Norwegian
Medicines Agency

Reported suspected adverse reactions to coronavirus vaccines

About the report:

- A summary is presented below of all assessed reports concerning suspected adverse reactions following coronavirus vaccination from 27 December 2020, the date on which the first vaccine became available.
- The figures are taken from the Norwegian ADR Registry and include reports from healthcare professionals, the general population and vaccine manufacturers in Norway.
- Only reports which have undergone quality assurance and been assessed in the Norwegian ADR Registry are included in the report. At any one time, there will be reports which are currently being assessed – these reports are not considered further in this summary.
- Reports of serious events are assessed first. The report therefore does not give a true picture of the distribution between serious and non-serious events.
- Symptoms or illnesses that occur after vaccination are reported if there is any *suspicion* of a possible link. As a result, it cannot be assumed that there is a causal relationship between the suspected adverse reaction and the vaccine.
- This report contains all suspected adverse reactions regardless of any possible causal link.
- The adverse reaction reports that are referred to are dynamic, i.e. additional information from the reporter or new knowledge concerning the vaccine may become available at any time which alters the assessment of the reports.
- The Norwegian Medicines Agency, the European Medicines Agency (EMA), the World Health Organization (WHO) and pharmaceutical companies are continuously conducting analyses of their adverse reaction data. This is known as 'signal detection' and involves both statistical calculations and a review of adverse reaction reports in order to identify unknown adverse reactions. When a signal is identified, a more thorough analysis is carried out to assess whether it could be a new adverse reaction to the drug, or whether any other factors could explain the signal. Based on these analyses, it may be appropriate to update the pharmaceutical information with new adverse reactions or introduce measures aimed at minimising the risks.
- Weekly reports are published which summarise the adverse reactions reported following vaccination with the coronavirus vaccines.

Summary

The ADR (adverse drug reaction) reports do not provide a basis for revising the current recommendations regarding the use of the coronavirus vaccines. The benefits of administering the vaccine are considered to outweigh any possible risks.

There are currently no new indications of unexpected or serious adverse reactions in Norway. The suspected adverse reactions which have been observed following vaccination are generally in line with what is described in the product information.

Most reports concern transient adverse reactions, such as headache, fatigue, malaise, fever, nausea and body pain. These usually appear on the first or second day after vaccination and last around 2-3 days. The vast majority of those who have been vaccinated appear not to have suffered any adverse reaction to the vaccine.

Amongst the reports that have been assessed, there were reported 93 deaths with a temporal link to vaccination amongst elderly people in need of care, most of whom were nursing home residents. The average age in these cases is above 87 years. Many of the reporter state that no causal link to vaccination is suspected. The fact that a person dies soon after being vaccinated does not mean that there is a causal relationship. In order to analyse whether there could be a causal relationship, other data and advanced analyses are normally required.

In the case of some patients, there is always a possibility that relatively mild adverse reactions following the vaccination of frail elderly people contributed to a deterioration in their general condition or underlying illness, leading to death of the patient.

Coronavirus vaccines in use in Norway

Three coronavirus vaccines are approved for use in Norway: Comirnaty (BioNTech/Pfizer), COVID-19 Vaccine Moderna (Moderna) and COVID-19 Vaccine AstraZeneca (AstraZeneca). Comirnaty and COVID-19 Vaccine Moderna are mRNA vaccines, while COVID-19 Vaccine AstraZeneca is a virus vector vaccine. All are administered as two doses, a few weeks apart.

Statistics concerning reports of suspected adverse reactions as of 16 February 2021

So far, **1264** reports of suspected adverse reactions have been received following COVID-19 vaccination. Of these, **678** have been assessed, after over **239,562** people had been vaccinated with the first dose of COVID-19 vaccine, and over **73,737** had been vaccinated with the second dose of COVID-19 vaccine as of 16 February 2021.

As of 16 February 2021, only reports concerning Comirnaty and COVID-19 Vaccine Moderna had been received.

Distribution of reports by gender

Gender	Female	Male
Number	520	158

Table 1: Gender breakdown amongst patients in the reports

Distribution of reports by age

Age group								
18-29	**30-39**	**40-49**	**50-59**	**60-69**	**70-79**	**80-89**	**90+**	**Unknown age**
76	123	80	63	25	47	128	126	10

Table 2: Age distribution of patients in the reports

Residents of nursing homes, persons 85 years of age and older, and selected groups of health professionals and other employees in the health and care services have so far been given priority in the vaccination programme. This is therefore also reflected in the gender and age distribution of the patients in the reports.

The weekly report at FHI.no also shows the number and proportion of persons vaccinated in different age groups and gender distribution nationwide.

