



REPORT N° 6

ADVERSE EVENTS FOLLOWING IMMUNIZATION WITH COVID-19 VACCINES IN LEBANON

COVID-19 Vaccines - Lebanon

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February 14, 2021 – October 19, 2021

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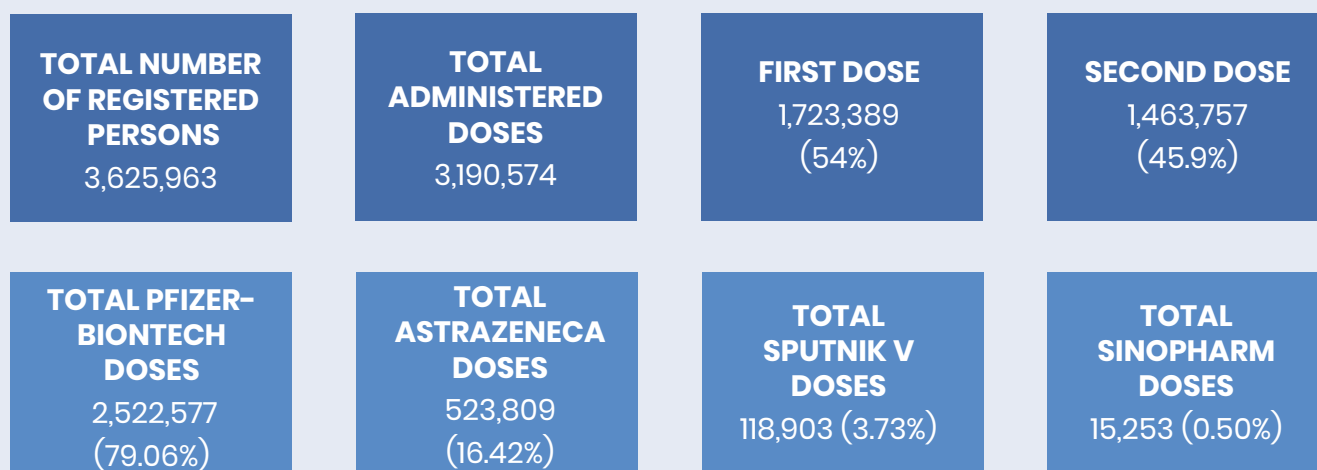
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EXECUTIVE SUMMARY

This executive summary provides an overview of Adverse Events Following Immunization (AEFIs) that were temporally associated (i.e., occurred after administration of the vaccine) to the four COVID-19 vaccines available in Lebanon during the mass campaign immunization between February 14th and October 19th, 2021 (Pfizer-BioNTech Vaccine, AstraZeneca Vaccine, Sputnik V Vaccine and Sinopharm Vaccine). According to the World Health Organization (WHO), an AEFI is any untoward medical occurrence that follows immunization and does not necessarily have a causal relationship with the vaccine. The adverse event may be any unfavorable or unintended sign, abnormal laboratory finding, symptom or disease.

The following information summarizes COVID-19 vaccines doses since their first deployment in Lebanon, from February 14th, 2021 until October 19th, 2021:



As per the COVID-19 vaccination dashboard provided by IMPACT platform on October 19th, 2021

BACKGROUND

Within the scope of the AEFI surveillance related to the available COVID-19 Vaccines in Lebanon, the Pharmacovigilance (PV) Program established a procedure for the management of reported AEFIs. Vaccine recipients experiencing any AEFI can report through one of the following means: 1214 Hotline Call Center, IMPACT Platform, Vaccination Sites/Hospital Sites through “Kobo tool box: AEFIs Software for reporting” or by direct contact with the PV program, and other sources including Preventive Medicine, Epidemiology Surveillance Program, Health Education and other departments from the MoPH. A case report refers to a report received by the PV Program which pertains to one individual vaccine recipient who reported at least one adverse event after receiving the COVID-19 vaccine (i.e., temporally associated with the vaccine). All case reports are screened and validated for data completion. Incomplete or inconsistent case reports are followed-up directly with the initial reporter. The case reports are classified as serious or non-serious cases. The non-serious case reports are entered directly into the national web-based report management system, VigiFlow, while serious cases go through a follow-up/investigation and causality assessment process before they are entered into VigiFlow. The surveillance aims to establish a rigorous safety profile in regards to the COVID-19 vaccines administered in Lebanon.

HIGHLIGHTS

- A total of 5,627 case reports and 21,183 AEFIs were received following the administration of 3,190,574 doses of COVID-19 vaccines (Pfizer BioNTech, AstraZeneca, Sputnik V and Sinopharm) in Lebanon between the 14th of February and the 19th of October, 2021.
 - This is equivalent to a reporting rate of 1.8 case reports/6.6 AEFIs per 1,000 doses administered.
 - This represents an increase of 371 case reports and 1,481 AEFIs in comparison with the previous report dated from the 14th of February to September 19th, 2021
 - The age group of vaccine recipients who mostly reported AEFIs was between 18 to 44 years old (53.13%), with females reporting more than males (62.2% vs. 37.8%) (Table 4).
 - The majority of the reporters were vaccine recipients. (86.4%).
- The 5,627 case reports were received through one of the following means (Table 1):
 - IMPACT Platform: 3,541 case reports (62.9%)
 - 1214 Hotline call center: 1,435 case reports (25.5%)
 - Vaccination Sites/Hospital Sites through “Kobo tool box: AEFIs Software for reporting” or by direct contact with the PV program: 593 case reports (10.6%)
 - Other reporting sources which may include Preventive Medicine, Epidemiology Surveillance Program, Health Education and other departments from the MoPH: 58 case reports (1.0%)
- Out of the 5,627 case reports (Table 2):
 - 4,529 case reports were associated with dose 1 of vaccination (80.5%)
 - 1,089 case reports were associated with dose 2 of vaccination (19.3%)
 - 9 case reports were missing this information (0.2%)

