

HPRA Safety Update

COVID-19 Vaccines, Overview of National Reporting Experience

Publication date: 17 June 2021 (Update #8)

Highlights from this update:

- Up to 9 June, 9470 reports of suspected side effects were notified to the HPRAs. The cumulative figure of total doses of COVID-19 vaccines administered was reported as 2.1 million (dose 1) and 1 million (dose 2).¹
- All vaccines have some side effects, the vast majority of which are mild to moderate in nature. These side effects need to be continuously balanced against the benefits in preventing COVID-19 illness. Overall, the national reporting experience continues to support the favourable assessment that the benefits of COVID-19 vaccines outweigh the risks. An overview of national reports received is provided in this safety update.
- On 11 June, the European Medicines Agency (EMA) published highlights from its monthly safety committee meeting, including information on [COVID-19 vaccines](#). On 21 May, the EMA published a safety update report for [Vaxzevria®](#). Safety updates for June for Comirnaty®, Moderna®, Vaxzevria® and COVID-19 Vaccine Janssen® are due to be published shortly and will be available from the [EMA website](#). These publications describe safety issues under evaluation, as well as any new recommendations.
- The EMA's safety committee has issued additional advice arising from an ongoing review of very rare cases of unusual blood clots occurring in combination with low platelets, which are associated with Vaxzevria® and COVID-19 Vaccine Janssen®. A description of this advice, as well as a summary of national reports, is provided on [page 8](#).
- The EMA's safety committee concluded a review of a small number of reports of capillary leak syndrome (CLS) following vaccination with Vaxzevria®. A description of the new EMA advice is provided on [page 9](#).
- The EMA's safety committee assessment of reports describing myocarditis (inflammation of the heart muscle) and pericarditis (inflammation of the membrane around the heart) following COVID -19 vaccination continues. An update on the ongoing assessment, as well as a summary of national reports, is provided on [page 9](#).
- The next HPRAs safety update is due for publication on 15 July.

¹Health Service Executive (HSE) Rollout of COVID-19 vaccines in Ireland <https://www2.hse.ie/screening-and-vaccinations/covid-19-vaccine/rollout/>

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UNDERSTANDING THE DATA PRESENTED WITHIN THIS SAFETY UPDATE

This update includes an overview of reports of **suspected side effects** notified to the HPRAs safety monitoring system and is provided as an enhanced transparency measure for members of the public and healthcare professionals (HCPs). All vaccines have some side effects, the vast majority of which are mild to moderate in nature. These side effects need to be continuously balanced against the expected benefits in preventing COVID-19 illness.

Reports included in the overview are those notified to the HPRAs on a voluntary basis by HCPs and members of the public, with reporting of suspected side effects to COVID-19 vaccines (www.hpra.ie/report) encouraged. Any reports of Irish cases received by the HPRAs from the company (i.e. the licence holder, to date, BioNtech, Moderna, AstraZeneca, Janssen) responsible for the vaccine are also included within this update. This overview provides an up-to-date summary of national reporting experience.

However, it is important to understand that conclusions on the safety of a vaccine cannot be drawn based on the information provided, given well-established and known limitations in interpreting such data in isolation, examples of which are described below.

Causation

- The HPRAs receives reports based on **suspicion** that an adverse experience may be associated with vaccination. This does not mean the vaccine **caused** the adverse experience. As such, these are referred to as **'suspected'** side effects.
- Reports may describe coincidental events, which have occurred post-vaccination, but would have occurred even if vaccination had not taken place (e.g. they may be due to an underlying medical condition, or be signs and symptoms of another illness).
- Each individual report is carefully reviewed, however, the totality of data from all sources (e.g. clinical and epidemiological studies and literature) must be considered as part of ongoing safety monitoring to ensure **evidenced based conclusions** are drawn.

Number/volume

- As the HPRAs system is based on voluntary reporting, **not all** suspected side effects will be reported. As such, the number and types of reports notified can vary for a variety of reasons.
- An increased number of reports is expected for COVID-19 vaccines, given public interest as well as HPRAs calls encouraging reporting. This is known as **stimulated reporting**.
- A single report may describe more than one suspected side effect in an individual (e.g. headache and nausea reported together), therefore, the number of side effects may exceed the total number of reports received.

