دائـــــرة الـــصـــحـــة
DEPARTMENT OF HEALTH

[ANALYSIS OF ADVERSE REACTION (AR) REPORTS 2013 - 2015]

[PHARMACOVIGILANCE PROGRAM]

PUBLIC عـــام

Table of Contents

Overview on DOH Pharmacovigilance Program

DOH pharmacovigilance program is a regional program established in 2008 in the Emirate of Abu Dhabi. It is considered as the central point for receiving Adverse Drug Reaction (AR), Medication error (ME), and Adverse event Following Immunization (AEFI) reports from all health care providers licensed in Abu Dhabi.

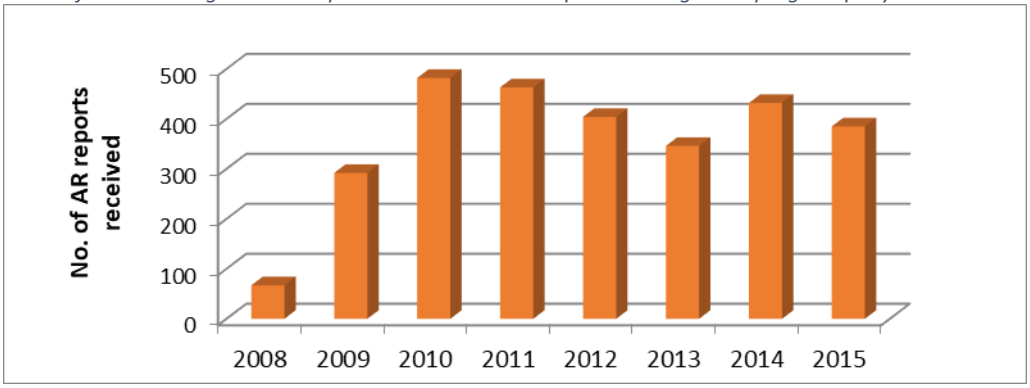
The goal of the program is to obtain a unified database for Adverse Drug Reactions and Medication Errors and to monitor the safety of all drugs and medical products available in the Emirate of Abu Dhabi.

Pharmacovigilance reporting is defined by the two DOH standards; Reporting Adverse Reactions and Reporting Medication Errors, published on DOH website. AR and ME Reporting is mandatory to all healthcare providers in Abu Dhabi.

Pharmacovigilance Network has been established across most health care facilities including hospitals, medical centers and clinics. Communication and networking is facilitated through the assigned focal point in each facility. DOH pharmacovigilance program has been receiving reports manually, by fax, email, or through DOH e-notification system. The e-notification system is an online reporting tool, which aims at facilitating the reporting process and data management.

DOH pharmacovigilance program actively collaborates with the national pharmacovigilance center at the Ministry of Health and Prevention (MOHAP) through the national pharmacovigilance committee. Along with processing and analyzing AR, ME and AEFI reports, DOH pharmacovigilance team performs daily screenings of medication safety alerts, health advisories and recalls issued by national and international drug regulatory agencies. Another major role of the Pharmacovigilance program is to investigate all safety/quality issues related to drugs and medical products in Abu Dhabi. Necessary information is disseminated by DOH to all healthcare professionals and concerned regulatory authorities.

Figure 1. Number of Adverse drug reaction reports submitted to DOH pharmacovigilance program per year



Analysis of Adverse Drug Reaction Reports

The aim of this analysis is to study the AR data reported in DOH database identifying possible risks associated with the use of drugs. This report summarizes data trends across various variables (e.g. types of ARs reported, outcome and seriousness of adverse events), comparison of the use of the online system vs manual reporting, identification of the top therapeutic categories of suspected drugs associated with AR cases and highlights on selected severe ARs.

All manual and electronic AR reports submitted to DOH pharmacovigilance program by healthcare professionals in Abu Dhabi during the period of January 2013 to December 2015 were included in the analysis.

