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Original Research Article

'Deb's Active Surveillance & Assisted Reporting System: A District Based Innovative Approach to Adverse Drug Reaction Monitoring

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Abstract:

Pharmacovigilance aims to alert healthcare professionals and the general public about risks from medications by gathering data, analysing it, and drawing findings that may be used to recommend sensible regulatory actions aimed at patient safety. The product, the indication, the target audience, and the problem at hand should decide the approach of pharmacovigilance to be taken in a given circumstance. Adverse drug reaction (ADR) monitoring in India mostly follows passive surveillance where voluntary and individual case reports of suspected adverse reactions are examined. Getting reports facilitates the creation of an alert. In contrast to passive monitoring, active surveillance employs a continuous, pre-planned strategy to thoroughly collect the desired information. Using an active surveillance system in pharmacovigilance is expected to make it more possible to gather comprehensive information on each adverse event report, including those missed out in passive monitoring. With this background, this innovative 'Deb's active surveillance & assisted reporting system has been designed for ADR monitoring of special situations of mass administration of medications or vaccines in a short span of time or extensive use of specific disease-related pharmacotherapy in a defined population of a particular geographical area, for example, mass administration of albendazole to children, vaccination drives in response to epidemics like COVID, at the level of a district. This strategy offers to increase the involvement of pharmacovigilance specialists, health care professionals, other service providers like school teachers and beneficiaries in adverse drug reaction monitoring, making it possible to find all potential, unreported suspected ADRs by proactive methods. A well-defined and novel six-step wise approach (TTWVAA) comprising team formation, train the trainers, work distribution, visits, active extraction and assisted reporting makes this technique highly promising and implementable. Among other aspects, assisted reporting of individual information through direct assistance provided by experts to end level service provider in completing every report makes this monitoring system very end user friendly. In this review, the steps of this new approach have also been further elaborated with respect to a particular situation and two cases have been described where this novel approach has been used in a district.

Keywords: Pharmacovigilance, Adverse drug reaction, Passive surveillance, Active surveillance

Introduction

Background: The goal of pharmacovigilance is to gather data, analyse it, and utilise the conclusions to suggest wise regulatory responses in addition to informing healthcare professionals and the general public about hazards. The extended patient safety scope of pharmacovigilance now covers mistakes in prescription, distribution, and administration in addition to the identification of medications of subpar quality. Other objectives include counterfeiting, antibiotic resistance, and the requirement for real-time monitoring during large immunisations. [1,2] ADR monitoring centre approved under Pharmacovigilance programme of India (PvPI) has been functioning in the department of Pharmacology, Kalpana Chawla Govt Medical College, Karnal since 2017.To establish a national system for reporting patient safety incidents and to find and analyse novel signals from the reported

instances are the objectives of pharmacovigilance under PvPI. The analysis of the benefit-risk ratio of commercially available drugs and the production of evidence-based data on drug safety are the other objectives. The findings of pharmacovigilance are used to assist regulatory bodies in making decisions on the usage of drugs. Minimising risk and promoting rational use of medicines by disseminating safety information to relevant stakeholders is the purpose of this national programme. [2, 3]

Adverse drug reaction monitoring: present status & passive surveillance system

Under the passive surveillance system, individual case reports of suspected adverse reactions are analysed. Pharmaceutical companies as well as government agencies maintain this system. [3] Receiving of reports help in generating an alert. Once there is an alert, other surveillance methods that are more sensitive and specific for determining causation can be used. However, this passive system of surveillance depends solely on voluntary reporting by health care professionals with some sensitization initiatives from time to time. [3,4] Though this system works satisfactorily for routine monitoring of drug reactions, in case of special occasions of mass administration of particular medicines or vaccination campaigns, reporting of ADRs fails to match the magnitude of its usage and potential harm, thereby risking the life of patients during such mass initiatives. Lack of cohesive step wise mechanism for involvement of different segments of health care delivery system and active measures to detect reports missed out of voluntary initiatives etc limit its utility in such cases.[3,5]