- Out of the 5,627 case reports (Table 3):
 - 5,251 case reports were non-serious (93.3% of total case reports)
 - 376 case reports included serious AEFIs as per the WHO definition (refer to Technical Notes for serious cases definition as per WHO) (6.7% of total case reports), out of which:
 - 266 case reports included serious AEFIs that did not require hospitalization nor lead to death. These were identified as other medically important events (4.7% of total case reports)
 - 110 case reports resulted in either hospital admission or death representing 1.95% of all case reports and a reporting rate of 0.034 per 1,000 doses of vaccines

- Of the total received AEFIs, the 5 most frequently reported AEFIs with the four COVID-19 vaccines available in Lebanon were (Table 6):
 - Injection site pain (45.6% of total reported AEFIs)
 - Fatigue (44.3% of total reported AEFIs)
 - General pain which may correspond to body pain or joint pain (43.9% of total reported AEFIs)
 - Headache (38.6% of total reported AEFIs)
 - Pyrexia (33.4% of total reported AEFIs)

- Of the total received AEFIs, the most reported AEFIs by System Organ Class (SOC) with the four COVID-19 vaccines available in Lebanon were (Table 11):
 - General Disorders and Administration Site Conditions (86.8% of total reported AEFIs per SOC)
 - Nervous System Disorders (44.7% of total reported AEFIs per SOC)
 - Gastrointestinal Disorders (27.6% of total reported AEFIs per SOC)

- The most frequently reported AEFIs per vaccine were: (Table 7, 8, 9, 10)
 - Injection site pain was the most frequently reported non-serious adverse event following the Pfizer-BioNTech Vaccine (39.6% of total reported AEFIs).
 - Fatigue was the most common adverse event following all other vaccines: 57.58% of the total reported AEFIs related to AstraZeneca Vaccine, 66.1% of the total reported AEFIs related to Sputnik V Vaccine, and 50% of the total reported AEFIs related to Sinopharm Vaccine.

REPORTING OVERVIEW

a. Global Analysis

Table 1 summarizes the case reports by reporting means: 1214 Hotline Call Center, IMPACT Platform, Vaccination Sites/Hospital Sites through “Kobo tool box: AEFIs Software for reporting” or direct contact with the PV program, and other sources including Preventive Medicine, Epidemiology Surveillance Program, Health Education and other departments from the MoPH.

Table 1: Summary of case reports by means of reporting

Means of Reporting	IMPACT Platform	1214 Hotline	Vaccination Sites/ Hospital Sites	Others
Number of Case Reports	3,541	1,435	593	58
Percentage	62.9%	25.5%	10.6%	1.0%

Table 2 classifies the 5,627 reported cases according to their occurrence: after the 1st or 2nd dose of COVID-19 vaccine. Out of these 5,627 case reports, 4,529 case reports were after the 1st dose (80.5%), while 1,089 case reports were after the 2nd dose (19.3%). 2,837 vaccinated individuals have received the booster dose of the Pfizer-BioNTech COVID-19 vaccine; no cases were reported following this dose during the time period covered by this report. 9 case reports (0.2%) were missing the dose number. 40.37% of the total registered persons have completed their primary COVID-19 vaccination series.

Table 2. Summary of case reports according to received dose*

	All Vaccines Combined	Pfizer-BioNTech	AstraZeneca	Sputnik V	Sinopharm
Total Case Reports (%)	5,627	3,257 (57.9)	2,124 (37.7)	230 (4.1)	16 (0.3)
Dose 1 (%)	4,529 (80.5)	2,363 (72.6)	1,983 (93.4)	173 (75.2)	10 (62.5)
Dose 2 (%)	1,089 (19.3)	888 (27.3)	138 (6.5)	57 (24.8)	6 (37.5)

*9 case reports were missing the dose number (0.2%)

Table 3 represents a summary of all case reports that were received between the period of February 14th to October 19th, 2021

Table 3. Summary of all case reports related to COVID-19 vaccines in Lebanon, from February 14th to October 19th, 2021

