Norwegian Medicines Agency

Reported suspected adverse drug reactions to coronavirus vaccines

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About the report

- A summary is presented below of all processed 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 ADR Registry and include reports from health professionals, the general population and vaccine manufacturers in Norway.
- Only reports which have undergone quality assurance and been assessed 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 processed first. The report therefore does not give a true picture of the distribution between serious and non-serious events.
- Symptoms or illnesses which occur after vaccination are reported if there is any *suspicion* of a possible link. It cannot be assumed that there is a causal link between the suspected adverse reaction and the vaccine.
- This report contains all suspected adverse reactions regardless of any possible causal link.
- Additional information about the events, or new knowledge about the vaccination, may become available at any time which alters the assessment of the adverse reactions.
- The Norwegian Medicines Agency, the European Medicines Agency (EMA), the World Health Organization (WHO) and pharmaceutical companies review the adverse reaction reports and prepare statistics in order to detect unknown adverse reactions (signal detection). 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.
- A weekly report is published which summarises reported adverse reactions to the COVID-19 vaccines.

Summary

This report is based on an assessment of adverse reaction reports received by 9 March. These reports do not provide a basis for revising the current recommendations regarding use of the coronavirus vaccines.

The benefits of administering the vaccine are considered to outweigh any possible drawbacks. The reports received as of 9 March give 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 pain in the body. These usually appear on the first or second day after vaccination and last around 2-3 days. Most people tolerate these transient adverse reactions well, while others experience significant discomfort during the first few days after vaccination.

Amongst the reports that have been assessed, there are 115 deaths with a temporal link to vaccination amongst elderly people in need of nursing care, most of whom were nursing home residents. The average age of the people concerned was over 87. Many of these reports state that no 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 of the frailest patients, there is always a possibility that relatively mild adverse reactions to the vaccine could have contributed to serious developments in their underlying illness.

Coronavirus vaccines in use in Norway

Three coronavirus vaccines are approved for use in Norway:

- Comirnaty (BioNTech/Pfizer)
- COVID-19 Vaccine Moderna (Moderna)
- COVID-19 Vaccine AstraZeneca (AstraZeneca)

Comirnaty and COVID-19 Vaccine Moderna are mRNA vaccines, while COVID-19 Vaccine AstraZeneca is a viral vector-based vaccine. All are administered as two doses, a few weeks apart.

Statistics concerning reports of suspected adverse reactions as of 9 March 2021

So far, a total of **4,985** reports of suspected adverse reactions following COVID-19 vaccination; of these, **2,479** have been assessed.

By 9 March 2021, over **408,000** people had received their first dose of COVID-19 vaccine, and over **214,000** people had received the second dose.

Distribution of reports by gender

Gender	Female	Male
Number	1955	524

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**
496	622	453	278	89	88	240	181	32

Table 2: Age distribution of patients in the reports

The weekly report at FHI.no 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	1524	114	143	1267
COVID-19 Vaccine Moderna (Moderna)	15.01.2021	71	1	7	63
COVID-19 Vaccine AstraZeneca (AstraZeneca)	08.02.2021	885	0	31	854

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

The data concerning the various coronavirus vaccines are not directly comparable. The vaccines have been given to different numbers of people, with different disease profiles and ages.

Reports on death

A total of 115 reports have so far been assessed concerning deaths following vaccination relating to elderly people in need of nursing care, most of whom were nursing home residents. Many people in this group who have been vaccinated are very frail or terminally ill patients. At this time of year, about 50 people die every day in the age group 85 years or older, and around 35 people every day in the age group 75-84. It is therefore to be expected that deaths will occur with a temporal link to vaccination, without there necessarily being

any causal link to the vaccine. The reported deaths have occurred within a period of up to three 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 determine. It can be difficult to know whether the death was due to the patient's underlying condition or another incidental, concomitant event. In the case of some of the most frail patients, there is always a possibility that relatively mild adverse reactions to the vaccine could have contributed to serious developments in their underlying illness.

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

The Norwegian Medicines Agency has set up an external group of geriatric specialists to look into these incidents in order to give us a better insight into any causal relationships.

Serious reports

Reported events following vaccination are classified as serious when:

- *the event resulted in or 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*

So far, 181 reports have been assessed which meet one of the severity criteria listed above. The majority of these reports concern people over the age of 60 who were admitted to hospital. Any event that leads to hospital admission is routinely classified as serious, even when the patient is only kept under observation and subsequently makes a full recovery. In addition, there are a number of events that are always classified as serious, such as anaphylactic reactions, syncope (fainting) and hallucinations.

The most common adverse reactions in this group are fever, decreased general condition, shortness of breath, muscle pain, vomiting, diarrhoea and fatigue. These are largely the same symptoms which we see for the non-serious reports, but which have resulted in the patient being admitted for observation with a suspected more serious condition.