Challenges of present scenario of ADR surveillance system

The challenges of present scenario are complacency (belief that very serious ADRs are well documented by the time a drug is marketed), insecurity (belief that it is nearly impossible to determine whether a drug is responsible for a particular adverse reaction), diffidence (belief that reporting an ADR should be done only in case of certainty of its relation to the use of a particular drug), indifference (perception that a single case observed by an individual physician might not contribute to medical knowledge) and ignorance (notion that it is only necessary to report serious or unexpected ADRs). [6,7] Other challenges are fear of medico-legal consequences, lack of time among health professionals to complete the form and the uncertainty of the potential causal relationship between drug and adverse reaction. These have been found to prevent healthcare personnel from reporting events that are suspected to be related to medications. These challenges are expected to magnify on special vulnerable situations like mass administration of a drug or vaccination campaigns.[6,7]

Objectives of Deb's new system of surveillance for special occasions of mass administration related to specific disease/drug/vaccine

Active surveillance, as opposed to passive surveillance, uses an ongoing, pre-planned method to fully identify the number of undesirable events. It is more practical to obtain thorough information on each adverse event report using an active surveillance system. [8] Hence, this new active surveillance model has been designed for ADR monitoring of special situations of mass administration of drug like albendazole to children, vaccine campaigns in epidemics like COVID or specific disease related pharmacotherapy on a large scale at the level of a district. It aims at increasing the standards of patient safety through informed, vigilant and closely assisted monitoring with involvement of experts. This model promises enhancement in participation of pharmacovigilance experts, health care workers, other care-givers as well as beneficiaries in adverse drug reaction monitoring there by making it feasible to identify all possible non reported suspected ADRs through active measures. This will enhance detailed and comprehensive reporting of ADRs through disease/ event/drug-centred and time-framed pharmacovigilance approach.

Method/steps of 'Deb's active surveillance& assisted reporting system (TTWVAA approach)

A. **Team Formation:** A team of health professionals with some experience in pharmacovigilance is formed at the outset.
B. **Train the trainers:** Prior training of ADR monitoring team on disease/event/drug centred and time framed pharmacovigilance activity including knowledge on specific adverse events, filling of specific reporting form and collaboration with community/ hospital based health workers & other service providers like school teachers, anganwadis, social workers, religious leaders etc. Basic training for conducting sensitization programme have to be imparted and there should be a discussion on plan of implementation of the whole programme.
C. **Work Distribution:** On the basis of geographical area/areas of project implementation, work has to be distributed among the team on the basis of individual abilities. There should be liaison between experts' team and peripheral level health workers/care givers. There must be proper co-ordination with authorities for logistic support like vehicle etc for the visits.

D. **Visits**: Physical visits by pharmacovigilance team are conducted to all places of health care related to specific diseases/epidemics/ vaccine administration for a specified short period whichever is applicable for the particular programme. Prior to physical visit an online training and sensitization program is conducted to cater to wide population of relevant health care workers/service providers in the district. Training and sensitisation of peripheral level health workers/caregivers for reporting known/ unknown, serious/non-serious, labelled/unlabelled ADRs is conducted during physical visits. There must also be an assessment of training provided and distribution of reaction reporting forms.
E. **Active extraction of data:** This is to be done by active surveillance involving measures specifically aimed at finding out allun reported suspected ADRs through specific questions to peripheral service providers. Since they are already motivated due to sensitization programme, they are more likely to positively respond to such questions if they have any information with them.
F. **Assisted reporting**: If anyone gives a hint of witnessing or coming across any ADR, they are either contacted by a physical visit or via telephonic/ video conversation and WhatsApp. Reminder call and message is given to every participant of sensitization program to report any ADR. All the ADR reports received are classified and secured. Further, they are reported to relevant authorities after analysis.

Benefits of the new system

This new district based monitoring system provides opportunity to collect adverse event reports possibly missed out in passive surveillance. In case of mass drug/ vaccine administration under government run programmes, a visible active process working for ensuring patient safety is expected to improve public trust, thereby improving coverage of the campaign. In addition, skill enhancement of health care workers/ service providers being an inbuilt segment of this new method, it is expected to uplift the human resources in public health sector. This model has been implemented in Karnal district in north Indian state of Haryana in two cases: one in mass administration of albendazole under National Deworming Day, 2023 and second for the COVID vaccine safety monitoring in order to be able to elaborate the steps of this technique in relation to different situations or mass administration campaigns.