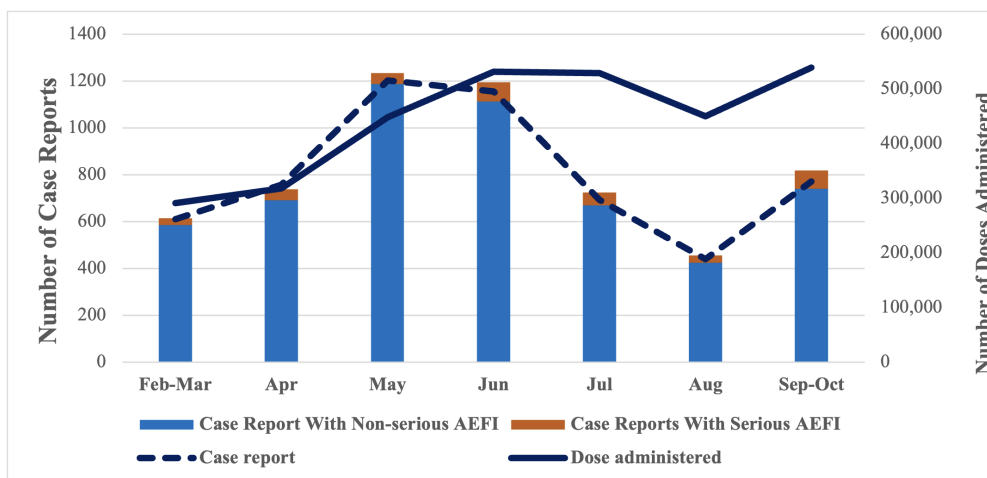
	All Vaccines Combined	Pfizer-BioNTech	AstraZeneca	Sputnik V	Sinopharm
Total Doses Administered	3,190,574	2,522,577	523,809	118,903	15,253
Total case reports (%)	5,627	3,257 (57.9)	2,124 (37.7)	230 (4.1)	16 (0.3)
Non serious case reports* (%)	5,251 (93.3)	3,017 (92.6)	2,001 (94.2)	221 (96.0)	12 (75)
Serious case reports** (%)	376 (6.7)	240 (7.4)	123 (5.8)	9 (4.0)	4 (25)
Total reporting rate per 1,000 doses administered	1.8	1.3	4.1	1.9	1.0
Serious reporting rate per 1,000 doses administered	0.12	0.1	0.23	0.08	0.26

Data Source: Vigilyze (Dataset date: 19/10/2021, MedDRA version: 24)

*Non-Serious cases include expected local and systemic AEFIs resolved without the need for further follow up or investigation

**Serious cases are those who meet the WHO seriousness criteria (refer to Technical Notes)

Figure 1: Number of Case reports, doses administered, non-serious and serious cases by month of the four COVID-19 Vaccines' administration in Lebanon, between the period of February 14th to October 19th, 2021



Case reports are assessed based on the date of vaccine administration. The administration period ranges from February 14th to October 19th, 2021. Accordingly, case reports were received as of February 14th, 2021 with an increase in both serious and non-serious case reports. The highest reporting rate was during the month of May for the non-serious cases and June for the serious cases.

b. Demographics

Tables 4 and 5 present a summary of case reports related to the COVID-19 vaccines by age group, gender and reporter qualification.

Table 4. Summary of all case reports related to the four COVID-19 vaccines by age group and gender in Lebanon, from February 14th to October 19th, 2021

Gender	COUNT	PERCENTAGE
Female	3,501	62.2%
Male	2,126	37.8%
Age		
12- 17 years	97	1.72%
18 - 44 years	2,990	53.13%
45 - 64 years	1,799	32%
65 - 74 years	299	5.31%
≥ 75 years	395	7.0%
Unknown	47	0.84%

Data Source: Vigilize (Dataset date: 19/10/2021, MedDRA version: 24)

Note: Age represents the age at time of vaccination. Some case reports may be missing the date of birth

Table 5. Summary of all case reports related to the four COVID-19 vaccines by reporter qualification in Lebanon, February 14th to October 19th, 2021

Reporter Qualification	COUNT	PERCENTAGE
Physician	158	2.8%
Pharmacist	189	3.4%
Other Health Professional	417	7.4%
Vaccine Recipients	4,863	86.4%

Data Source: Vigilize (Dataset date: 19/10/2021, MedDRA version: 24)

c. Non serious Adverse Events Following Immunization

A case report refers to a report received by the PV Program, which pertains to one individual vaccine recipient who has reported at least one adverse event after receiving one of the COVID-19 vaccines (i.e., temporally associated with the vaccine).

The tables below give an overview of the top reported non-serious AEFIs.

c.i. Most Reported Non-Serious AEFIs Related to COVID-19 Vaccines:

Table 6. Top 15 reported AEFIs by symptom Preferred Terms (PT)* related to the four COVID-19 vaccines in Lebanon, February 14th to October 19th, 2021

Reported Preferred Terms* (MedDRA)	COUNT	PERCENTAGE
Injection site pain	2,393	45.6%
Fatigue	2,326	44.3%
Pain	2,307	43.9%
Headache	2,029	38.6%
Pyrexia	1,756	33.4%
Chills	1,687	32.1%
Nausea	923	17.6%
Injection site swelling	528	10.1%
Abdominal pain	427	8.1%
Diarrhoea	407	7.8%
Dyspnoea	405	7.7%
Injection site erythema	367	7.0%
Cough	331	6.3%
Vomiting	265	5.0%
Respiratory symptom	235	4.5%

Data Source: Vigilize (Dataset date: 19/10/2021, MedDRA version: 24.0).

*Preferred Terms (PTs) are distinct descriptors (single medical concept) for a symptom, sign, disease diagnosis, therapeutic indication, investigation, surgical or medical procedure, and medical social or family history characteristic.

c.ii. Non serious AEFIs per specific vaccine:

Table 7. Top 10 reported AEFIs by symptom Preferred Terms (PT)* related to the Pfizer-BioNTech COVID-19 vaccine in Lebanon, from February 14th to October 19th, 2021

Reported Preferred Terms (MedDRA)	COUNT	PERCENTAGE
Injection site pain	1,195	39.6%
Pain	1,153	38.2%
Fatigue	1,017	33.7%
Headache	912	30.2%
Pyrexia	733	24.3%
Chills	705	23.4%
Nausea	398	13.2%
Injection site swelling	318	10.5%
Injection site erythema	210	7.0%
Diarrhoea	209	6.9%

Data Source: Vigilize (Dataset date: 19/09/2021, MedDRA version: 24.0).