Distribution of reports according to severity for each vaccine

Vaccine	Date adopted	Total number of reports	Number of reports involving death	Serious reports other than death	Reports of non-serious events
Comirnaty (Pfizer/BioNTech)	27.12.2020	660	93	71	496
Covid-19 Vaccine Moderna (Moderna)	15.01.2021	18	0*	2	16

Table 3: Distribution of reports of suspected adverse reactions according to severity

**One report of a death following vaccination with COVID-19 Vaccine Moderna from the report published on 11.02.2021 has been updated, as it has since become apparent that it was Comirnaty that was actually given.*

The data concerning the various coronavirus vaccines are not directly comparable. This is partly because they have different adverse reaction profiles, because they have not been used for equal periods of time and because the vaccines have been administered to different numbers of people with different disease profiles and ages.

Reported events following vaccination are classified as serious when:

- *the event resulted in/extended a stay in hospital*
- *the event is considered to be a medically important event*
- *the event resulted in a prolonged reduction in function level*
- *the event resulted in a life-threatening illness (e.g. anaphylaxis) or death*
- *the event resulted in birth defects/congenital malformations*

Reports on deaths

So far, 93 reports of deaths after vaccination have been assessed concerning elderly patients in need of care, most of whom were nursing home residents. Many people in this patient group who have so far been vaccinated are very frail or terminally ill patients. At this time of year, an average of around 50 people die every day in the age group 85 years or older, and around 35 people every day in the age group 75-85. It is

therefore to be expected that deaths will occur soon after vaccination, without there necessarily being any causal link to the vaccine. The reported deaths have occurred within a period of up to 2 weeks following vaccination.

The reports on many of these deaths state that no link with vaccination is suspected, and that the death is being reported for the sake of completeness. Many of the patients were also very frail prior to vaccination, and had many medical conditions and were taking many different medicines. Amongst this patient group, a number of factors often contribute to death, and the actual cause of death can be difficult to establish. It can be difficult to know whether the death was caused by the patient's underlying condition or another incidental, concomitant event. In the case of some of the frailest patients, there is always a possibility that relatively mild adverse reactions to the vaccine could have contributed to a serious course of their underlying illness.

These reports do not currently constitute a signal of an adverse reaction and do not provide a basis for revising the product information for the vaccines.

The Norwegian Medicines Agency is now working to establish an external group of geriatricians to look into these events in order to give a better insight into any causal relationships.

Number of suspected adverse reactions according to category

A single adverse reaction report can include a number of suspected adverse reactions or symptoms. Figure 1 and Table 4 show suspected adverse reactions grouped according to the category to which they belong and the types of suspected adverse reactions which have been reported most frequently.

The distribution is categorised according to the origin of the suspected adverse reaction (e.g. the heart), or the cause of the suspected adverse reaction (e.g. infections).

The categories are the highest level in a hierarchical, standardised medical terminology which is used internationally (MedDRA). Using this terminology makes it possible compare reports internationally.