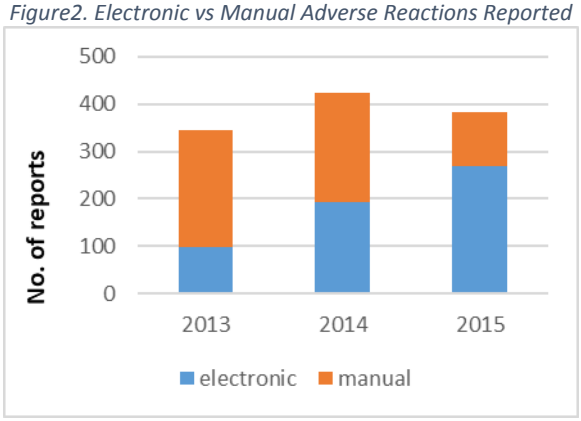
Adverse drug reactions were coded by DOH pharmacovigilance team with the relevant terms from the Medical Dictionary for Regulatory Activities (MeDdra) (1).

Table 1. Overall Data Findings

Number of Adverse Reaction (AR) reports analyzed (2013-2015)	1151
Number of Suspected Drug Molecules	236
Total Number of Suspected Drugs Reported	1328
Number of AR terms reported	1520

Number of Reports and Mode of reporting

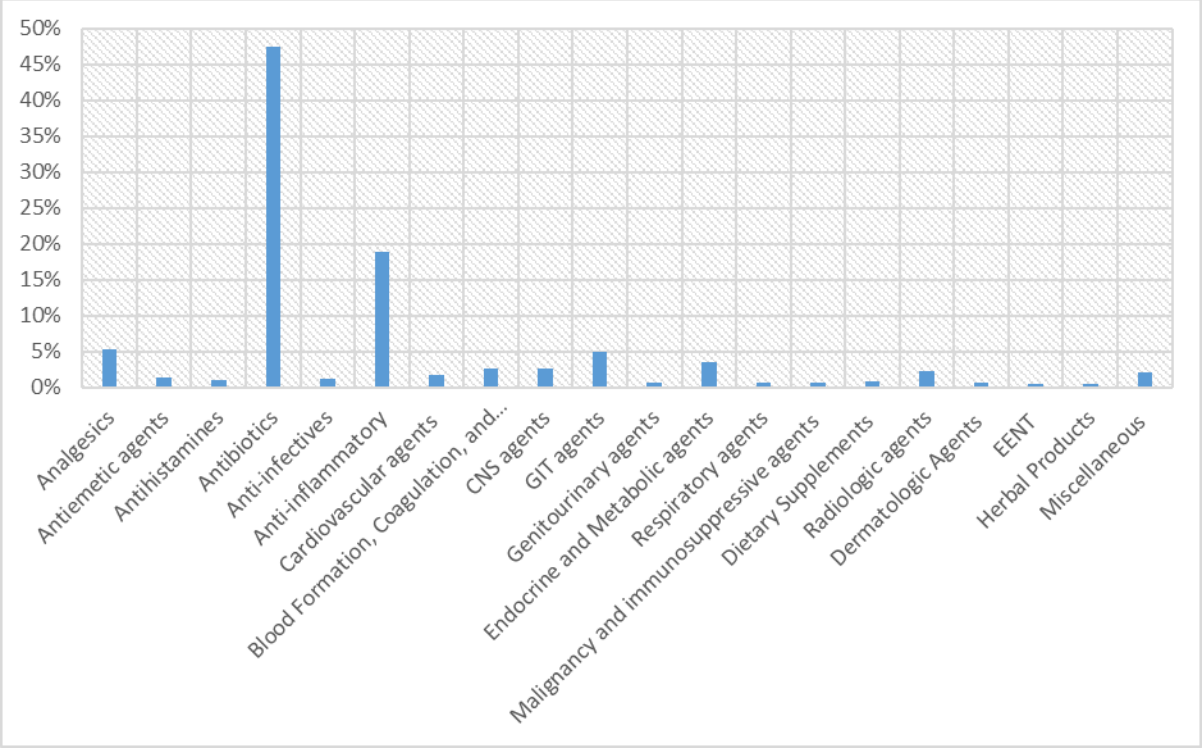
Figure2. Electronic vs Manual Adverse Reactions Reported



A total of 1151 AR reports were included in the analysis; 588 reports were submitted manually (through email, fax or manual) and 563 reports were submitted electronically through DOH pharmacovigilance e-notification tool. The online reporting tool was first introduced in 2013 and there was a notable increase in its use throughout the period of 2013-2015.