*Preferred Terms (PTs) are distinct descriptors (single medical concept) for a symptom, sign, disease diagnosis, therapeutic indication, investigation, surgical or medical procedure, and medical social or family history characteristic.

Table 8. Top 10 reported AEFIs by symptom Preferred Terms (PT)* related to the AstraZeneca COVID-19 vaccine in Lebanon, from February 14th to October 19th, 2021

Reported Preferred Terms (MedDRA)	COUNT	PERCENTAGE
Fatigue	1,157	57.8%
Injection site pain	1,083	54.1%
Pain	1,036	51.8%
Headache	1,007	50.3%
Pyrexia	925	46.2%
Chills	872	43.6%
Nausea	472	23.6%
Abdominal pain	208	10.4%
Injection site swelling	196	9.8%
Dyspnoea	183	9.1%

Data Source: Vigilyze (Dataset date: 19/10/2021, MedDRA version: 24.0).

*Preferred Terms (PTs), are distinct descriptors (single medical concept) for a symptom, sign, disease diagnosis, therapeutic indication, investigation, surgical or medical procedure, and medical social or family history characteristic.

Table 9. Top 10 reported AEFIs by symptom Preferred Terms (PT)* related to the Sputnik V COVID-19 vaccine in Lebanon, from February 14th to October 19th, 2021

Reported Preferred Terms (MedDRA)	COUNT	PERCENTAGE
Fatigue	146	66.1%
Pain	115	52.0%
Injection site pain	110	49.8%
Chills	109	49.3%
Headache	108	48.9%
Pyrexia	95	43.0%
Nausea	50	22.6%
Diarrhoea	20	9.0%
Abdominal pain	14	6.3%
Cough	14	6.3%

Data Source: Vigilyze (Dataset date: 19/10/2021, MedDRA version: 24.0).

*Preferred Terms (PTs), are distinct descriptors (single medical concept) for a symptom, sign, disease diagnosis, therapeutic indication, investigation, surgical or medical procedure, and medical social or family history characteristic.

Table 10. Top 10 reported AEFIs by symptom Preferred Terms (PT)* related to the Sinopharm COVID-19 vaccine in Lebanon, from February 14th to October 19th, 2021

Reported Preferred Terms (MedDRA)	COUNT	PERCENTAGE
Fatigue	6	50.0%
Injection site pain	5	41.7%
Dyspnoea	3	25.0%
Nausea	3	25.0%
Pain	3	25.0%
Pyrexia	3	25.0%
Vomiting	2	16.7%
Cough	2	16.7%
Dizziness	2	16.7%
Headache	2	16.7%

Data Source: Vigilyze (Dataset date: 19/10/2021, MedDRA version: 24.0).

*Preferred Terms (PTs), are distinct descriptors (single medical concept) for a symptom, sign, disease diagnosis, therapeutic indication, investigation, surgical or medical procedure, and medical social or family history characteristic.

Table II. Summary of number and percentage of reported non-serious AEFIs by System Organ Class (SOC)* related to the four COVID-19 vaccines in Lebanon, from February 14th to September 19th, 2021

System Organ Class (SOC)	All Vaccines Combined	Pfizer–BioNTech	AstraZeneca	Sputnik V	Sinopharm
General disorders and administration site conditions	4,556 (86.8)	2,517 (83.4)	1,823 (91.1)	206 (93.2)	10 (83.3)
Nervous system disorders	2,347 (44.7)	1,093 (36.2)	1,132 (56.6)	117 (52.9)	5 (41.7)
Gastrointestinal disorders	1,447 (27.6)	671 (22.2)	705 (35.2)	68 (30.8)	3 (25.0)
Respiratory, thoracic and mediastinal disorders	601 (11.4)	341 (11.3)	238 (11.9)	19 (8.6)	3 (25.0)
Musculoskeletal and connective tissue disorders	566 (10.8)	299 (9.9)	250 (12.5)	16 (7.2)	1 (8.3)
Skin and subcutaneous tissue disorders	402 (7.7)	210 (7.0)	174 (8.7)	17 (7.7)	1 (8.3)
Vascular disorders	123 (2.3)	65 (2.2)	58 (2.9)	0 (0.0)	0 (0.0)
Cardiac disorders	115 (2.2)	75 (2.5)	40 (2.0)	0 (0.0)	0 (0.0)
Investigations**	107 (2.0)	72 (2.4)	34 (1.7)	0 (0.0)	1 (8.3)
Eye disorders	96 (1.8)	46 (1.5)	47 (2.3)	2 (0.9)	1 (8.3)
Infections and infestations	75 (1.4)	50 (1.7)	21 (1.0)	3 (1.4)	1 (8.3)
Ear and labyrinth disorders	50 (1.0)	31 (1.0)	15 (0.7)	4 (1.8)	0 (0.0)
Blood and lymphatic system disorders	49 (0.9)	39 (1.3)	8 (0.4)	2 (0.9)	0 (0.0)
Reproductive system and breast disorders	36 (0.7)	17 (0.6)	18 (0.9)	1 (0.5)	0 (0.0)
Psychiatric disorders	35 (0.7)	14 (0.5)	21 (1.1)	0 (0.0)	0 (0.0)
Injury, poisoning and procedural complications	33 (0.6)	15 (0.5)	18 (0.9)	0 (0.0)	0 (0.0)
Metabolism and nutrition disorders	29 (0.6)	11 (0.4)	18 (0.9)	0 (0.0)	0 (0.0)
Immune system disorders	27 (0.5)	15 (0.5)	12 (0.6)	0 (0.0)	0 (0.0)
Renal and urinary disorders	11 (0.2)	6 (0.2)	5 (0.2)	0 (0.0)	0 (0.0)
Surgical and medical procedures	1 (0.0)	1 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)