Case 1: Adverse drug reaction monitoring of albendazole administration among school children under National Deworming Day using 'Deb's active surveillance & assisted reporting' system in Karnal district

National Deworming Day (NDD) is an initiative of Ministry of Health and Family Welfare, Government of India to make every child in the country worm free. This is one of the largest public health programmes reaching large number of children during a short period. It is to deworm all preschool and school age children (enrolled and non-enrolled) between the ages of 1-19 years through the platform of school and anganwadi centres in order to improve their overall health, nutritional status, access to education and quality of life. [9, 10]

Pharmacovigilance activity/ Passive reporting is routinely conducted under NDD. As per guidelines of National Deworming Day, in case of any adverse event, it has to be reported using a prescribed format. If any such report is received, it has to be sent further as part of this passive reporting mechanism. The deworming treatment generally has very few side effects in children. There may be some mild side effects like dizziness, nausea, headache, and vomiting, all likely due to the worms being passed through the child's body.[10, 11]

It is generally observed that in spite of continuing for many years; still many parents are reluctant on administration of albendazole to their children in schools. This might be due to lack of awareness and knowledge gaps among teachers who are not able to address concerns of parents. Moreover, in order to increase public trust & participation, it is vital to have a robust mechanism for monitoring of possible adverse drug reactions following administration of albendazole on a large scale & in a short span of time which will generate confidence that safety system is in place. This requires detection of every suspected adverse event and minimising missed reporting due to lack of awareness among service providers like teachers on its significance, lack of competence in reporting or lack of timely assistance in reporting. [10,12,13]

Hence, the innovative 'Deb's active surveillance &assisted reporting' system of adverse drug reaction (ADR) monitoring designed by Dr. Tirthankar Deb was implemented during National Deworming Day and Mop-up, 2023 in Karnal District of Haryana.

The TTWVAA six steps approach of Deb's active surveillance & assisted reporting' system was followed in detailand each step was elaborated as per the specific situational needs for adverse drug reaction monitoring in mass administration of albendazole as below:

A. Team Formation

A Team of 5 doctors and health workers from department of pharmacology, Kalpana Chawla Govt Medical College, Karnal comprising a Professor, a senior resident, two post graduate students and a pharmacovigilance associate was formed to undertake the monitoring of ADRs under NDD 2023.

B. Train the trainers

Prior to the surveillance of ADR monitoring, a training session on the new model was conducted for the team comprising following aspects: How to fill a suspected ADR reporting form (PvPI) &reaction reporting form of NDD; Common side effects of albendazole; How to conduct a sensitization cum training program for school teachers; How to specifically enquire from school teachers about any suspected adverse event following albendazole; possible challenges faced by school teachers in reporting ADRs from Albendazole; How to make it easy for school teachers to report ADRs to ADR Monitoring Centre; How to assist in proper filling of the form in case of receipt of only partial information.

C. Work Distribution

The different task for implementation of the project was distributed among the members of team: One person was allotted to co-ordinate with Civil Surgeon & District Education Officer and collect information regarding the list of all the cluster heads of government schools the district. Each cluster comprises of around 8-10 schools headed by Principal of one of the major senior secondary schools. It was found that there were 94 clusters in Karnal district with total 846 government schools. Another team member was assigned to contact all the cluster heads, determine willingness and fix date & time for the visit regarding sensitization program for all the representatives/ In-charges of schools under that cluster. Another person was entrusted to arrange all the paper works regarding the visit, for example training handouts, informed consent form, attendance sheet, reaction reporting form etc. One member of the team was assigned to coordinate with medical college authorities for provision of logistics like vehicle for visit. One member was responsible for preparing and conducting goggle form mediated pre and post-test assessment of participating teachers regarding effectiveness of sensitization programme. Different members of the team were assigned task of being speaker on different sensitization programme visits. Few members of the team worked on collecting and analysing the data.