Therapeutic Categories of Suspected Drugs in AR reports

Figure 3. Distribution of Suspected Drugs by Therapeutic Category



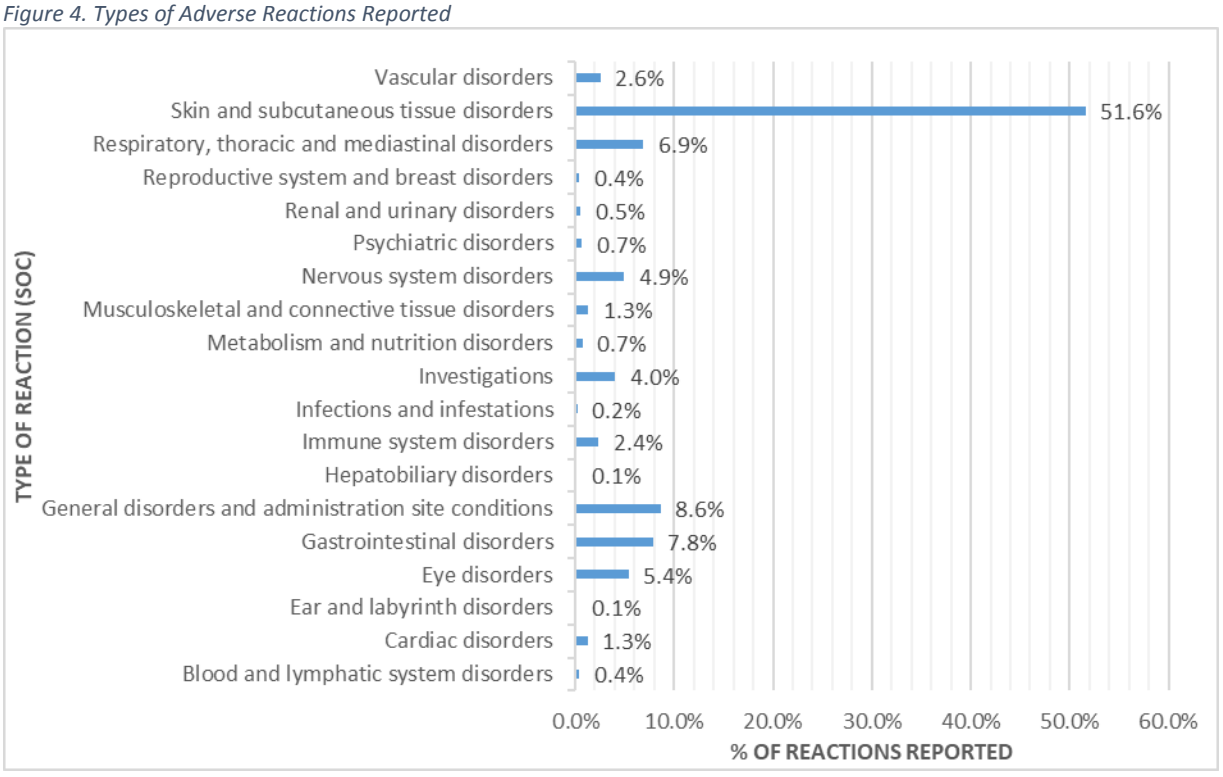
A total of 1328 cases of suspected drugs were implicated in the 1151 AR reports, however the total number of drug molecules were 236. In 89% of the AR reports, only one drug was suspected to be associated with the reaction(s).

Antibiotics, representing approximately 47% of the suspected drugs in AR reports, ranked the highest therapeutic category associated with AR reports. Anti-inflammatory drugs, mainly non-steroidal anti-inflammatory drugs (NSAIDS), ranked second, constituting about 19% of the suspected drugs in AR reports.

