Global Health
AN ONLINE JOURNAL FOR THE DIGITAL AGE

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CAUSALITY, SEVERITY, PREVENTABILITY ASSESSMENT OF ADVERSE DRUG REACTIONS IN A TERTIARY CARE NABH ACCREDITED HOSPITAL

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Introduction

The World Health Organization (WHO) defines an Adverse Drug Reaction (ADR) as "a response to a drug which is noxious and unintended, and which occurs at doses normally used in man for the prophylaxis, diagnosis, or therapy of disease, or for the modification of physiological function"(1).

World Health Organization-Uppsala Monitoring Centre (WHO-UMC), the two principal collaborating bodies started pharmacovigilance programme to keep a watch on various ADRs and events occurring worldwide. The significance of monitoring ADRs to improve public health, Pharmacovigilance Programme of India (PVPI) was started in 2010. According to this program, ADR monitoring centers have been set up in many medical institutions all over the country to estimate the frequency of ADRs occurring with various drugs among the Indians. Spontaneous reporting of ADRs voluntarily by the healthcare professionals has been the core data-generating system of pharmacovigilance for years. It plays a major role in identifying and reporting of any adverse events to the pharmacovigilance coordinating center, health/regulatory authority or to the drug manufacturer itself [(1)].

Identification of ADRs

By reporting known or suspected ADRs, Pharmacists, other health care practitioners, and patients can assist in identifying patterns and trends, which may leads to increased regulatory scrutiny or even the withdrawal of drugs that do not have a favorable risk- benefit ratio. To assess causality, a suspected "aa-ADR" was assigned to a Naranjo ADR probability category based on a total score obtained from 10 weighted questions. These questions assessed the temporal association between suspected drug and adverse reaction, alternative cause(s) of the reaction, plasma drug levels (if available), dose–response relationships and previous patient experience with the drug. Suspected aa-ADRs with Naranjo score of 0 were *doubtful,* 1–4 *possible*, 5–8 *probable*, and ≥*9 definite* (Naranjo et al. 1981). Thus, coding an adverse event as "aa-ADR" required at least *possible* grading on the Naranjo scale [(2)].

Preventability was assessed using the modified Schumock and Thornton Preventability Scale (Schumock and Thornton 1992; Lau et al. 2003), whereas severity was evaluated using the Division of AIDS Table for Grading the Severity of Adult and Pediatric Adverse Events (Division of AIDS (DAIDS), 2004) and seriousness using the WHO Uppsala Monitoring Centre (UMC) criteria (WHO-UMC, 2000). Rarity of an aa-ADR (occurrence in <0.1% of medication users) (WHO-UMC, 2011), was assessed by RK using the British National Formulary (BNF) (British National Formulary, 2014) as the principal reference [(2)].

Detection of ADRs

Using Electronic Medical Records (EMR):

Recently, Electronic Medical Records (EMR) have emerged as a valuable resource for pharmacovigilance in documenting the in-patient laboratory results and medication order in the EMR to identify ADRs. EMR- derived laboratory measurements and medication orders can help to validate previously reported ADRs, and detect new ADRs [3]. This prospective study was designed to collect patient demographics, patient medication therapy details including non-prescription drugs, alternative treatments and recently ceased medication, comprehensive adverse reaction details including description of the reaction, time of onset and duration of the reaction and treatment given with relevant investigation reports.

Using Databases

For unconfirmed adverse drug reactions, databases are a crucial tool to detect and assess an ADR, thus increasing the concept of new and old drugs associated with rare adverse drug reactions.

Voluntary Reporting

Generally, there are three systems used for voluntary reporting: virtual, national and international. The virtual relates to all correspondence and short reports in the medical literature. The second consists of national and international adverse drug reaction monitoring center for reporting of adverse drug reactions.

Pharmacovigilance

Pharmacovigilance (PV), also known as drug safety, is the pharmacological science relating to the collection, detection, assessment, monitoring, and prevention of adverse effects with pharmaceutical products [5]. The importance of PV to improve patients' safety includes detection and reporting of ADR events, medication errors, counterfeit and substandard medicines, lack of efficacy of medicines, misuse and/or abuse of medicines, and drug–drug interactions. Pharmacists, as the drug experts, have the central role in ensuring drug safety by detecting and reporting of ADRs [4].Pharmacovigilance has role in the rationale use of medicines by providing information abo ut adverse drug reactions (ADRs) in he general population.The development of a better syste m of reporting ADRs has been recommended a s a top priority action to prevent ADRs and ad verse drug events (ADEs) in hospitals [5].