Data Source: Vigilyze (Dataset date: 19/10/2021, MedDRA version: 24.0)

*System Organ Classes (SOCs) are groupings by etiology (e.g. Infections and infestations), manifestation site (e.g. Gastrointestinal disorders) or purpose (e.g. Surgical and medical procedures)

** Investigations include cases of abnormal blood pressure, increased blood pressure, decreased blood pressure, increased systolic blood pressure, increased heart rate, irregular heart rate, increased Fibrin D-Dimer, decreased weight, decreased oxygen saturation, increased blood glucose levels, decreased blood iron, increased blood pH, increased intraocular pressure, red blood cells in urine, decreased urine output and cases who tested positive or negative for SARS COVID 1 and 2

d. Serious Adverse Events Following Immunization

According to the WHO, a serious AEFI is an event that results in death, hospitalization or prolongation of an existing hospitalization, persistent or significant disability or incapacity, congenital anomaly/birth defect or is life-threatening. The ICH E2A and E2D Guidelines (refer to Technical Notes) have also stated that other situations such as other medically important event or reaction which may jeopardize the patient or may require intervention to prevent one of the outcomes stated in the serious case definition, should also be considered serious after applying medical and scientific judgment. Those “other situations” are open to interpretation and could vary from jurisdiction to jurisdiction. In this report, serious case reports following immunization were classified as follows:

- **Other Medically Important Events :** This includes unexpected AEFIs, local or systemic, that may be serious in their nature but did not require hospitalization nor resulted in death. They may include ER visits and may or may not be resolved in the next 48 hours. These case reports are followed by the PV team over the phone without further investigation.
- **Serious Cases :** This includes cases that resulted in death, hospitalization, disability, congenital abnormalities, or were life threatening. These are investigated and evaluated for causality assessment.

376 case reports were included serious AEFIs as per the WHO definition, out of which 266 case reports did not require hospitalization nor lead to death. These were identified as other medically important events. 110 case reports were serious cases that were either admitted to the hospital or resulted in death.

d.i: Serious Cases:

Out of the 110 cases mentioned above, 47 case reports fit the WHO definition of seriousness criteria, but they did not require on-site investigations and they were followed up by phone only. 63 cases were serious reports that required full investigation. Of the 63 serious cases, 46 reports have been completed with a final decision by the Serious AEFI Special Committee at the Ministry of Public Health. The remaining 17 case reports are still under assessment by the PV team.

The tables below show detailed description of the 63 serious cases.

Table 12. Summary of 46* serious case reports that have been completed with a final decision by the Serious AEFI Special Committee by gender, age groups, dose number and time of AEFI occurrence (TTO)

	All Cases	Pfizer-BioNTech	AstraZeneca	Sinopharm
Number of case report (%)	46 (100)	36 (78.26)	9 (19.57)	1 (2.17)
Age (years)				
12 - 17 years	0	0	0	0
18 - 44 years	6	4	1	1
45 - 64 years	13	6	7	0
65 - 74 years	4	3	1	0
≥ 75 years	23	23	0	0
Median Age in years (range)	75 (25-95)	78 (25-95)	55 (29-65)	43
Sex (%)				
Male	23 (50)	18 (50)	5 (55.56)	0
Female	23 (50)	18 (50)	4 (44.44)	1 (100)
Dose number (%)				
1 st	29 (63.04)	21 (58.33)	7 (77.78)	1 (100)
2 nd	16 (34.79)	15 (41.67)	1 (11.11)	0
1 st and 2 nd **	1 (2.17)	0	1 (11.11)	0
Median TTO in days (range)***	5 (0-32)	5 (0-26)	9 (2-32)	20
Median TTO in days (range) per dose				
1 st	8 (0-32)	7 (0-26)	14 (2-32)	20
2 nd	2.5 (0-19)	3 (0-19)	2	0
1 st and 2 nd **	9	0	9	0
Mean TTO in days (SD) per dose****				
1 st	10.17 (8.45)	8.86 (7.58)	12.71 (10.58)	20
2 nd	5.38 (6.12)	5.6 (6.27)	2	0
1 st and 2 nd **	9	0	9	0
Seriousness Criteria (%)				
Fatal	18 (39.13)	14 (38.89)	3 (33.33)	1 (100)
Hospitalized	28 (60.87)	22 (61.11)	6 (66.67)	0
AEFI Committee Decision (%)				
Coincidental	32 (69.56)	26 (75)	4 (44.45)	1 (100)
Indeterminate	12 (26.09)	10 (25)	3 (33.33)	0
Consistent	2 (4.35)	0	2 (22.22)	0

*46 case reports' assessment has been completed by the PV team and the Serious AEFI Special Committee at MoPH