Both analgesics and gastrointestinal (GIT) agents constituted 5% of the suspected drugs in AR reports equally. Analgesics consisted of paracetamol and opioids. The most commonly reported GIT agents were proton pump inhibitors, H_2 antagonists, and antispasmodics.

Types of Adverse Reactions Reported

Figure 4. Types of Adverse Reactions Reported

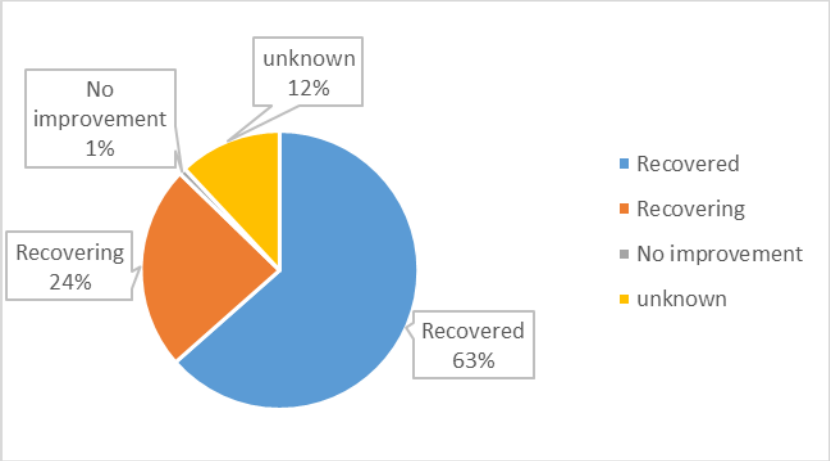


A total of 1520 adverse reaction terms were reported in the 1151 AR reports included in the analysis. Some reports had more than one reaction term reported. Adverse reaction terms were classified by the system organ class (SOC) affected using MeDdra classification.

More than 50% of the reactions reported were classified as “Skin and Subcutaneous Tissue Disorders”. “General Disorders and Administration Site Conditions”, “Respiratory Disorders”, “Gastrointestinal Disorders”, “Eye Disorders” and “Nervous System Disorders” each was involved in about 5-10% of the reported reactions.

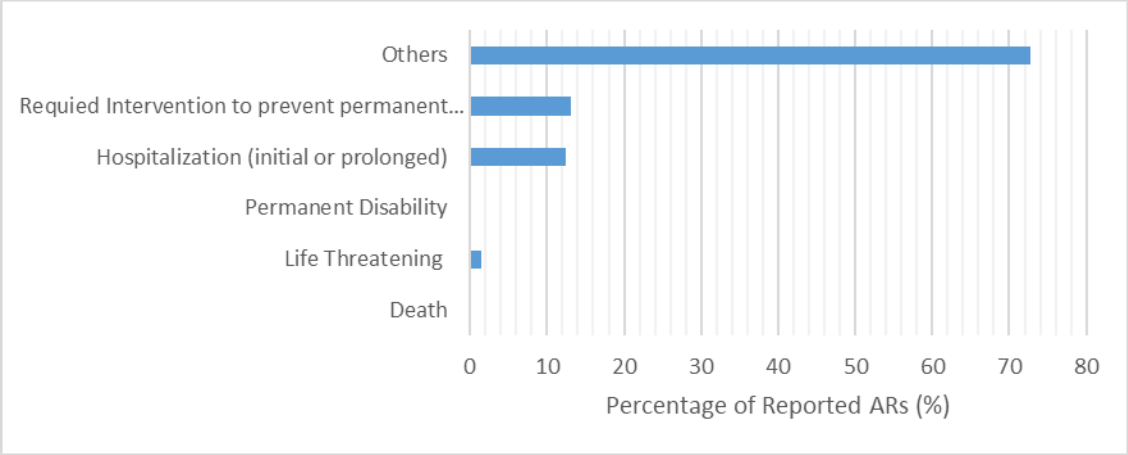
Outcome and Seriousness of the Adverse Events

Figure 5. Outcome of Adverse Reaction Reports



Patient outcome was assessed based on the patient condition reported at the time of the event.