Comparisons

- The type and number of reports received for different COVID-19 vaccines are **not directly comparable** as, for example, the vaccines have not been used in the vaccination programme for the same length of time, and will have been administered to different numbers of people, with different underlying medical conditions and across different settings.
- Each vaccine is authorised on the basis that its benefits-risk profile has and continues to be favourable.

Changes to data over time

- The description of suspected side effects in this update reflects available information known at the time by the HPRA. These data may undergo changes as more information about individual reports becomes available through follow-up, and as more data are reported and evaluated.
- For these reasons, the information in this report is not sufficient in isolation to draw conclusions on the safety profile of a vaccine. Like all vaccines, some side effects are to be expected, with the vast majority mild or moderate in intensity and resolving within a few days. Vaccines are approved for use on the basis of robust scientific evidence that demonstrates their benefits outweigh any risks.

Always refer to the product information for information on the established safety profile, including known side effects of a COVID-19 vaccine.

This includes the Package Leaflet (for members of the public) and Summary of Product Characteristics (for healthcare professionals)

Product information is accessible from
www.hpra.ie/homepage/medicines/covid-19-updates

AUTHORISED COVID-19 VACCINES

COVID-19 vaccines currently authorised for use in the European Union by the EMA include:

mRNA vaccines:

- Comirnaty® (licence holder: BioNTech Manufacturing GmbH), granted conditional marketing authorisation on 21 December 2020. For further information on this vaccine click [here](#). On 28 May, the EMA extended the marketing authorisation for Comirnaty® beyond the initial authorised use in adults and adolescents aged 16 years and above, to include use in children aged 12-15
- COVID-19 Vaccine Moderna® (licence holder: Moderna Biotech Spain, S.L.), granted conditional marketing authorisation on 6 January 2021. For further information on this vaccine click [here](#).

Adenoviral vector vaccines:

- Vaxzevria® (licence holder: AstraZeneca AB), granted conditional marketing authorisation on 29 January 2021. For further information on this vaccine click [here](#).
- COVID-19 Vaccine Janssen® (License holder: Janssen-Cilag International NV), granted conditional marketing authorisation on 11 March 2021. For further information on the vaccine click [here](#).

OVERVIEW OF SUSPECTED SIDE EFFECT REPORTS

Up to 9 June, the HPRa received 9470 reports describing suspected side effects^{2,3} in association with COVID-19 vaccines, as follows:

mRNA vaccines (Comirnaty® and COVID-19 Vaccine Moderna®)	4605
Adenoviral vector vaccines (Vaxzevria® and COVID-19 Vaccine Janssen®)	4807
Brand unknown/not specified	58

The most regularly reported suspected side effects notified to the HPRa include the following:⁴

<p>mRNA vaccines (Comirnaty® and COVID-19 Vaccine Moderna®)</p> <p>10% or more of reports describe side effects such as:</p> <ul style="list-style-type: none">▪ Chills, fever, tiredness▪ Dizziness, headache▪ Muscle pain, other pain (non-specific)▪ Nausea <p>1% to less than 10% of reports describe side effects such as:</p> <ul style="list-style-type: none">▪ Abdominal pain, diarrhoea, tingling sensation in mouth, vomiting▪ Altered taste, drowsy, fainting/feeling faint, migraine, numbness/reduced sensations, tingling/pins and needles, tremor▪ Back pain, joint/limb pain, muscle weakness/stiffness, neck pain▪ Chest discomfort/pain, feeling unwell, feeling hot/cold, flu-like symptoms, lack of energy/feeling weak/tiredness, swelling including of legs/arms/face, underarm pain▪ Cough, shortness of breath, sore throat▪ Difficulty carrying out daily tasks (such as temporarily unable to attend work)▪ Enlarged lymph nodes▪ Insomnia/trouble sleeping▪ Increased heart rate/racing heart, increased blood pressure▪ Injection site redness, pain, itchiness, swelling▪ Lack of appetite▪ Skin red/red rash, sweating, general rash, itching, itchy rash, hives▪ Vertigo-like symptoms

²A single report may contain more than one suspected side effect for an individual (e.g. rash and hives reported together). Therefore, the total number of suspected side effects will exceed the total number of reports.

