

Do I really
need to get
vaccinated?

#GrazWillsWissen

Questions about the vaccination?
You'll find all the answers at graz.at/willswissen



Kommunale Impfkampagne

Legal Notice

Graz local authority - Abteilung für Kommunikation
Hauptplatz 1, 8011 Graz
Responsible for contents: Graz local authority - Office of Health
Text: DSA Christoph Pammer, MPH, MA

Expert review:

Dr. Marton Szell, National Vaccination Council (Nationales Impfgremium)
Mag.a Dr. Edith Flaschberger, Kompetenzzentrum Gesundheitsförderung und Gesundheitssystem der
Gesundheit Österreich GmbH; Österreichische Plattform für Gesundheitskompetenz Mag. Christoph
Schmotzer, Kompetenzzentrum Gesundheitsförderung und Gesundheitssystem der Gesundheit Österreich
GmbH; Österreichische Plattform für Gesundheitskompetenz

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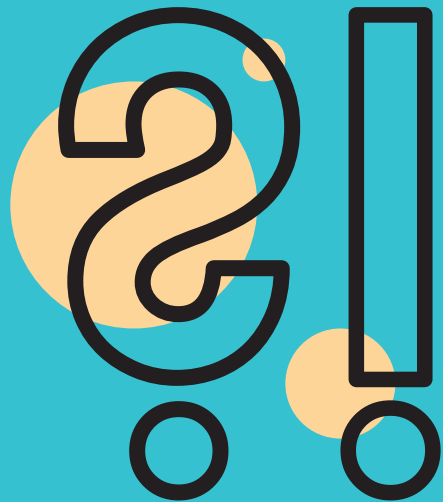
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Do I really need to get vaccinated?



One of the obligations of the Office of Health (Gesundheitsamt) of Graz local authority is, to make important, scientific evidence-based information that is required to enable individuals to make the necessary personal decisions regarding their health issues, in a form that is easy to understand, available. This brochure is primarily intended for residents of Graz who are still unsure whether they need an additional booster vaccination.

The purpose of this is primarily to prevent individuals developing a serious illness. We know that it is not easy to make a decision in view of the difficulty of interpreting available experience and facts and of identifying what is deliberate misinformation.

This brochure is designed to help you make an informed decision about vaccination!

Although we may now be starting to learn to live with COVID-19 and some pandemic-related measures are being removed, this does not mean that the virus has ceased to be a risk to the health of the population. Being vaccinated is still the best way to avoid the potentially serious effects of becoming infected.

Knowledge about the vaccines has been obtained not only from carefully controlled clinical trials but also from observational studies undertaken following authorisation of the use of the vaccines. The results of studies conducted in various countries mean that good quality data is now available. In general, this data is such that it is now possible to draw conclusions about a range of aspects relating to the use of the vaccines.

In order to enable you to better verify the information provided in this brochure, we have provided links on our website to all the original studies that we have consulted.

What are the effects of the vaccine in my body?



How the immune system works

You could say the immune system has a memory. It can remember what dangerous pathogens – microscopic agents that cause disease – have invaded the body from outside and have caused harm. So when, even many years later, there is infection with the same pathogens, the immune system is rapidly activated to effectively combat these.

Vaccination takes advantage of this capability by introducing an attenuated (weakened) form of a virus into the body. In response, the immune system generates antibodies to prepare itself to fight infection with the virus. Although antibodies are important over the long and medium term in the battle against pathogens, so-called T-cells – the second arm of the immune system – maintain the memory of the immune system over years and even decades.

What human cells do

Human cells are made of a cell wall, cell plasma containing the cell's internal "organs" called organelles and the heavily protected nucleus in which is the genome made of DNA (deoxyribonucleic acid). This DNA provides all the information that cells need to be able to make important proteins.

For this purpose, DNA is converted to mRNA (messenger ribonucleic acid). Once mRNA has been formed with the blueprint for a protein, it leaves the cell nucleus. The organelles in the cell plasma then read the blueprint and produce the corresponding protein.

What vaccines are available?

Researchers have made significant progress in recent years so that two new types of technology can now be employed to produce vaccines that will protect the general population against COVID-19; namely mRNA vaccines and viral vector vaccines.

Both are so-called "inactivated vaccines" in which the related virus has been killed so that live viruses cannot proliferate in the body. This means that these vaccines can also be given to individuals with a weakened immune system.

What are mRNA vaccines?

These include BioNTech/Pfizer's Comirnaty and Moderna's Spikevax

It is possible to make artificial mRNAs, and thus the blueprint for any protein, in the laboratory. The vaccine manufacturers use this process to develop mRNA vaccines. An mRNA vaccine contains an artificially made RNA gene segment that contains the genetic information for the so-called "spike protein" of coronavirus. To ensure their stability, the mRNA molecules are encased in tiny bubbles of fat.

Once introduced into the body, the vaccine stimulates body cells to produce antibodies effective against the spike protein of coronavirus that can then quickly go into action in the case of an infection. The various components of the vaccines are completely broken down in the body within a short time.

What are viral vector vaccines?