Methods

Study Design

This study was a prospective, descriptive, observational study conducted in an internal general medicine department for a period of 6 months among patients who experienced adverse drug reactions during their hospitalization at tertiary care NABH accredited hospital, India.

Source of data and materials

The following parameters were collected :(1) Historical prescription data. (2) Medication review. (3) Laboratory data. (4) Physician and nurse notes. (5) Causality assessment scales. (6) Severity scales assessment scales. (7) Preventability scales. (8) Patients Identification. (9) Medical and pharmacy bills. (10) Case records of patient admitted in the hospital. (11) Patient profile forms. (12) Suspected adverse drug reaction reporting

forms. (13) Case records forms: Original case record forms were collected which contained the following information; (a) History and physical examination at the time of admission. (b) Laboratory values. (c) Daily drug treatment chart. (d) Daily physician's and nurse's orders. (e) Previous history of allergies. (14) Comprehensive adverse reaction details including description of the reactions.
(15) Time onset and duration of the reaction and (16) Treatment given with relevant investigation reports were collected.

Inclusion criteria

i. Patient admitted under internal general medicine department and suspected ADR during hospital stay.
ii. Patient admitted because of adverse drug reactions.

Exclusion criteria

i. Test dose reactions.
ii. Pregnant and lactating women.
iii. Poisoning or drugs overdose cases.
iv. Emergency

Method of data collection

This prospective study was designed to collect patient demographics, patient medication therapy details including non-prescription drugs, alternative treatments and recently ceased medication, comprehensive adverse reaction details including description of the reaction, time of onset and duration of the reaction and treatment given with relevant investigation reports. The overall process was done to ensure safety of drugs and minimize adverse drug reactions (ADRs). The Pharmacovigilance Program of India (PVPI)-Central Drugs Standard Control Organization (CDSCO) form was used for data collection.

In this method, the inpatient case sheets and prescriptions was screened for ADRs on a daily basis. All the prescribed medications along with the patients' other medications and relevant information were noted in a customized data collection form to find out the ADR and other allergies. The study patients were followed daily until their discharge. Micromedex, Medscape, articles and relevant references books were used as a tool to review the collected data. The prescribed medication and relevant dosing calculation and drug concentrations (if applicable) were checked.
The patient's case sheets, prescriptions, nurse notes were randomly selected on a daily basis and were reviewed for usage patterns and adverse drug reactions. The overall process was done to ensure safety of drugs, and to minimize ADRs. The causality was assessed by using Naranjo causality assessment scale and the severity was assessed by using modified Hart - wig's and Siegel severity scale and also the severity assessment scale according to the recommendation by the WHO Uppsala Monitoring Center (UMC), Sweden for monitoring of adverse drug reactions.

Study procedures

During this study, the study investigators visited the respective ward/department and collected the necessary details. In active vigilance, medication history interviews were conducted just after the admission of the patient to the inpatient ward. During this session if the patient was found to have a reaction either due to a test or overdose, they were excluded. For the patient who didn't meet those criteria, daily follow up with doctors was done during which if any subjective or objective evidence suggested an ADR, these patients were included in this study for further evaluation. Detailed analysis, evaluation and discussion with a consultant was done in the case of strongly suspected adverse drug reactions.

As a result of this study, general awareness on the importance of pharmacovigilance was raised and the system of detecting and reporting ADRs were upgraded continuously for the patient who didn't meet the aforementioned criteria.

A step by step assessment of causality was accomplished with the help of instruments, scales and a suspected drug was investigated to identify the suspected reaction was explored. After doing a complete assessment of adverse drug reactions, they were reported to the nearest Adverse Drug Monitoring centers (AMCs).Once the world unique number got generated (No. for Suspected ADRs), the ADRs were detailed in the meeting of the Physician and Therapeutics committee (P &T committee) to help with the administrative decision of whether to continue with the same products or change withdraw this medication from the hospital formulary.

Follow-up

The change of medication and the daily notes which were added in the case sheets were followed until the patient got discharged, and further collection of data from Medical Record Department was done for future studies.

RESULTS

Patient demographic data with ADRs:

Table 1: Gender and age distribution of ADRs.