³In accordance with EU guidance, reports are valid if the minimum reporting criteria are met. These include an identifiable reporter, an identifiable patient, one or more suspected medicine known to have been administered and one or more suspected adverse reaction.

⁴Terms listed as frequently reported are presented according to standard coding classification system (MedDRA) adopted for use in the EU, and grouped by system organ class (SOC) and listed alphabetically. It should be noted that regular reporting of a side effect is not the same as the incidence of occurrence.

Adenoviral vector vaccines (Vaxzevria® and COVID-19 Vaccine Janssen®)

10% or more of reports received describe side effects such as:

- Fever, feeling cold, tiredness
- Dizziness, headache
- Joint pain, muscle pain, other pain (non-specific)
- Nausea

1% to less than 10% of reports received describe side effects such as:

- Abdominal discomfort/pain, diarrhoea, vomiting
- Back pain, bone pain, limb pain, muscle spasms/weakness/stiffness, neck pain
- Chest discomfort/pain, feeling unwell/ill, feeling hot/cold, flu-like symptoms, lack of energy/weakness, swelling including of legs/arms
- Cough, shortness of breath, sore throat
- Difficulty carrying out daily tasks (such as temporarily unable to attend work, need to stay in bed)
- Drowsy, fainting, headache, migraine, numbness/reduced sensations, tingling/pins and needles, tremor
- Ear pain, tinnitus (ringing in the ears), vertigo-like symptoms
- Enlarged lymph nodes
- Eye pain, vision blurred
- Increased blood pressure
- Hives, skin warm, skin red/rash, sweating/cold sweat, itching, itchy rash
- Increased heart rate/racing heart
- Injection site pain, redness, swelling, bruising
- Insomnia/trouble sleeping
- Lack of appetite

The majority of regularly reported suspected side effects are consistent with the types of events typically observed following vaccination, including those described in the product information for the individual vaccines, and are mild to moderate in nature.

For reports evaluated which included information on outcome, approximately half of the suspected side effects were reported to have resolved or were resolving. For others, the suspected side effects had not yet resolved, or the outcome was reported as unknown at the time of initial reporting. Information on reports with a fatal outcome is provided on [page 10](#).

A full breakdown of all suspected side effects described in reports is provided on [page 11](#). Further information on how reports received by the HPRA are processed, including how safety signals are evaluated, is given on [page 14](#).

Links to the most recent updates from EMA's safety committee, including safety issues under evaluation, are provided in the highlights section on the [cover page](#).

Topics of interest are further described in the sections below.

TOPICS OF INTEREST, INCLUDING EMA RECOMMENDATIONS

mRNA vaccines (Comirnaty® and COVID-19 Vaccine Moderna®)

Reports of allergic type reactions (also known as hypersensitivity)

- Allergic type reactions are known side effects of mRNA vaccines. The HPRA has received a number of such reports, mainly describing symptoms such as itchiness, hives and rash. In a minority of cases, medical treatment and/or clinical observation of the individual was needed.
- The HPRA continues to monitor reports of anaphylaxis, which is a serious allergic reaction. All reports suggestive of anaphylaxis (e.g. sudden onset of symptoms such as low blood pressure, collapse, rapid heart rate, shortness of breath, swelling of lips/throat and itchy skin) are carefully reviewed. Cases are classified by the HPRA as anaphylaxis using a well-established set of clinical and laboratory criteria.⁵ Of the reports reviewed, nine are currently classified as anaphylaxis. In these nine cases, the individuals concerned were reported to have recovered. An additional small number of suspected cases are being followed-up for further information.
- Anaphylaxis is a known side effect, and information on managing this risk is described in the product information. As for all vaccines, COVID-19 vaccines should be administered under close supervision with appropriate medical treatment available in case of such a reaction. Those vaccinated should discuss any signs/symptoms of allergic reaction that they are concerned about with a healthcare professional.