**This is an immunization-error case in which the patient received both doses during the same vaccination session

***TTO: Time to onset

****SD: Standard deviation

Table 13: Summary of reported AEFIs for the 46* serious cases by Vaccine

Vaccine Brand		Pfizer BioNtech (N=36)	AstraZeneca (N=9)	Sinopharm (N=1)
AEFI				
Aspiration Pneumonia with Respiratory Failure		1	0	0
Atrial Fibrillation with Ischemic Cerebrovascular Accident (CVA)		1	0	0
Atypical Pneumonia		1	0	0
Cardiac Arrest		7	1	0
Cerebral Hemorrhage		0	1	0
Cerebrovascular Accident (CVA)	Hemorrhagic	0	1	0
	Ischemic	13	1	0
	Transient Ischemic Attack	1	0	0
Extensive Portal Vein Thrombosis extending to the Superior Mesenteric Vein		0	1	0
Fatal Atrial Fibrillation		1	0	0
Hyperstimulation of Immune System		1	0	0
Pulmonary Actinomycosis		0	1	0
Myocardial Infarction		4	1	0
Oxygen Desaturation with Dyspnea		1	0	0
Polypnea, Cyanosis and hypotension		0	0	1
Post-Surgical Bleeding		0	1	0
Pulmonary Edema		1	0	0
Pulmonary Embolism		1	0	0
Sepsis		1	0	0
Severe Allergic Reaction		1	0	0
Thrombosis of Left Axillary Artery		1	0	0
Vaccine-induced Immune Thrombotic Thrombocytopenia (VITT)		0	1	0

*46 case reports' assessment has been completed by the PV team and the Serious AEFI Special Committee at MoPH

Table 14. Summary of 17* serious case reports that are still under assessment by the PV team by gender, age groups, dose number and time of AEFI occurrence (TTO)

	All Cases	Pfizer-BioNTech	AstraZeneca
Number of case report (%)	17 (100)	13 (76.47)	4 (23.53)
Age (years)			
12 - 17 years	0	0	0
18 - 44 years	4	2	2
45 - 64 years	8	6	2
65 - 74 years	5	5	0
≥ 75 years	0	0	0
Median Age in years (range)	61 (24-73)	64 (24-73)	43.5 (38-63)
Sex (%)			
Male	10 (58.82)	9 (69.23)	1 (25)
Female	7 (41.18)	4 (30.77)	3 (75)
Dose number (%)			
1 st	10 (58.82)	6 (46.15)	4 (100)
2 nd	7 (41.18)	7 (53.85)	0
Median TTO in days (range)**	3 (0-93)	2 (0-93)	4.5 (0-7)
Median TTO in days (range) per dose			
1 st	2 (0-7)	0.5 (0-4)	4.5 (0-7)
2 nd	3 (0-93)	3 (0-93)	0
Mean TTO in days (SD) per dose****			
1 st	2.4 (2.55)	1.33 (1.75)	4 (2.94)
2 nd	17.71 (33.67)	17.71 (33.67)	0
Seriousness Criteria (%)			
Fatal	2 (11.76)	2 (15.38)	0
Hospitalized	15 (88.24)	11 (84.62)	4 (100)

*17 serious case reports that are still under assessment by the PV team

**TTO: Time to onset

***SD: Standard deviation



DESCRIPTION OF SERIOUS ADVERSE EVENTS FOLLOWING IMMUNIZATION

AEFIs requiring Hospitalization or with Fatal Outcome (Tables 12, 13, 14)

AEFIs are classified as serious according to the seriousness criteria of WHO (refer to the Technical Notes). These cases either require a phone call only or an investigation followed by a causality assessment in order to evaluate the potential relationship between the AEFI and the vaccine and to implement the appropriate follow-up actions. The investigation is carried out by the PV team members. It includes an extensive and rigorous scientific evaluation based on available information about the vaccination site, the patient's medical records, laboratory results, and information retrieved from the recipient or his/her relatives. After collecting all the available information, the investigation report is filled, and a causality assessment is performed by a group of experts to review the potential causal association between the AEFI and the vaccine. WHO forms and tools are used to carry out both the investigation and the causality assessment. Findings are discussed with the Serious AEFI Special Committee at Ministry of Public Health. In the period of time covered by this report, there were 110 case reports classified as serious per the WHO-UMC definition that resulted in either hospitalization or death, representing 1.95% of all case reports and a reporting rate of 0.034 per 1,000 doses of vaccines.

Overview of completed serious case reports (Table 12, 13)

Out of the 46 serious case reports that were completed with a final decision by the Serious AEFI Special Committee, there are 28 cases of hospitalization and 18 cases of death temporally associated with the receipt of the COVID-19 vaccine.

For the 28 suspected hospitalization cases post vaccination (13 Males, 15 Females), the vaccine recipients' age range was between 25 and 95 years old. 18 hospitalizations occurred after the first dose, while the remaining 9 hospitalizations occurred after the second dose. There is one case of immunization error where the patient received both doses during the same vaccination session. The 28 vaccine recipients experienced AEFIs within one day to 32 days post-vaccination. The Serious AEFI Special Committee at the Ministry of Public Health confirmed the coincidental causality assessment in 21 case reports. 6 were considered as indeterminate, and the 1 case report was classified as consistent due to immunization error.

In the 18 suspected cases of death post vaccination (10 Males, 8 Females), the vaccine recipients' age range was between 29 and 92 years old. 11 death cases were after the first dose while the remaining 7 cases were after the second dose. The 18 vaccine recipients experienced AEFIs within 30 minutes to 20 days post-vaccination. The Serious AEFI Special committee at the MoPH confirmed the coincidental classification in 10 case reports, 7 case reports were considered as indeterminate, and 1 case reports showed a consistent association due to the lack of other clearly attributing factors.

Overview of serious case reports under assessment (Table 14)

Out of the 17 serious case reports that are still under assessment by the PV team, there are 15 cases of hospitalization and 2 cases of death temporally associated with the receipt of the COVID-19 vaccine.