Age Group (Years)	Drugs Related ADRs		
	No. of Drugs Related ADRs (%)		
	Male	Female	Total N=135(%)
1-20	10	7	17 (12.59)
20-40	20	12	32 (23.70)
40-60	15	21	36 (26.66)
60-80	27	14	41 (30.37)
>80	5	4	9 (6.66)
Total	**77**	**58**	**135**

Incidence of ADRs:

Table 2: Incidence of Adverse Drug Reactions (ADRs)

Ward	No. of Admitted Patient (N)	Patient-days in Hospital	No. of ADRs	Incidence	Crude rate
Medicine	45613	364904	88	0.241	0.192
Oncology	1568	14112	5	0.354	0.318
Pediatric	12562	37686	8	0.212	0.0636
ENT	9370	18735	3	0.1601	0.0320
Surgery	10695	85560	6	0.0701	0.0561
Ortho	11650	104850	2	0.0190	0.0171
OPD	89752	89752	1	0.0111	0.00111
Deluxe Unit	38625	270375	3	0.0110	0.00776
OBGYN	11582	57910	3	0.0518	0.0259

Critical care	29548	177288	18	0.102	0.0609
Total	**260967**	**1330851**	**135**	**1.6983**	**0.774**

ADE-adverse drug event per 1,000 patient-days, per 100 admissions

Frequency distribution of ADRs:

Table-3: Frequency of Adverse Drug Events According to Drug Classes

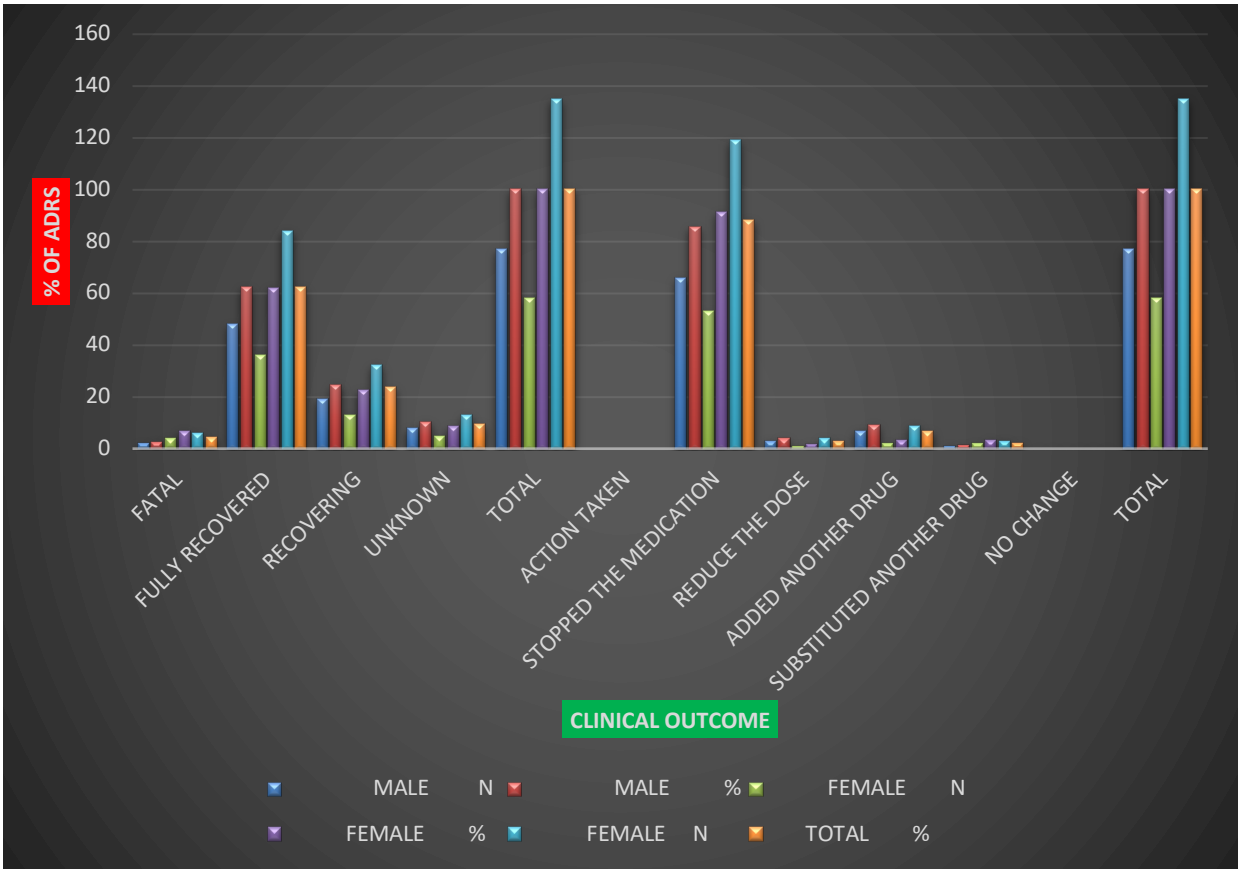
Drug Class	ADEs, n=135 (%)	Preventable ADEs, n=112 (%)	Non-preventable ADEs, n=23 (%)	Potential ADEs, n=87(%)	Intercepted potential ADEs, n=66 (%)	Non-intercepted Potential ADEs, n=21 (%)
Antibiotics	38(28.14)	36(32.14)	2(8.69)	29(33.33)	27(40.90)	2(9.52)
Anticancer agents	5(3.70)	4(3.57)	1(4.34)	2(2.29)	1(1.15)	1(4.76)
Diuretics	2(1.48)	2(1.78)	0(0)	2(2.29)	1(1.15)	1(4.76)
Antihypertensive	7(5.18)	6(5.35)	1(4.34)	3(3.44)	2(3.03)	1(4.76)
Anticoagulants	3(2.22)	2(1.78)	1(4.34)	1(1.14)	1(1.15)	0(0)
Antidiabetics	2(1.48)	2(1.78)	0(0)	1(1.14)	1(1.15)	0(0)
PPI	3(2.22)	3(2.67)	0(0)	2(2.29)	2(3.03)	0(0)
Laxatives	1(0.74)	1(0.89)	0(0)	1(1.14)	1(1.15)	0(0)
Antidepressant	1(0.74)	0	1(4.34)	0(0)	0(0)	0(0)
Antipsychotic	2(1.48)	1(0.89)	1(4.34)	1((1.14)	0(0)	1(4.76)
Ant- tuberculosis	3(2.22)	1(0.89)	2(8.69)	2(2.29)	1(1.15)	1(4.76)
Anti- seizure	5(3.70)	3(2.67)	2(8.69)	3(3.44)	2(3.03)	1(4.76)
Antiarrhythmic	1(0.74)	1(0.89)	0(0)	1(1.14)	1(1.15)	0(0)
NSAIDs	10(7.40)	8(7.14)	2(8.69)	7(8.04)	5(7.57)	2(9.52)
Other analgesics	6(4.44)	5(4.46)	1(4.34)	4(4.59)	3(4.54)	1(4.76)
Corticosteroids	7(5.18)	4(3.57)	3(13.04)	2(2.29)	1(1.15)	1(4.76)
Antihistamines	1(0.74)	1(0.89)	0(0)	1(1.14)	1(1.15)	0(0)
Electrolytes/fluids	6(4.44)	6(5.35)	0(0)	3(3.44)	2(3.03)	1(4.76)
Anti-lipid emic	7(5.18)	5(4.46)	2(8.69)	4(4.59)	3(4.54)	1(4.76)
Anti-rheumatic	1(0.74)	1(0.89)	0(0)	0(0)	0(0)	0(0)
Antitussive	2(1.48)	2(1.78)	0(0)	1(1.14)	1(1.15)	0(0)
Antianginal	1(0.74)	1(0.89)	0(0)	1(1.14)	1(1.15)	0(0)
Xanthine oxidase inhibitor	3(2.22)	2(1.78)	1(4.34)	2(2.29)	1(1.15)	1(4.76)
Thyroid drugs	3(2.22)	2(1.78)	1(4.34)	2(2.29)	1(1.15)	1(4.76)
Local anesthetic	1(0.74)	1(0.89)	0(0)	1(1.14)	0(0)	1(4.76)
Antiprotozoal	3(2.22)	3(2.67)	0(0)	3(3.44)	2(3.03)	1(4.76)
Antiplatelet	2(1.48)	2(1.78)	0(0)	2(2.29)	1(1.15)	1(4.76)
Antiseptic	3(2.22)	3(2.67)	0(0)	2(2.29)	1(1.15)	1(4.76)
Others	6(4.44)	4(3.57)	2(8.69)	4(4.59)	3(4.54)	1(4.76)