Figure 6. Event Seriousness in Reported Adverse Reactions



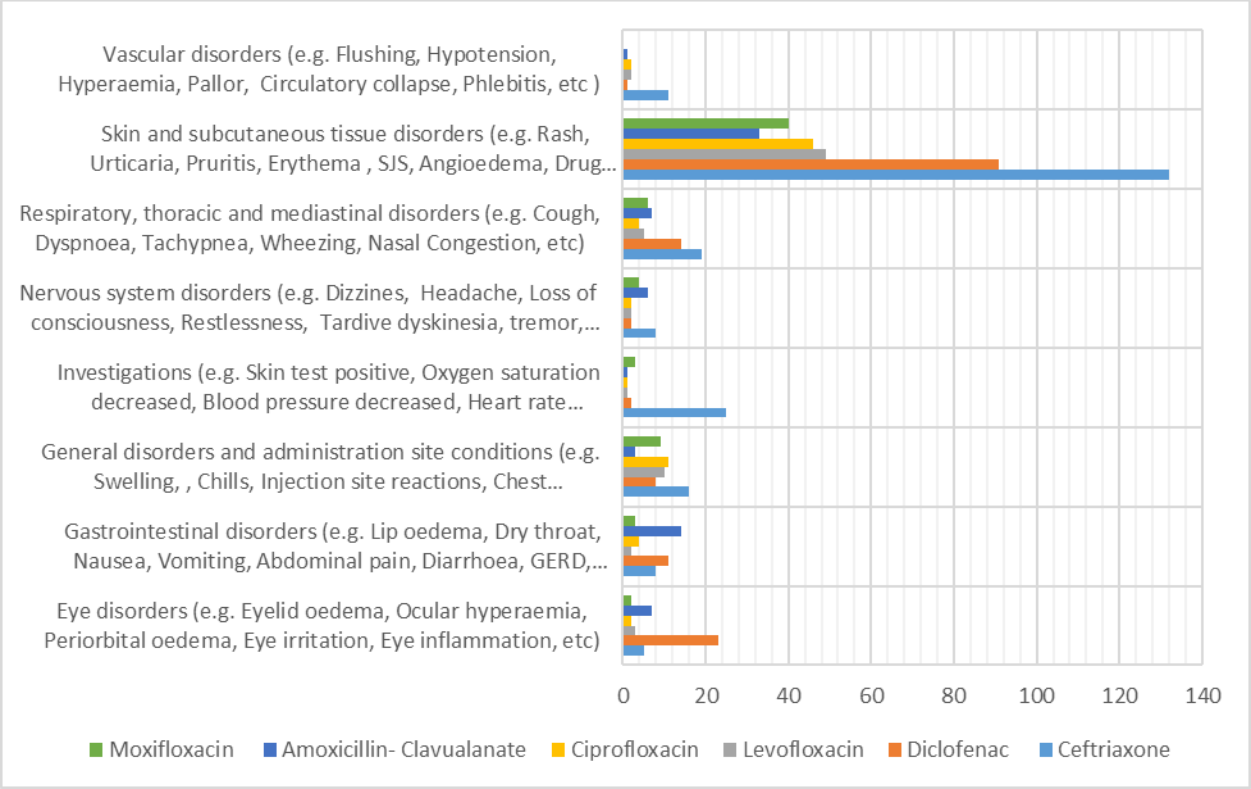
Suspected Drugs in AR Reports and Types of Reactions

Table 2. Top 10 Drugs (by active ingredient) suspected of causing Adverse Reactions.

Ranking	Active Ingredient	No. of Reports
1	Ceftriaxone	181
2	diclofenac	121
3	Levofloxacin	64
4	Ciprofloxacin	59
5	Amoxicillin-Clavualanate	51
6	Moxifloxacin	51
7	Ibuprofen	30
8	Etoricoxib	28
9	Acetaminophen	26
10	Cefuroxime	24

A total of 236 drug molecules were implicated in the 1151 AR reports included in the analysis. It is important to note that more than one drug may be suspected in one report and several reactions may be associated with one drug in one report.