Reports of systemic events

- More than 1% of reports received by the HPRA include a comment from the reporter describing an impact of expected systemic events on their normal daily activities. Reporters have commented on the need to take time off work or to rest in bed, typically for a short period.
- Systemic events can be similar to flu-like symptoms, and can include fatigue, headache, muscle/joint pain, chills and fever, in the day(s) following vaccination.
- These types of systemic events post vaccination are common, with the vast majority mild to moderate in nature and usually resolve within a few days of vaccination.
- These events may occur after either dose. However, the frequency and intensity observed in clinical trials was increased after the second dose of the mRNA vaccines.⁶
- Product information (package leaflet) indicates that some of the possible side effects may temporarily affect ability to operate machinery or drive. Vaccine recipients should be alert to this warning.

Adenoviral vector vaccines (Vaxzevria® and COVID-19 Vaccine Janssen®)

Reports of allergic type reactions (also known as hypersensitivity)

- Allergic type reactions are known side effects of adenoviral vector vaccines. The EMA recently reviewed the different types of reactions reported for Vaxzevria® and have recommended an update to the [product information](#) to include additional examples, such as urticaria (raised, red and itchy skin rash) and angioedema (rapid swelling under the skin). The EMA noted that urticaria

⁵Reports classified using Brighton Collaboration case definition for anaphylaxis
<https://brightoncollaboration.us/category/pubstools/case-definitions/>

⁶European Public Assessment Report (EPAR) for Comirnaty® available from the EMA website
<https://www.ema.europa.eu/en/medicines/human/EPAR/comirnaty>

may occur rarely (less than 1 in 1,000 persons), however, the incidence (i.e. how often it occurs) of angioedema remains under review.

- In the context of suspected side effects notified to the HPRA, similar to the above, hypersensitivity reports such as itching, itchy rash and hives are reported regularly, with cases of angioedema rarely described. In a minority of cases, medical treatment and/or clinical observation of the individual was needed.
- The HPRA continues to monitor reports of anaphylaxis, which is a serious allergic reaction. All reports suggestive of anaphylaxis (e.g. sudden onset of symptoms such as low blood pressure, collapse, rapid heart rate, shortness of breath, swelling of lips/throat and itchy skin) are carefully reviewed. Cases are classified by the HPRA as anaphylaxis using a well-established set of clinical and laboratory criteria.⁵ Of the reports received, a small number (less than five)⁷ are currently classified as anaphylaxis. In all of these case(s) the individual concerned was reported to have recovered.
- Anaphylaxis is a known side effect, and information on managing this risk is described in the product information. As for all vaccines, COVID-19 vaccines should be administered under close supervision with appropriate medical treatment available in case of such a reaction. Those vaccinated should discuss any signs/symptoms of allergic reaction that they are concerned about with a healthcare professional.

Reports of systemic events

- More than 1% of reports received by the HPRA include a comment from the reporter describing an impact of expected systemic events on their normal daily activities. Reporters have commented on the need to take time off work, or to rest in bed typically for a short period.
- Systemic events can be similar to flu-like symptoms, and can include fatigue, headache, muscle/joint pain, chills and fever, in the day(s) following vaccination.
- These types of systemic events post vaccination are common, with the vast majority mild to moderate in nature and usually resolve within a few days of vaccination.
- For Vaxzevria®, these events may occur after either dose. However, adverse reactions reported after the second dose were milder and reported less frequently than after the first dose in clinical trials.⁸
- Product information (package leaflet) indicates that some of the possible side effects may temporarily affect ability to operate machinery or drive. Vaccine recipients should be alert to this warning.