Management and outcome of ADRs:

Table-4: Management and outcome of Adverse Drugs Reactions

Outcomes	Male		Female		Total	
	N	%	N	%	N	%
Fatal	2	2.59	4	6.89	6	4.44
Fully recovered	48	62.33	36	62.06	84	62.22
Recovering	19	24.67	13	22.41	32	23.70
Unknown	8	10.38	5	8.62	13	9.62
Total	**77**	**100**	**58**	**100**	**135**	**100**
Action taken						
Stopped the medication	66	85.71	53	91.37	119	88.14
Reduce the dose	3	3.89	1	1.72	4	2.96
Added another drug	7	9.090	2	3.44	9	6.66
Substituted another drug	1	1.29	2	3.44	3	2.22
No change	0	0	0	0	0	0
Total	**77**	**100**	**58**	**100**	**135**	**100**

Figure 1: Outcomes and management of Adverse Drug Reactions



Assessment of ADRs:

Table 5: Causality, Severity and Preventability assessment of adverse drug reaction

Causality assessment		Total		Severity assessment	Total	
		N	%		N	%
Naranjo Scale	Definite	68	50.37	Level-1 (mild)	8	5.92
	Probable	40	29.62	Level-2 (mild)	14	10.37
	Possible	21	15.55	Level-3 (moderate)	56	41.48
	Unlikely	6	34.44	Level-4a (moderate)	32	23.70
	Total	**135**	**100**	Level-4b(moderate)	15	11.11
WHO Scale	Certain	62	45.92	Level-5 (severe)	6	4.44
	Probable	49	36.29	Level-6 (severe)	4	2.96
	Possible	15	11.11	**Total**	**135**	**100**
	Unlikely	7	5.18	**Preventability assessment**	**Total**	
					N	%
	Unclassified	2	1.48	Definitely preventable	95	70.37
				Probably preventable	31	22.96
	Total	**135**	**100**	Not preventable	9	6.66
				Total	**135**	**100**

Discussion

Patient demographic data with ADRs

Out of a total of 135 ADRs, 77 (57.037%) men had an ADRs while only 58 (42.96%) were females. ADRs per age group: 1-20 years: 17 (12.59%), 20-40 years: 32 (23.70%), 40-60 years: 36 (26.66%), 60-80 years: 41 (30.37%), 81 years and older: 9 (6.66%). The gender and age distribution of ADRs is summarized in in Table 1.

Incidence of ADRs

The on-site reviewers identified 4,581 incidents during the study period. Among these incidents, reviewers judged that there were 1,010 ADEs in 726 patients, for an incidence of 17.0 per 1,000 patient-days and a crude rate per 100 admissions of 29.2. Based on this data and information from the three hospitals (Reference Article), 8,000 ADEs are estimated to occur annually among the three hospitals. The incidence was higher in ICUs, with 30.7 ADEs per 1,000 patient-days, whereas the crude rate was higher in medical wards, with 32.9 events per 100 admissions as per the study of Takeshi Morimoto et al [(6)].For this study, 1.6983 incidents during the study period were found. Among these incidents, there were 135 ADEs in 1330851 patients, for an incidence of 1.6983 per 1,000 patient days and a crude rate per 100 admission of 0.774. The ADR incidence is represented in Table 2.

Frequency distribution of ADRs

Antibiotics accounted for one-third of all ADEs and thus represented the most frequent drug class associated with ADEs. Sedatives, non-steroidal anti-inflammatory drugs (NSAIDs) and laxatives caused 9%, 8%, and 7% of ADEs, respectively. Sedatives, NSAIDs, and electrolytes were the most frequent drug classes involved in preventable ADEs, whereas antibiotics were the class most frequently associated with non-preventable ADEs in the studies of Takeshi Morimoto et al [(6)]. This study found the following medications were associated with ADRs: anticancer agent 5 (3.70%), Diuretic 2 (1.48%), Antihypertensive 7 (5.18%), Antidiabetic 2 (1.48%), PPI 3 (2.22%), Laxatives 1 (0.74%), Antidepressant 1 (0.74%), Antipsychotic 2 (1.48%), Anti-tuberculosis 3 (2.22%), Anti-seizure 5 (3.70%), Antiarrhythmic 1 (0.74%), NSAIDs 10 (7.40%), other analgesic 6 (4.44%), corticosteroids 7 (5.18), Antihistamine 1 (0.74%), Electrolyte or Fluids 6 (4.44%), Anti-lipidemic 7 (5.18%), Anti-rheumatic 1 (0.74%), Antitussive 2 (1.48%), Antianginal 1 (0.74%), Xanthine oxidase 3 (2.22%), Thyroid drug 3 (2.22%), Local anesthetic 1 (0.74%), Antiprotozoal 3 (2.22%), Antiplatelet 2 (1.48%), Antiseptic 3 (2.225), and others were 7 (5.18%). The frequency of ADEs according to drug class is shown in table 3.