Other serious cases have also been observed following vaccination where no causal relationship has been established. Among other things, elevated blood sugar levels, high INR values in patients taking Marevan, chest pain and difficulty breathing may be caused by blood clots, numbness, absence or reduction of sensation and paralysis. The Norwegian Medicines Agency wishes healthcare professionals to be aware of possible reactions after vaccination which could be associated with these conditions.

Some of these reactions were also seen in the studies that formed the basis for the temporary authorisations of the vaccines, but insufficient data is currently available to establish any link to the vaccine. However, a number of these reactions are included in the list of possible adverse reactions of particular interest which the pharmaceutical authorities in Europe are closely monitoring.

Number of suspected adverse reactions according to category

A single adverse reaction report can include a number of suspected adverse reactions or symptoms. Suspected adverse reactions are presented below, grouped according to the category to which they belong for each vaccine type 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.

Reactions to mRNA vaccines

- Comirnaty (Pfizer/BioNTech)
- COVID-19 Vaccine Moderna (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	2033
Neurological symptoms E.g.: Headache, dizziness, drowsiness, syncope	948
Musculoskeletal symptoms E.g.: Muscle pain, joint pain, muscle stiffness, pain in the extremities	635
Gastrointestinal symptoms E.g.: Stomach pain, nausea, vomiting, diarrhoea	516
Respiratory tract symptoms E.g.: Difficulty breathing, shortness of breath, cough, irritation of the respiratory tract	271
Skin symptoms E.g.: Rash, itching, redness, cold sweats	231
Examinations E.g.: Abnormal and raised heart rate, decreased blood pressure, decrease in oxygen saturation	90
Psychiatric symptoms E.g.: Sleep abnormalities, restlessness, lethargy, hallucination	86
Cardiac symptoms E.g.: Bradycardia, tachycardia	67
Symptoms from the blood and lymphatic system	64

E.g.: Swollen lymph nodes, pain in the lymph nodes	
Infections E.g.: Pneumonia, cold symptoms	60
Vascular symptoms E.g.: Flushes, pallor, low blood pressure	56
Eye symptoms E.g.: Blurred vision, twitch	44
Metabolic and nutrition-related symptoms E.g.: Decreased appetite, dehydration	43
Ear symptoms E.g.: Pain in the ear, vertigo	17
Social factors E.g.: Bedridden	17
Kidney and urinary tract symptoms E.g.: Urinary retention	12
Injuries and procedural complications E.g.: Fall	12
Immune system symptoms E.g.: Allergic reaction	10
Symptoms relating to the genitals and breasts	3
Endocrine symptoms	2
Pregnancy, puerperal and perinatal disorders	1
Surgical and medical procedures	1

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.

Reactions to viral vector-based vaccines

- COVID-19 Vaccine AstraZeneca (AstraZeneca)

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	1811
Neurological symptoms E.g.: Headache, dizziness, numbness, drowsiness	815
Musculoskeletal symptoms E.g.: Muscle pain, joint pain, back pain	753
Gastrointestinal symptoms E.g.: Stomach pain, nausea, vomiting, diarrhoea	329
Skin symptoms E.g.: Rash, pain in the skin, cold sweat	90
Respiratory tract symptoms E.g.: Breathing difficulties, hyperventilation, nasal congestion, pain and swelling of the throat	86
Cardiac symptoms E.g.: Palpitations	41
Examinations E.g.: Abnormal and elevated heart rate	39
Psychiatric symptoms E.g.: Sleep disorders, insomnia	32
Metabolic and nutrition-related symptoms E.g.: Reduced appetite	29
Eye symptoms E.g.: Eye pain, photophobia	25
Vascular symptoms E.g.: Flushes, hot flushes	16
Infections E.g.: Colds, sinusitis	14
Social factors E.g.: Bedridden	13
Ear symptoms E.g.: Pain in the ear, noise sensitivity	12
Symptoms relating to the genitals and breasts E.g.: Pain in the genitals and nipples	7
Symptoms from the blood and lymphatic system E.g.: Swollen lymph nodes	6
Immune system symptoms E.g.: Anaphylactic reaction, allergic reaction	6
Kidney and urinary tract symptoms	5
Injuries and procedural complications	1

Suspected adverse reactions reported following vaccination with viral vector-based vaccines reflect the reactions observed during the studies and referred to in the summary of product characteristics for the Astra Zeneca vaccine. Many people experience severe reactions after the first dose, but only minor reactions after the second, and most reports concern known adverse reactions, such as reactions around the injection site, headache, fever, fatigue and deterioration in general condition.

Reports that the Norwegian Medicines Agency has specifically looked at in this week's report

Reports of higher blood sugar levels

Eight reports have been received where diabetic patients have developed higher blood sugar levels (hyperglycaemia) or experienced difficulty regulating their blood sugar 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.

Severe allergic reactions following vaccination with the mRNA vaccine

Eight serious allergic reactions have been reported following vaccination with Comirnaty. Severe allergic reactions are very rare and occur in 1-2 per million people who have been vaccinated with other vaccines. The incidence of anaphylactic reactions after vaccination with an mRNA vaccine appears to be higher than for other vaccines.