Reports of Thrombosis with Thrombocytopenia syndrome (TTS)

- Thrombosis with Thrombocytopenia syndrome (TTS) is a very rare side effect associated with adenoviral vector vaccines (Vaxzevria® and COVID-19 Vaccine Janssen®). The syndrome involves an unusual combination of thrombosis (blood clots) with thrombocytopenia (abnormally low level of the components that help blood to clot, known as platelets). Vaccine recipients are reminded to seek medical attention if they experience any of the following signs and symptoms: shortness of breath, chest pain, leg swelling, leg pain, persistent abdominal pain post vaccination, severe or persistent headaches, blurred vision, confusion, seizures (fits) or bruising beyond the site of vaccination after a few days.
- Product information for Vaxzevria® has recently been updated to advise that the second dose of Vaxzevria® is contraindicated (i.e. should not be administered) for people who have

⁷When the relevant number is less than five, it is described as a small number to avoid any potential, inadvertent identification of the individuals concerned.

⁸European Public Assessment Report (EPAR) for Vaxzevria® available from the EMA website <https://www.ema.europa.eu/en/medicines/human/EPAR/vaxzevria-previously-covid-19-vaccine-astrazeneca>

experienced TTS following previous vaccination with Vaxzevria®. [A Direct Healthcare Professional Communication](#) was issued in relation to this advice.

- The EMA recently published a statement to raise awareness amongst healthcare professionals of TTS clinical care recommendations issued by learned societies, such as the International Society on Thrombosis and Haemostasis (ISTH).⁹ National guidance is available from the Irish Haematology Society Coagulation Special Interest Group.¹⁰
- Further information on TTS is available for HCPs through the following links (Vaxzevria®: [HPRA Drug Safety Newsletter 102](#) and [Direct Healthcare Professional Communication on 13 April](#); and COVID-19 Vaccine Janssen®: [HPRA Drug Safety Newsletter 103](#) and [Direct Healthcare Professional Communication](#) on 26 April).
- As of 9 June, the HPRAs has received seven reports that are suspected cases of TTS, and which describe the unusual combination of blood clotting in combination with low platelets. In relation to these suspected TTS cases, symptoms occurred approximately 1-3 weeks from vaccination with the first dose of Vaxzevria. The types of symptoms reported include shortness of breath, severe and/or persistent headache, unusual skin bruising, abdominal pain, leg pain and leg swelling. Cases occurred in both males and females, with a median age of 45 (age range, 29 to 63 years). In a small number, blood clots occurred in unusual locations, including in the brain (cerebral venous sinus thrombosis, CVST) and liver (hepatic and portal veins). Based on information currently available, the individuals are either discharged or recovering in hospital after receiving specialist medical care.

Reports of Capillary Leak Syndrome with Vaxzevria®

- The EMA's safety committee has recommended an [update](#) to the product information for Vaxzevria® to include new information and advice on a disorder known as Capillary Leak Syndrome (CLS). CLS is an extremely rare but serious disorder, which involves a leakage of fluid from blood vessels, causing tissue swelling, mainly in the arms and legs and a drop in blood pressure.
- The new recommendations follow an in depth review of six reports of CLS in people vaccinated with Vaxzevria®, three of whom had a prior history of CLS. These six cases occurred in the EU/EEA and UK, relative to the more than 78 million doses of Vaxzevria® have been administered as of the end of May.
- The product information will describe CLS as a new side effect, together with warnings that people who have previously had CLS must not be vaccinated with Vaxzevria®. The product information will also be revised to include information on the signs and symptoms of CLS to raise awareness among healthcare professionals and those vaccinated of this very rare risk. People who have been vaccinated with Vaxzevria® should seek immediate medical assistance if they experience rapid swelling of the arms and legs or sudden weight gain in the days following vaccination. These symptoms are often associated with feeling faint (due to low blood pressure).