Management and outcome of ADRs

Outcome of management was assessed by using Monica z studies [(7)]. The outcome of the management of the reported ADRs suggested that 6 (8.5%) cases were found to be fatal from the reported ADRs, 84 (62.22%) patients were fully recovered, 32 (23.70%) patients were still recovering, 13 (9.62%) were unknown cases of recovery. The fatality due to an ADR calls for intensive monitoring of ADRs. Probable risk factors to incidence of ADR were analyzed. Cardiac problems were found to be the most probable risk factors followed by renal insufficiency, smoking, hepatic injury, previous allergy and alcohol consumption. Analysis of the management/treatment revealed that drug withdrawal and symptomatic treatment of the ADRs were the most preferred approaches in 119(88.14%) ADRs. This was followed by reduction of the dose 4 (2.96%), adding another

drug 9 (6.66%), and substituting another drug 3 (2.22%). The management and outcome of ADRs are depicted in Figure 1.

Assessment of ADRs

Causality assessment is the evaluation of the likelihood that a particular treatment is the cause of an observed adverse event, and establishing a causal association between a drug and a drug reaction is necessary to prevent further recurrences. The causality assessment was performed using Naranjo's scale algorithm. Suh DC et al[8] found that causality assessment of ADRs in their study were reported as possible followed by probable and certain which is agreement with our study. This study shows that there were 135 ADRs and of these, 68 (50.37%) were definite, 40 (29.26%) were probable, 21 (15.55%) were possible and 6 (4.44%) were unlikely. Similarly from WHO scale [(9),] certain were 62 (45.92), probable were 49 (36.29%), possible were 15 (11.11%), unlikely were 7 (5.18%) and unclassified were 2 (1.48%). Severity of the ADRs encountered during the study was determined by using the HARTWIG's severity assessment scale [(10)].The results of assessment of the severity suggested that the maximum number of ADRs encountered were found to be moderateLevel-3 (Moderate) 56 (41.48%), Level-4A (moderate) 32 (23.70%), Level-4B (moderate) were 15 (11.11%), Level-1 (mild) were 8 (5.92%), level-2 (mild) were 14 (10.37%) , Level-5 (Severe) were 6 (4.44%) and Level-6 (severe) were 4 (2.96%)). Preventability of ADRs was assessed by using Modified Shumock and Thomton criteria [(11)]. The result tabulated (Table-5) definitely preventable 95 (70.37%), probably preventable 31 (22.96%), not preventable 9 (6.66%); this revealed that the majority of the ADRs were definitely preventable. The overall assessment of ADRs is shown in Table 4.

Limitation of the study

(1) The short duration of the study was the major limitation (6 Months).
(2) Poor knowledge about the awareness and the importance of Pharmacovigilance leads to huge under reporting of ADRs.
(3) Delayed adverse drug reactions was difficult to detect.

Conclusion

From this study, the pattern of ADRs reported in our hospital is comparable with the results of studies conducted in hospital set up elsewhere. It gives a database of ADRs due to common drugs used in our hospital, which will help clinicians for optimum and safe use of these drugs. So, strict vigilance is required for the use of these likely drugs and their safety assessment. The present study used as intensive monitoring method to detect and estimated an incidence of 20-30% adverse reactions in the monitored group. The causality, severity, predictability, and preventability of the documented ADRs were studied and assessed. Hospital based monitoring of ADRs and reporting is an important program to identify and quantity the risk associated with the use of drugs. This information may be useful in identifying and minimizing preventable ADRs while generally enhancing the knowledge of the prescribers to deal with ADRs more efficiently.