For the 15 suspected hospitalization cases post vaccination (8 Males, 7 Females) the vaccine recipients' age range was between 24 and 73 years old. 10 hospitalizations occurred after the first dose, while the remaining 5 hospitalizations occurred after the second dose. The 15 vaccine recipients experienced AEFIs within 15 minutes to 16 days' post vaccination.

In the 2 suspected cases of death post-vaccination (2 Males), the vaccine recipients' age was 61 and 69 years old. Both cases were after the second dose. The 2 vaccine recipients experienced AEFIs 3 days and 93 days post-vaccination (Table 14).



SIGNALS

The PV team has adopted two sources for identifying signals (refer to Technical Notes) associated with AEFIs following Pfizer–BioNTech and AstraZeneca COVID-19 Vaccine:

The French National Security Agency of Medicines and Health Products (ANSM) and the World Health Organization–Uppsala Monitoring Center (WHO–UMC) Classification.

I. Signals Identified in Lebanon based on the ANSM Signals

In Lebanon, the below reported AEFIs during the time of this report may be considered as potential or confirmed signals for both vaccines, Pfizer–BioNTech and AstraZeneca, which are aligned with the ANSM signals list:

For Pfizer BioNTech Vaccine:

- The **potential** signals include:
 - Cardiac Rhythm disorders
 - Rheumatoid Polyarthritis
 - Spontaneous Hematomas
 - Menstrual Irregularities
 - Herpes Zoster Reactivation
- The **confirmed** signals include:
 - Hypertension
 - Pericarditis

For AstraZeneca Vaccine:

- The **potential** signal includes:
 - Hypertension
 - Mucocutaneous bleeding
 - Bell's Palsy and Facial Paralysis
 - Dyspnea and asthma associated with flu-like symptoms
 - Deafness
 - Cardiac rhythm disturbances
 - Herpes Zoster Reactivation
- The **confirmed** signals include:
 - Flu-like symptoms
 - Thrombosis associated with thrombocytopenia

II. Signals Identified in Lebanon based on the WHO–UMC Vigibase Signals

The WHO UMC Vigibase has highlighted Trigeminal Neuralgia, Hearing Loss/Tinnitus, and Photophobia (refer to Technical Notes) as confirmed signals with both Pfizer–BioNTech and AstraZeneca while Myocarditis/pericarditis (refer to Technical Notes) was a confirmed signal for Pfizer BioNTech.

In Lebanon, both vaccines have reported AEFIs that may be considered as associated potential signals per the WHO-UMC classification.

For Pfizer BioNTech Vaccine:

- Trigeminal Neuralgia
- Tinnitus
- Pericarditis
- Photophobia

For AstraZeneca Vaccine:

- Trigeminal Neuralgia
- Tinnitus
- Photophobia



INTERNATIONAL DATA OVERVIEW RELATED TO SERIOUS AEFI WITH COVID-19 VACCINES

After a thorough literature review, the following data was retrieved from other countries regarding AEFI with COVID-19 vaccines. It is important to mention that each country has its own way of reporting AEFI with COVID-19 vaccines.

United-States of America (CDC)

According to the CDC, death reports after COVID-19 vaccination are rare. From December 14, 2020, through October 25, 2021, more than 414 million doses of COVID-19 vaccines were administered in the United States. Vaccine Adverse Event Reporting System (VAERS) received 9,143 reports of death (0.0022%) among people who received a COVID-19 vaccine.

Ontario, Canada (Public Health Ontario)

Based on the weekly surveillance summary published by Public Health Ontario (PHO) regarding AEFI for COVID-19 in Ontario, covering the period between December 13, 2020 to October 17, 2021, 783 AEFI reports have been classified as serious representing 5.6% of all AEFI reports, and a serious AEFI reporting rate of 3.5 per 100,000 doses administered for all vaccine products combined. The serious reporting rate for the Pfizer-BioNTech vaccine was 2.7 per 100,000 doses administered, and the serious reporting rate for the AstraZeneca vaccine was 10.5 per 100,000 doses administered. Of the 783 serious reports, 775 reports were hospitalization cases due to the adverse event and 8 were death cases.

United Kingdom (Medicines and Healthcare Products Regulatory Agency)

Based on the weekly summary the of the Yellow Card reporting by the Medicines and Healthcare products Regulatory Agency (MHRA), 122,542 UK Yellow Cards have been received and analyzed from people who have received the Pfizer/BioNTech vaccine, and a total of 234,882 UK reports of suspected ADRs to the COVID-19 Vaccine AstraZeneca received and analyzed up to and including the 13th of October, 2021. The MHRA has received 564 reports and 1,101 reports of suspected adverse events in which the patient died shortly after vaccination with the Pfizer-BioNTech vaccine and AstraZeneca COVID-19 vaccine respectively.

Italy (Italian Medicines Agency)

In the COVID-19 Vaccine Surveillance Report published by the Agenzia Italiana Del Farmaco (AIFA) also known as the Italian Medicines Agency, covering the period between the 12th of December, 2021, and the 26th of September, 2021, for all vaccines, 14.4% of reports refer to serious adverse events with a reporting rate of 17 serious events per 100,000 administered doses, regardless of the type of vaccine. For Pfizer-BioNTech, 12% of the report were serious which translates into about 4 reports per 100,000 doses administered. As for the AstraZeneca vaccine, 18% of the reports were classified as serious. In this report by the AIFA, serious case reports are divided into “other clinically relevant condition”, hospitalization” and “life-threatening” cases.