COVID-19 vaccines- Common topics

Reports of Myocarditis and Pericarditis

- The EMA's safety committee has issued an [update](#) on the ongoing review of cases of myocarditis (inflammation of the heart muscle) and pericarditis (inflammation of the membrane around the heart) reported in a number of people following COVID-19 vaccination. This review started in April following cases of myocarditis after vaccination with Comirnaty® in Israel. Most of these

⁹ISTH Global Response to COVID-19 guidance available from https://www.isth.org/page/Published_Guidance

¹⁰HSE Guidance on diagnosis and management of thrombocytopenia and thrombosis associated with adenoviral vector COVID-19 vaccination available from https://hse.drsteevenslibrary.ie/ld.php?content_id=33558658

cases were described as being mild and resolved within a few days. They mainly affected males under 30 years of age, with symptoms typically starting within several days of vaccination with the second dose.

- Myocarditis and pericarditis are inflammatory diseases of the heart that typically occur following an infection or immune disease. The estimated incidence for myocarditis and pericarditis in the general (unvaccinated) EU/EEA population ranges from 1 to 10 in 100,000 people each year. Symptoms of myocarditis and pericarditis can vary but often include shortness of breath, a forceful heartbeat that may be irregular, and chest pain. These conditions can improve spontaneously, or with treatment.
- As of 9 June, the HPRA has received 15 reports describing myocarditis and/or pericarditis following vaccination, including nine with mRNA vaccines and six with Vaxzevria®. Of the 15 reports, six describe myocarditis, six pericarditis and a further three describe both myocarditis and pericarditis. In a small number of cases, there was a previous history of pericarditis. The cases occurred in 10 females and five males, with a median age of 53 years (range 28 to 81). Symptoms appeared after the first dose in 11 cases and after the second dose in four cases. In eight of the cases, the diagnosis was reported as provisional in nature, or medical confirmation is awaited. For the remaining seven cases, for which more complete information is available, most individuals had recovered, or were recovering at the time of reporting. All reports describing myocarditis and/or pericarditis are carefully reviewed. However, it can be expected that medical events due to various causes will continue to occur, including following vaccination, but which are not necessarily caused by the vaccine.
- Whilst the review is ongoing, the EMA have advised that individuals who have symptoms such as shortness of breath, a forceful heartbeat that may be irregular, and chest pain following vaccination should seek medical attention.

Reports of deaths following COVID 19 vaccination

- A total of 67 reports have been received describing an individual who was known to have been vaccinated and subsequently passed away. Of these, 58 were reported with an mRNA vaccine. The remaining nine fatalities were related to adenoviral vector vaccines or brand unknown/not specified. The types of events reported mainly include fatalities often seen in the general population, such as those due to natural causes, progression of underlying disease. In some cases, the individuals concerned tested positive for COVID-19. For a number of reports, the cause of death was unconfirmed at the time of reporting, with post mortem results awaited.
- Reports describing a death are carefully reviewed. However, it can be expected that fatalities due to progression of underlying disease or natural causes will continue to occur, including following vaccination. This does not mean that the vaccine caused the deaths.
- In January, the EMA undertook a specific [review](#) of reports of fatalities following mRNA vaccination, and did not identify a safety concern. In most cases, progression of (multiple) pre-existing diseases was considered a plausible explanation. A safety concern has not been identified through subsequent EU coordinated reviews, performed as part of continuous monitoring for all vaccines, and which consider the totality of all reports and available data.

BREAKDOWN OF SUSPECTED SIDE EFFECTS BY CATEGORY

A full breakdown of all suspected side effects described in reports received by the HPRA is provided below by vaccine type (i.e. mRNA and adenoviral vector vaccines) and by category (i.e. the related body system).

Whilst the vast majority of reports notified to the HPRA describe expected events (i.e. known side effects of a vaccine or vaccination process), reports can also be received for events that are unexpected and/or are considered serious, as they required medical care or intervention. Such reports may describe events not caused by the vaccine and may have occurred coincidentally. However, all reports are carefully reviewed and if there is cause to do so, a further analysis is carried out to determine if a vaccine may have had a contributory role. If it is determined that a vaccine is a contributory factor, the public and healthcare professionals will be informed and the relevant product information will be updated.