Figure 7. Distribution by SOC of the common Adverse Reactions Reported for the Top 6 Drugs



Examples of Severe Adverse Reactions Reported

Table 3 Examples of Severe Adverse Reactions Reported

Description	MeDdra Preferred Term	Suspected Drug (the number in the bracket represents the number of times the drug has been implicated)
Immune system disorders	Anaphylactic reaction	Celecoxib (2), Ceftriaxone (2), Salbutamol (1), Azithromycin (1), Prednisolone (1), Ioversol (1), Gadoteric Acid (1)
	Anaphylactic shock	Pantoprazole (1), Acetaminophen (1), Ceftriaxone (1), Pethidine (1), Cefdinir (1), Cefuroxime (1)
Nervous system disorders	Cerebral haemorrhage	Alteplase (1)
	Intraventricular haemorrhage	Tenectaplase (1)
Blood and lymphatic system disorders	Thrombocytopenia	Boceprevir(1), Linezolid (1), Piperacillin/Tazobactam (1)
	Heparin-induced thrombocytopenia	Heparin (2)
	Neutropenia	Linezolid (1)
	Haemolysis	Piperacillin/Tazobactam (1)
Infections and Infestations	Pneumonia	Boceprevir (1)
	Fungal infection	Boceprevir (1)
	Sepsis	Ibuprofen (2)
Vascular disorders	Circulatory collapse	Diclofenac (1)
Skin and subcutaneous tissue disorders	Stevens-Johnson syndrome	Omeprazole (1), mebeverine (1), Butamirate (1), Ceftriaxone (1), Amoxicillin (1), Allopurinol (1), Cetirizine (1)
metabolism and nutrition disorders	Lactic acidosis	Metformin (1), Linezolid (1)
Musculoskeletal and connective tissue disorders	Rhabdomyolysis	Atorvastatin (1)
respiratory, thoracic and mediastinal disorders	Respiratory distress	Ibuprofen (1)
Renal and urinary disorders	Renal failure	Piperacillin/Tazobactam (1)
hepatobiliary disorders	Hepatic failure	Piperacillin/Tazobactam (1)

Limitations

This analysis was based on adverse drug reaction reports received from healthcare professionals. Data validity, reliability and accuracy are subjective.

Although adverse drug reactions reporting is mandatory, underreporting and poor quality reporting are major challenges facing the pharmacovigilance program. This limits the usefulness of the data, hinders the ability to calculate reliable rates and reduces the chance to detect safety triggers.

Recommendations and Future implications

Pharmacovigilance is an essential component of patient care aiming at achieving the best outcome of treatment with medications. It supports regulators to identify the risks associated with the use of medications. Such information would allow for rational, evidence-based prescribing with the potential for preventing the occurrence of many adverse reactions and ensuring patients receive optimum therapy.

It is the duty of all healthcare professionals to adopt pharmacovigilance concept in their daily activities and become active reporters of suspected adverse drug reactions. Bearing in mind the value of this data on the regional, national and global level in ensuring medication safety will further motivate healthcare professionals to report.

Healthcare professionals should be vigilant towards capturing possible adverse drug reactions, especially with new medications introduced to the market. They should also advice patients to report to them upon experiencing any side effects to medications. (2)

Healthcare professionals are encouraged to report using the online e-notification tool.

Submitting directly through the online tool and completing the necessary data, facilitates the process of data collection and analysis by DOH pharmacovigilance team.

Quality and completeness of reported data are vital elements in performing data assessment and analysis. Healthcare professionals are advised to complete the required data as much as possible.

DOH Pharmacovigilance team will provide the necessary support and education to ensure full adherence to DOH reporting requirements, efficiency of reporting and completeness of submitted data.

References:

1- Medical Dictionary for Regulatory Activities (MedDRA©) version 18.1, available at: https://tools.meddra.org/WBB/#

2- BMA Board of Science; Reporting adverse drug reactions, A guide for healthcare professionals; May 2006; © British Medical Association 2006; available at : http://www.isoponline.org/wp-content/uploads/2015/01/BMAreport.pdf