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10. Modified Har-twig's and Siegel Adverse Drug Reactions Assessment Scale; Mild, Moderate, Severe With their Level up to 7.

11. Criteria for determining preventability scale of an ADRs; Section A, Section B, Section C assessed by using Modified Shumock and Thomton criteria.

ANNEXURE

Annexure 1: WHO Causality Assessment Scale

CERTAIN	A Clinical event, including laboratory test abnormality, occurring in a plausible time relationship to drug administration, and which cannot be explained by concurrent disease or other drugs or chemicals. The response to withdrawal of the drug (Dechallenge) should be clinically plausible. The event must be definitive pharmacologically or phenomenologically, using a satisfactory Rechallenge. Procedure if necessary.
PROBABLE/ LIKELY	A clinical event, including laboratory test abnormally, with a reasonable time sequence to administration of the drug, unlikely to be attributed to concurrent disease or other drugs or chemicals, and which follows a clinically reasonable response on withdrawal (Dechallenge). Rechallenge information is not required to fulfil this definition. Event, including laboratories test abnormality, with a reasonable time sequence to administration of the drug, unlikely to be attributed to concurrent disease or other drugs or chemicals, and which follows a clinically reasonable response on withdrawal (Dechallenge). Rechallenge information is not required to fulfil this definition.
POSSIBLE	A clinical event, including laboratory test abnormality, with a reasonable time sequence to administration of the drug but which could also be explained by concurrent disease or other drugs or chemicals. Information on drug withdrawal may be lacking or unclear.
UNLIKELY	A clinical event, including laboratory test abnormality, with a temporal relationship to drug administration which makes a causal relationship improbable, and in which other drugs, chemicals or underlying disease provides plausible explanations.
CONDITIONAL/ UNCLASSIFIED	A clinical event, including laboratory test abnormality, reported as an adverse drug reaction, about which more data is essential for a proper assessment or the additional data are under examination.
UNASSESSIBL/U NCLASSIFIABLE	A report suggesting an adverse reaction which cannot be judged because information is insufficient or contradictory, and which cannot be supplemented or verified.

Annexure 2: Modified Hart- wig's and Siegel Severity scale

MILD

LEVEL 1: The ADR requires no changes in treatment with the suspected drug or
LEVEL 2: The ADR requires that the suspected drug be withheld, discounted or otherwise changed. No antidote or other treatment is required and there is no increase in length of stay.

MODERATE

LEVEL 3: The ADR requires that the suspected drug be withheld, discounted or otherwise changed, and / or an antidote or other treatment is required. There is no increase in length of stay
LEVEL 4 (a): Any level3 ADR that increases length of stay by at least one day or
LEVEL 4 (b): The ADR is the reason for admission**.**