Global (Vigibase)

In regards to the four COVID-19 vaccines (Pfizer-BioNTech, AstraZeneca, Sputnik V, and Sinopharm), 158,294 case reports were classified as serious out of 1,009,109 cases reported in the WHO-UMC global database “Vigibase”. Out of the 158,294 case reports, 16,996 (1.68%) were death cases, 80,932 (8.02%) were hospitalizations cases, 20,109 (1.99%) were life-threatening cases, 40,095 (3.97%) were disabling cases, and 162 (0.01%) cases resulted in congenital anomalies.

CONCLUSION

In Lebanon, 639,332 confirmed cases of coronavirus with 8,472 deaths following a positive test of COVID-19 have been reported to the WHO from January 3rd 2020 till October 31st, 2021. The single most effective way to reduce deaths and hospitalizations from COVID-19 is vaccination. The national immunization campaign has been underway since February, 2021. Four COVID-19 vaccines are available in Lebanon: Pfizer-BioNTech, AstraZeneca, Sputnik V, and Sinopharm. However, the majority of COVID-19 vaccines administered are Pfizer-BioNTech and AstraZeneca. In this report, 93.8% of the AEFI reported were classified as non-serious case reports, and only 6.2% were classified as serious. It is important to note that reports of adverse events following vaccination, including hospitalizations and deaths, do not necessarily mean that they are caused by the vaccine.

The PV Program at the Ministry of Public Health continues to conduct constant monitoring for the safety of COVID-19 vaccines in collaboration with its partners, including individual case review, daily analysis of surveillance data for vaccine safety signals, and regular reporting.

TECHNICAL NOTES

- Important Medical Event Terms List: The EudraVigilance Expert Working Group (EV-EWG) has coordinated the development of an Important Medical Event Terms (IME, MedDRA version: 24.0) list. This IME list aims to facilitate the classification of suspected adverse reactions as well as aggregated data analysis and case assessment in the frame of the day-to-day PV activities of stakeholders. The IME list is intended for guidance purposes only.
- EudraVigilance is the system for managing and analyzing information on suspected adverse reactions to medicines which have been authorized or being studied in clinical trials in the European Economic Area (EEA). The European Medicines Agency (EMA) operates the system on behalf of the European Union (EU) medicines regulatory network.
- MedDRA (Medical Dictionary for Regulatory Activities) is a standardized medical terminology, published by the International Council for Harmonization, used in particular for coding cases of adverse effects in clinical study reports and pharmacovigilance databases, and to facilitate searches in these databases.
- PIDM: The WHO Program for International Drug Monitoring (PIDM), established in 1968, provides a forum for WHO Member States to collaborate in the monitoring of drug safety, and notably, the identification and analysis of new adverse reaction signals from data submitted to the WHO global individual case safety report (ICSR) database by member countries.

- Seriousness Criteria: According to the WHO, a serious AEFI is an event that results in death, hospitalization or prolongation of an existing hospitalization, persistent or significant disability or incapacity, congenital anomaly/birth defect or is life-threatening.
- ICH E2A Guidelines: Aims to develop standard definitions and terminology for key aspects of clinical safety reporting. It also provides guidance on the appropriate mechanism for handling expedited (rapid) reporting, in the investigational (i.e. pre-approval) phase.
- Signal: According to the World Health Organization (WHO), a "signal" is a reported information on a possible causal relationship between an AE and a drug, the relationship being unknown or incompletely documented previously. Usually more than one report is required to generate a signal, depending on the seriousness of the event and the quality of the information.
- Trigeminal Neuralgia: is a neuropathic pain condition affecting the fifth cranial nerve and causing one of the most severe pains to be experienced. Symptoms include extreme, sporadic, sudden burning or shock like pain lasting from seconds up to two minutes and is usually unilateral.
- Myocarditis: An inflammation of the heart muscle (myocardium). Common myocarditis signs and symptoms include chest pain, rapid or abnormal heartbeat (arrhythmias), shortness of breath, or fluid buildup with leg swelling.
- Photophobia: Abnormal light sensitivity. It can occur as a symptom of various condition such as migraine headache or ophthalmic inflammation.
- VigiFlow is a web-based individual case safety report (ICSR) management system that is available for use by national PV centers of the WHO Program for International Drug Monitoring.
- VigiBase is the WHO global ICSR database that contains ICSRs submitted by the participating member states enrolled under WHO's international drug monitoring program. It is the single largest drug safety data repository in the world.
- VigiLyze supports the collection, processing, and sharing of data of case reports to facilitate effective data analysis. VigiLyze is a signal detection and management system that can use national, regional or global data as the starting point for quantitative signal detection.

DATA CAVEATS

- Each case report refers to a reporter who reported an AEFI after receiving a dose of COVID-19 vaccine. A case report may contain multiple AEFIs. Therefore, the total number of AEFIs can exceed the number of individual case reports reported in a given time frame. Case reports that did not contain an AEFI at the time of data extraction or was missing the Vaccine name have been excluded.
- AEFI reporting rates were calculated using the number of vaccines' specific AEFIs reported in the specified time period in Lebanon divided by the doses of vaccines administered in the same time period in Lebanon.
- The information available in this report does not represent Uppsala Monitoring Center (UMC) nor WHO's opinions.

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CITATION:

Ministry of Public Health – Quality Assurance of Pharmaceutical Products – Pharmacovigilance Program (2021). Adverse Events Following Immunization for COVID-19 Vaccines in Lebanon: February 14th, 2021 to October 19th, 2021; Beirut, Lebanon.

FOR FURTHER INFORMATION:

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