Please read the following explanatory note in relation to understanding the data presented in the suspected side effect tables:

- A single report describes at least one suspected side effect for a vaccinated individual. Reports often describe several suspected side effects for an individual, which may include more than one category, or more than one in a specific category. For example, a single report that describes chills, fatigue and nausea in an individual, includes three suspected side effects, two in general symptoms (chills and fatigue) and one in gastrointestinal (nausea). As such, there are more suspected side effects in each category and overall, as compared to the number of reports received.
- The breakdown summary includes all suspected side effects as they are reported to the HPRA. This includes cases for which a diagnosis is reported as provisional, or for which there is more than one possible diagnosis at the time of reporting. In other cases, a diagnosis may not be available, and only signs and symptoms or laboratory test results are given. Reports are also received from members of the public, and the HPRA follows up to medically confirm these reports, where consent is provided and more information is required. For each report, all events are 'coded'¹¹ as suspected side effects in the national pharmacovigilance database using the exact information (verbatim) given in the report. The HPRA follows up with the reporter to collect any further information which may be relevant to the assessment of the case.
- The description of suspected side effects in this update, including the number and category, reflect available information known at the time by the HPRA. These data may undergo changes as more information about individual reports becomes available through follow-up, and as reports are further evaluated.
- Please refer to the section 'Understanding the data presented within this safety update' on [page 3](#) with regard to further interpretation guidance. Background information on the evaluation of suspected side effect reports is available on [page 14](#).

Additional anonymised information on reports, including those initially notified to the HPRA, is publicly available through the following link www.adrreports.eu.

¹¹ Medical Dictionary for Regulatory Activities (MedDRA) <https://www.meddra.org/>

Suspected side effects to mRNA vaccines

A breakdown of suspected side effects described in the 4605 reports notified to the HPRA is provided below by category. Each report describes at least one suspected side effect for a vaccinated individual. Reports often describe several suspected side effects for an individual, including more than one in a specific category. As such, there are more suspected side effects in each category and overall, as compared to the number of reports received.

CATEGORY	NO. OF SUSPECTED SIDE EFFECTS
General symptoms and local reactions <i>e.g. chills, fatigue, 'flu-like' feeling, fever, injection site pain or swelling</i>	5747
Nervous system <i>e.g. dizziness, headache, lack of energy, pins & needles, fainting or feeling faint</i>	3137
Muscles, tissue, bones or joints <i>e.g. general muscular pain or weakness</i>	2205
Gastrointestinal <i>e.g. nausea, vomiting, diarrhoea</i>	1697
Skin <i>e.g. rash, itchy rash</i>	1157
Respiratory <i>e.g. cough, shortness of breath</i>	527
Behavioural, emotional and mental health <i>e.g. insomnia, trouble sleeping</i>	360
Blood and lymphatic system <i>e.g. swollen glands</i>	339
Eye <i>e.g. eye pain, vision blurred</i>	253
Abnormal clinical or laboratory result (i.e. where information is provided on results of relevant tests) <i>e.g. high temperature (via thermometer), increased heart rate or blood pressure (via BP monitor)</i>	250
Social circumstances <i>e.g. need to rest in bed or take a break from normal daily activities</i>	246
Cardiac (heart) related <i>e.g. palpitations</i>	240
Blood vessel related (i.e. veins/arteries) <i>e.g. pale complexion</i>	239
Infection <i>e.g. local or general such as influenza or cold sore</i>	218
Procedural issues and complications <i>e.g. injection site bruising</i>	203
Obstetrics and gynaecology <i>e.g. menstruation change</i>	157
Ear related <i>e.g. earache, tinnitus</i>	140
Metabolism and nutrition disorders <i>e.g. decreased appetite</i>	131
Immune system related <i>e.g. hypersensitivity, allergic reaction</i>	57
Kidney related <i>e.g. change in frequency of urination</i>	29
Liver related <i>e.g. jaundice</i>	8
Cysts and polyps	<5
Endocrine (hormone)	<5

Suspected side effects to Adenoviral vector vaccines

A breakdown of suspected side effects described in the 4807 reports notified to the HPRA is provided below by category. Each report describes at least one suspected side effect for a vaccinated individual. Reports often describe several suspected side effects for an individual, including more than one in a specific category. As such, there are more suspected side effects in each category and overall, as compared to the number of reports received.