SEVERE

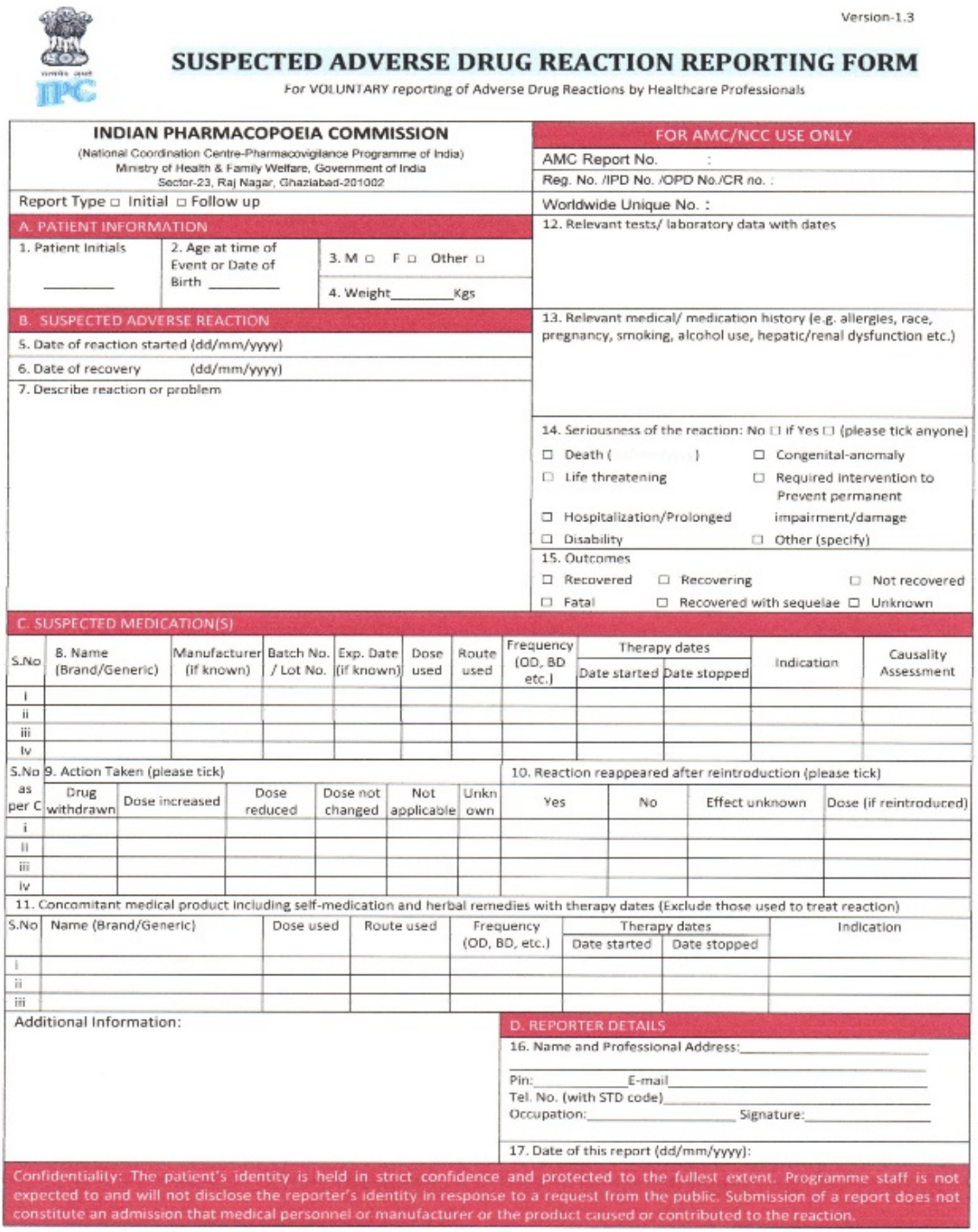
LEVEL 5: Any level 4 ADR that requires intensive medical care or
LEVEL 6: The ADR causes permanent harm to the patient or
LEVEL 7: The ADR either directly or indirectly leads to the death of the patient.

Annexure 3: Preventability Scale-Modified Schumock and Thornton Preventability Scale (Schumock and Thornton 1992; Lau et al).

Criteria for Determining Preventability of an ADR
Section A: Answering "yes" to one or more of the following implies that an ADR is DENINITELY PREVENTABLE. 1. Was there a history of allergy or previous reaction to the drug? 2. Was the drug involved inappropriate for the patient's clinical condition? 3. Was the dose, route or frequency of administration inappropriate for the patient's age, weight, or disease state?
Section B: Answering "yes" to one or more of the following implies that an ADR is PROBABLE PREVENTABLE. 1. 1. Was require therapeutic drug monitoring or other necessary laboratory tests, tests not performed? 2. Was a documented drug interaction involved in the ADR? 3. Was poor compliance involved in the ADR? 4. Was a preventable measure not administered to the patient? 5. If a preventive measure was administered, was it inadequate and/ or inappropriate? Answer "no" if this question is non- applicable. If Answers are all negative to the above, then proceed to section C
Section C**:** The ADR is NOT PREVENTABLE.

Annexure 4 – Adverse Drug Reactions

Reporting Form



Version-1.3

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

12. Relevant tests/ laboratory data with dates

B. SUSPECTED ADVERSE REACTION

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

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 ( ) ☐ Congenital-anomaly
☐ Life threatening ☐ Required intervention to Prevent permanent
☐ Hospitalization/Prolonged impairment/damage
☐ 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		Indication	Causality Assessment
								Date started	Date stopped		
i											
ii											
iii											
iv											

S.No as per C	9. Action Taken (please tick)						10. Reaction reappeared after reintroduction (please tick)			
	Drug withdrawn	Dose increased	Dose reduced	Dose not changed	Not applicable	Unknown	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		Indication
					Date started	Date stopped	
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.