reactions when used in the mouth, on open wounds, or immediately before or during surgery. Difficulty in breathing; throat tightness or hoarseness; and fainting.	NCC-PvPI received one report of allergic reaction.
Fluoroquinolone antibacterial drugs	Restricting use	Tendons, muscles, joints, nerves and central nervous system. These adverse effects outweigh the benefits of Fluoroquinolone when used for acute sinusitis, acute bronchitis, and uncomplicated urinary tract infections. FDA recommends that Fluoroquinolone should be reserved for those with no alternative treatment options.	NCC-PvPI keen on monitoring ADR report of Fluoroquinolone in the acute sinusitis, acute bronchitis, and uncomplicated urinary tract infections from healthcare professionals
Metformin	Warnings for certain patients with reduced kidney function	Diabetes can lead to kidney damage, hence current labeling strongly recommends against use of Metformin in patients with renal impairment due to risks of developing lactic acidosis	NCC- PvPI received three report of renal failure
Olanzapine	Risk of serious skin reactions	FDA has received 23 cases of Drug Reaction with Eosinophilia and Systemic Symptoms (DRESS) The FDA recommends that healthcare professionals stop treatment with Olanzapine immediately if DRESS is suspected and they should inform patients of the signs and symptoms of severe skin reactions	NCC-PvPI received two reports of DRESS
Allopurinol	Serious cutaneous adverse reaction (SCAR)	HAS found evidence of strong association with allopurinol 100 times high risk compare to others	44 cases of SCAR were reported to NCC
Isotretinoin	Psychiatric adverse events	Good administration Australia (TGA) reports depression and suicidability.	NCC-PvPI received six cases of psychiatric disorder
Atypical Antipsychotics	Sleep apnoea	Health Canada reported Atypical Antipsychotics (Clozapine, Olanzapine, Asenapine, Aripiprazole, Respiridone)	3 reports were reported
Etanercept	potential harm due to in utero exposure during pregnancy	Health Canada review reports Etanercept associated with potential risk of experiencing miscarriage	One case abortion due to Etanercept
Metoclopramide containing products	Neurological and cardiovascular	European union review	Multiple report of neurological and two report of cardiovascular ADR
BCR-ABL Tyrosine kinase inhibitors	Hepatitis B virus reactivation	TGA and Health science authority (HSA) report the risk of Hepatitis B virus reactivation induced by Imatinib, Nilotinib, Dasatinib, Bosutinib.	Two cases of hepatitis B virus reactivation were received for Imatinib

Table 1: Current comparative status of Global Drug Alerts with PvPI Database for drugs.

How to Overcome Challenges Related to Adverse Drug Reaction

Requiring educational interventional programme in hospitals, clinics and social media news letter, journals and direct communication, motivation and encourage healthcare professionals and consumers to report ADRs. Create drug safety alert. Also, improve clinical pharmacy education in the academics.

Outcome of the Reporting Adverse Drug Reaction

Adverse drug reaction reporting can improve patient care related to the medication. It inspires the confidence and trust between the patients and healthcare professionals with respect to medicines safety.

Conclusion

Rational use of drugs includes right drug, right dose, and right time with the right patient could improve the quality of the public. Both healthcare professionals and non-healthcare professionals should aware about Pharmacovigilance programme. This would be achieved by best pharmaceutical care. Communication related to drug safety information to patients and healthcare professionals is essential for achieving the objectives of pharmacovigilance in terms of promoting the safe and effective use of medicine, prevention harm from adverse reaction and contributing to the protection of public health.

Communication in PvPI improves patient care, understanding, promotes transparency and accountability. All the communication with WHO-UMC will be managed by NCC. The NCC is responsible to publish/ communicate any findings from NCC database to journals/ media/online- web whereas the other stakeholders are required to get prior approval from NCC to publish/communicate any data or matter related to PvPI. This can be achieved by, press communication, website, newsletter and publication.

References

1. Kalaiselvan V, Kumar P, Mishra P, Singh G (2015) System of adverse drug reactions reporting: What, where, how, and whom to report? Indian J Critical Care Med 19: 564-566.
2. Lihite RJ, Lahkar M, Das S, Hazarika D, Kotni M, et al. (2017) A study on adverse drug reactions in a tertiary care hospital of Northeast. India J Med 53: 151-156.
3. Dhikav V, Singh S, Anand KS (2004) Adverse drug reaction monitoring in India. JIACM 5: 27-33.
4. Kalaiselvan V, Thota P, Singh GN (2016) Pharmacovigilance programme of India: Recent developments and future perspectives. Indian J Pharmacol 48: 624-628.
5. http://www.ijmr.org.in/temp/IndianJMedRes1404563-1139603_030956.pdf
6. Tandon RV, Mahajan V, Khajuria V, Gillani Z (2015) Under-reporting of adverse drug reactions : A challenge for pharmacovigilance in India. Indian J Pharmacol 47: 65-71.
7. Gupta P, Udupa A (2011) Adverse drug reaction reporting and pharmacovigilance: knowledge, attitudes and perceptions amongst resident doctors. Int J Pharm Sci Res 3: 1064-1069.
8. http://ipc.nic.in/writereaddata/mainlinkFile/File873.pdf
9. Optimizing Drug Safety through Research Based Pharmacovigilance: IPC
10. Guidance Document for Reporting Individual Case Safety Report by IPC.

11. file:///F:/my%20new%20project/Pharmacovigilance%20Programme%20of%20India.htmlF:\mynew\project\Pharmacovigilance Programme of India.html

12. Singh P, Agrawal M, Hishikar R, Joshi U, Maheshwari B, et al. (2017) Adverse drug reactions at adverse drug reaction monitoring center in Raipur: Analysis of spontaneous reports during one year. Indian J Pharmacol 49: 432-437.

13. Guidance Document for Spontaneous Adverse Drug Reaction Reporting Version: 1.00.

14. News letter (2016) Pharmacovigilance programme of India 16.

15. www.pharmacompanion4u.blogspot.in