CATEGORY	NO. OF SUSPECTED SIDE EFFECTS
General symptoms and local reactions <i>e.g. chills, fatigue, 'flu-like' feeling, fever, injection site pain or swelling</i>	8998
Nervous system <i>e.g. dizziness, headache, lack of energy, pins & needles, fainting or feeling faint</i>	4419
Muscles, tissue, bones or joints <i>e.g. general muscular pain or weakness</i>	3139
Gastrointestinal <i>e.g. nausea, vomiting, diarrhoea</i>	2516
Skin <i>e.g. rash, itchy rash</i>	1291
Respiratory <i>e.g. cough, shortness of breath</i>	657
Behavioural, emotional and mental health <i>e.g. insomnia, trouble sleeping</i>	572
Social circumstances <i>e.g. need to rest in bed or take a break from normal daily activities</i>	433
Metabolism and nutrition disorders <i>e.g. decreased appetite</i>	395
Eye <i>e.g. eye pain, vision blurred</i>	335
Blood vessel related (i.e. veins/arteries) <i>e.g. pale complexion</i>	308
Abnormal clinical or laboratory result (i.e. where information is provided on results of relevant tests) <i>e.g. high temperature (via thermometer), increased heart rate or blood pressure (via BP monitor)</i>	299
Cardiac (heart) related <i>e.g. palpitations</i>	257
Ear related <i>e.g. earache, tinnitus</i>	221
Procedural issue or complications <i>e.g. injection site bruising</i>	185
Obstetrics and gynaecology <i>e.g. menstruation change</i>	165
Blood and lymphatic system <i>e.g. swollen glands</i>	146
Infection <i>e.g. local or general such as influenza or cold sore</i>	145
Kidney related <i>e.g. increased frequency of urination</i>	52
Immune system related <i>e.g. hypersensitivity, allergic reactions</i>	35
Liver related <i>e.g. jaundice</i>	<5
Cysts and polyps	<5
Endocrine (hormone)	<5

BACKGROUND INFORMATION ON THE EVALUATION OF SUSPECTED SIDE EFFECT REPORTS

As for all medicines and vaccines, suspected side effect reports in association with COVID-19 vaccines submitted to the HPRA are recorded and stored on the HPRA's national adverse reactions database. They are subsequently submitted (with any personal identifiers and contact details removed) to the EudraVigilance database operated and managed by the European Medicines Agency (EMA). EudraVigilance provides for the transfer of reports from national regulatory agencies such as the HPRA and marketing authorisation holders to the EMA. This supports early detection and monitoring of possible safety signals in relation to reported side effects.

The EMA also make available anonymised information on all reports, based on global safety experience, publically available through the following link www.adrreports.eu. The EMA also publish regular safety updates for COVID 19 vaccines, as well as highlights from meetings of the EMAs safety committee (Pharmacovigilance Risk Assessment Committee), which describe safety issues under review, as well as recommendations to revise product information. These are available via www.ema.europa.eu.

Information from side effect reports, together with additional safety data (e.g. from the scientific literature, cumulative safety data analysis, epidemiological studies etc.) are assessed on an on-going basis, in conjunction with our EU counterparts to consider their impact on the known safety profile of the COVID-19 vaccines and any need for regulatory changes to support safe and appropriate use.

Partially anonymised details of reports are also shared with other bodies also involved in safety monitoring of medicines, in accordance with the legislative provisions, including GDPR (please see the HPRA privacy statement [here](#)). These bodies include the World Health Organisation (WHO) and as appropriate, the company(ies) that hold the licence(s) for the medicine(s) concerned (i.e. marketing authorisation holders or 'MAHs'). Sharing of this information ensures that the information is available to all parties responsible for the ongoing safety monitoring of medicines.

Further information to support interpretation of the data provided in this update is available [here](#).