D. Visit

Prior to physical visit an online training and sensitization program was conducted via the facebook live portal whose link was shared with district health administration, district education department and all cluster heads. Around 25 persons attended the online session in which initial information on the upcoming National Deworming Day, significance of monitoring ADRs and physical visits to be conducted by the team were shared. An overview of purpose of sensitization program on ADR monitoring for National Deworming Day was presented. Informed consent was obtained from all the participating teacher representatives of schools under the particular cluster. Before beginning the training, a pre-test was conducted for the teachers on their knowledge regarding adverse drug reaction reporting and National Deworming Day (NDD) through google form by sharing the link with the teachers present. After pre-test, an interactive session was conducted about adverse events reporting following albendazole administration. Cluster in-charge along with school teachers/ In-charges (under that cluster) was sensitized about possible adverse drug reactions following albendazole administration. They were trained on what type of adverse event need to be reported, who can report an ADR, how to fill the reaction form for NDD & where to report. Brief description about ADR monitoring centre & Pharmacovigilance Programme of India and its importance was also discussed. After the sensitization session, a post-test was conducted with same questionnaire to assess the effectiveness of the training program. Training handouts and NDD reaction reporting forms were circulated to them to be filled in case of an ADR. Contact details of all the participants were obtained using an attendance sheet performed for follow up with them.

E. Active extraction of data

All possible adverse events were monitored through active surveillance by conducting physical visits.

At all visits that were held before NDD, all the teachers who attended the sensitization program were specifically asked whether they are motivated enough to identify the ADRs and report in case any reaction happens in any student in their schools. At all visits that were held after NDD, all the teachers were specifically asked citing all known ADRs of albendazole, whether any such reaction happened and whether all students were comfortable after taking the medicine and whether any student complained of any difficulty or adverse event the next day which may be either known to be related to albendazole or unknown. In addition, all the teachers who attended the sensitization program were later contacted telephonically regarding any ADR they observed. Reaction reporting forms of NDD were distributed and contacts details of ADR monitoring centre of the medical college (Email ID, phone number etc.) were shared with all

participating teachers with request to contact even in case of slightest of suspicion of any reaction.

F. Assisted Reporting

In case of receiving any information on ADR following albendazole administration through email, WhatsApp or telephonically, every such respondent was followed up by video conferencing or physical visit and assisted in properly filling the reaction reporting form of NDD. It was not left out to just the teacher to fill it and send.

Feedback received from few cluster heads also pointed out positive experience regarding the active surveillance and training programme involved in the new system.

Few of the comments were as follows: a) A team of doctors visited the school regarding NDD and talked about adverse effects of tablet after consumption (if any), it was very fruitful for all to know its importance. b) The visit of the doctors' team was an enriching experience. We wish that such educational experience is conducted more often c) In relation to National Deworming Day, the visit of doctors helped us understand the significance of reporting if any adverse event occurs and how it has to be done.

Case 2: COVID vaccine safety monitoring in Karnal district using 'Deb's active surveillance & assisted reporting system'

In a similar fashion, the innovative system was also used for ADR monitoring of COVID vaccine (covishield and covaxin)among 18-45 age group in the initial 2 months of vaccination programme in Karnal district so that safety profile of the vaccines recommended for emergency use could be assessed at a time when very less information was available regarding this. All the six steps of TTWVAA approach were followed. For the list of vaccination centres, the pharmacovigilance team coordinated with the district Civil Surgeon office. A total of 34 vaccination centres were functioning in Karnal district. As per the steps of the system, beneficiaries as well staff of vaccination centres were sensitised about adverse drug reaction (ADR) reporting via newspaper coverage and peripheral vaccination site visits & workshops. Contact details of ADR monitoring centre were shared. Promotion of this initiative was done through print media to gain public trust in vaccination programme.

Conclusion

Adverse drug reaction monitoring is a vital component of safe patient care measures for any health care delivery system. An effective and vigilant system could avert several tragedies of past which were later traced to be related to adverse effects of medications which were not known during clinical trials. While passive & voluntary surveillance system is already in place for monitoring of routine as well as special uses of drugs or vaccines, an active system promises to complement patient safety through timely and more comprehensive detection of adverse events, especially during mass or large scale use of medications or vaccines in a short span of time. Step wise approach of working as a predefined & trained team which further trains the end level service providers through physical, well-coordinated & planned site visits, and finally active measures for extraction of missed out information and practical assistance extended in every single scope of detecting a suspected report can be an effective tool to improve pharmacovigilance in India. India, being a country with huge health care professional human resource, this proactive system can be a game changer in ensuring patient safety in health care delivery system. This new approach should be tried in different districts in special mass administration programmes to determine statistical significance of improvement in detection of ADRs in comparison to passive & voluntary reporting system.

Declarations

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Dr. Tirthankar Deb: Idea, writing the article, review, final editing, submission

Dr Saurav Misra: writing of the article, review, final editing

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