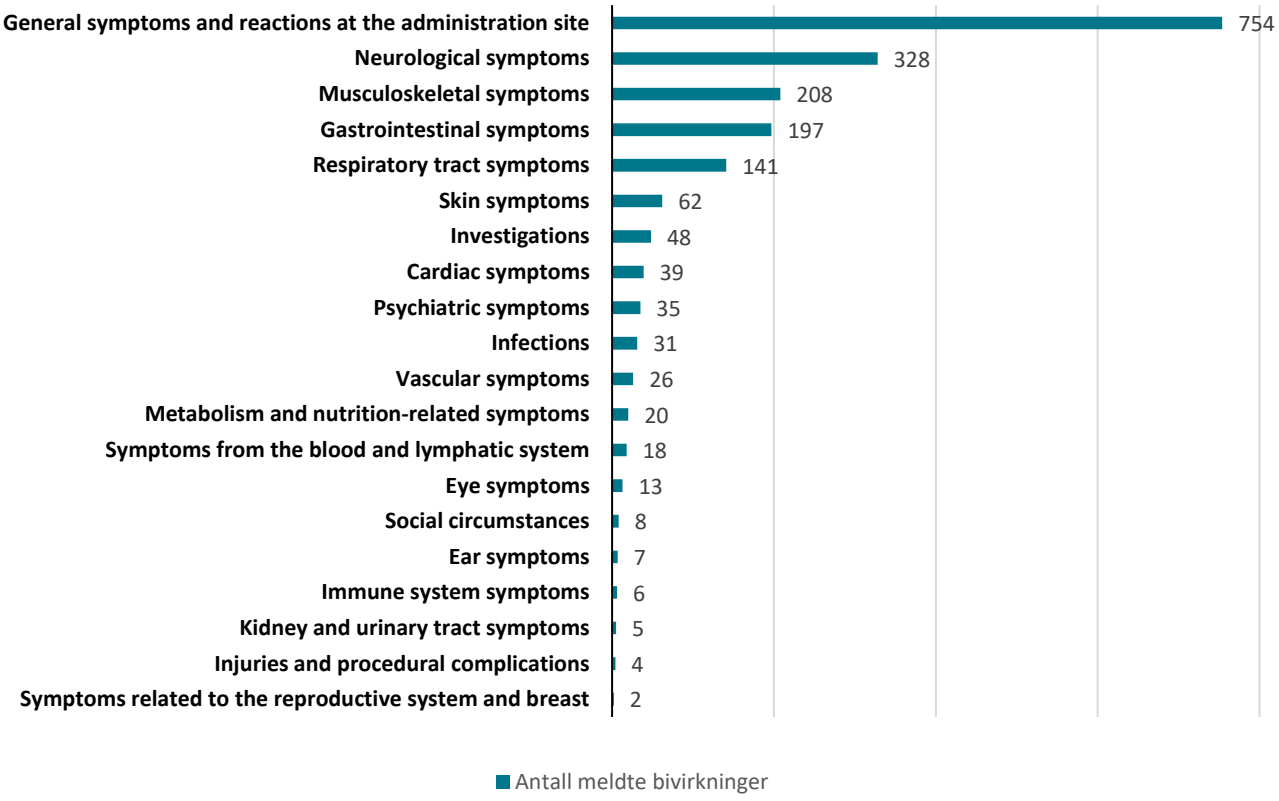

Figure 1: Reported suspected adverse reactions by category for mRNA vaccines (Comirnaty and Covid-19 Vaccine Moderna)

Category	Number of reported adverse reactions
General symptoms and reactions at the vaccine administration site E.g.: Pain and reactions at the injection site, discomfort, fever, fatigue, decreased general condition	754
Neurological symptoms E.g.: Headache, dizziness, drowsiness, syncope	328
Musculoskeletal symptoms E.g.: Muscle pain, joint pain, muscle stiffness, pain in the extremities	208
Gastrointestinal symptoms E.g.: Stomach pain, nausea, vomiting, diarrhoea	197
Respiratory tract symptoms E.g.: Difficulty breathing, shortness of breath, cough, irritation of the respiratory	141
Skin symptoms E.g.: Rash, itching, redness, cold sweats	62
Examinations E.g.: Abnormal and raised heart rate, decreased blood pressure, decrease in oxygen saturation	48
Cardiac symptoms E.g.: Bradycardia, tachycardia	39
Psychiatric symptoms E.g.: Sleep abnormalities, restlessness, lethargy, hallucination	35
Infections E.g.: Pneumonia, cold symptoms	31
Vascular symptoms E.g.: Flushes, pallor, low blood pressure	26
Metabolic and nutrition-related symptoms E.g.: Reduced appetite	20
Symptoms from the blood and lymphatic system E.g.: Swollen lymph nodes	18
Eye symptoms E.g.: Blurred vision, twitch	13
Social circumstances E.g.: Bedridden	8
Ear symptoms E.g.: Discomfort in the ear	7
Immune system symptoms E.g.: Allergic reaction	6
Kidney and urinary tract symptoms E.g.: Urinary tract infection	5
Injuries and procedural complications E.g.: Fall	4
Symptoms relating to the reproductive organs and breast E.g.: Chest pain	2

Table 4: Reported suspected adverse reactions by category for mRNA vaccines (Comirnaty and Covid-19 Vaccine Moderna)

The most frequently reported symptoms primarily consist of known adverse reactions within the general symptoms category, and include reactions at the vaccine injection

site, decreased general condition, fever and general malaise. Headache, dizziness and drowsiness after vaccination are also frequently reported, as well as gastrointestinal symptoms such as diarrhoea, nausea and vomiting. The symptoms have arisen within 1-2 days after vaccination and have generally disappeared within a few days. Some reports have been received where the patient has developed infections such as pneumonia and influenza. As the mRNA vaccines are not live, they cannot cause conditions which are being vaccinated against or other infections

Severe allergic reactions following vaccination with the mRNA vaccine

Four serious allergic reactions have been reported following vaccination with Comirnaty. New information has been provided for one report, which indicated that the event was not an allergic reaction. Severe allergic reactions are generally very rare and occur in 1-2 per million people who have been vaccinated with other vaccines. The frequency of anaphylactic reactions after mRNA vaccination remains unknown, but the data that is available suggests that it is higher than for other vaccines.

Reports of higher blood sugar levels

Five reports have been received where diabetic patients have developed higher blood sugar levels (hyperglycaemia) or experienced difficulty regulating their blood sugar levels during the first few days after being vaccinated with Comirnaty. Infectious diseases and fever are known to increase the risk of high blood sugar levels. It is possible that the common adverse reactions following vaccination, such as fever and nausea, could affect blood sugar levels.

More pronounced reactions after the second dose of mRNA-vaccine than after the first

We are receiving reports of common adverse reactions following the second dose of mRNA vaccine. A number of these reports concern similar reactions following the first dose and indicate that the reactions were more severe following the second dose. This is entirely in line with what was observed during the clinical studies and the description in the product information for the mRNA vaccines.