These include Janssen-Cilag's Jcovden and AstraZeneca's Vaxzevria

Used in these vaccines are vector viruses; in other words, viruses that have been modified to be harmless and deliver information on the SARS-CoV-2 spike protein into cells. This process tricks the immune system into believing that infection has occurred, as a result of which it begins to form antibodies and T-cells. Vaxzevria is not currently available in Austria.

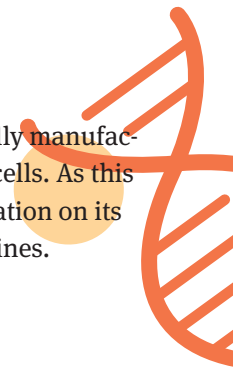
Recently approved vaccines

Novavax's Nuvaxovid

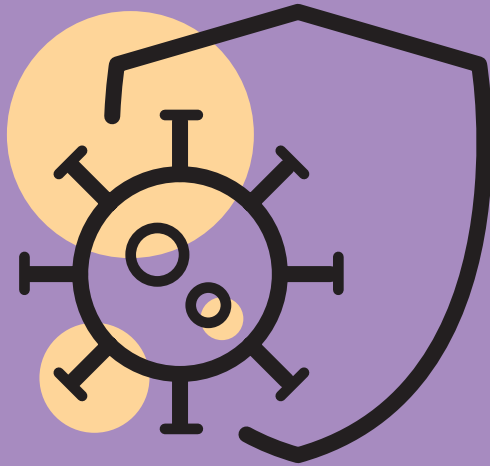
Nuvaxovid is an inactivated vaccine that contains a biologically manufactured spike protein obtained from the surface of coronavirus cells. As this vaccine has not been in use for very long, there is less information on its effectiveness in comparison with that available for other vaccines.

Valneva's COVID-19 vaccine

Valneva's COVID-19 vaccine is a whole virus, inactivated, adjuvanted (facilitated) vaccine. In contrast with the other vaccines, it causes antibodies to be formed against whole coronavirus cells and not just the spike protein. It was first approved for use in the EU on 24 June 2022 and has been available in Graz since early September.



What will the vaccine do for me?



The benefits of vaccination

- + In general, vaccination makes the effects of infection less severe. Although the mortality rate among those infected with Omicron is lower than in the case of infection with the Delta and earlier variants, vaccination additionally reduces the probability of dying from COVID-19.¹
- + The vaccines provide good protection against serious illness after infection with Omicron as the antibodies formed also fight Omicron. However, the level of protection declines after two shots and is only retained for at least 6 - 9 months after a third booster.²
- + Those vaccinated experience milder symptoms even after infection with various Omicron variants if they become infected despite being vaccinated.³
- + Vaccination hinders re-infection. However, it should be borne in mind that the protection offered by vaccination has declined from some 90% in the case of the wild type (original) virus and 75% in the case of Delta to 5 - 40% in the case of Omicron. Booster doses can increase the level of protection against infection by some 20%.⁴
- + Vaccination will also reduce the probability of developing long COVID after infection with the Delta variant. Unfortunately, clinical studies have been unable to confirm or disprove this effect after infection with the Omicron variants.⁵

Source texts

- 1 Federal Ministry of Social Affairs, Health, Care and Consumer Protection (1 July 2022): COVID-19 vaccinations: Anwendungsempfehlungen des Nationalen Impfgremiums, Version 10.2.
- 2 European Centre for Disease Prevention and Control (2022 Jan 27). Assessment of the further spread and potential impact of the SARS-CoV-2 Omicron variant of concern in the EU/EEA, 19th update. URL 1
- 3 Chalupka A, Handra N, Richter L, Schmid D (AGES): Effektivität von impf- und infektionsinduzierter Immunität gegenüber Infektionen mit SARS-CoV-2 Variante Omikron. 19 April 2022, retrievable at: URL 2
- 4 UK Health Security Agency, COVID-19 vaccine surveillance report, Week 27, July 7 2022, S15. Bar-On Y.M., Goldberg Y., Mandel M, Bodenheimer O et al.: Protection by a Fourth Dose of BNT162b2 against Omicron in Israel. N Engl J Med 2022; 386:1712-1720. Gattinger P, Tulaeva I, Borochova K, Kratzer B. et al. (2022): Omicron: A SARS-CoV-2 variant of real concern. Europ. Journal Allergy & Clin. Immunology 77/5: 1616-1620.
- 5 Robert Koch Institut, FAQs COVID-19-Impfung, status 18 August 2022. URL 3

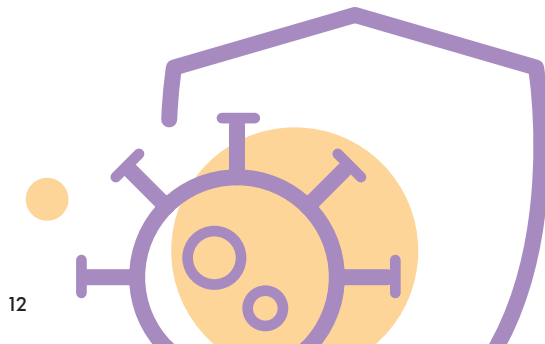
The side effects of vaccination

Side effects of vaccination, which usually subside within 24 hours, are common and are generally not a cause for concern. In fact, they are signs that the immune system is reacting as required to the vaccine.

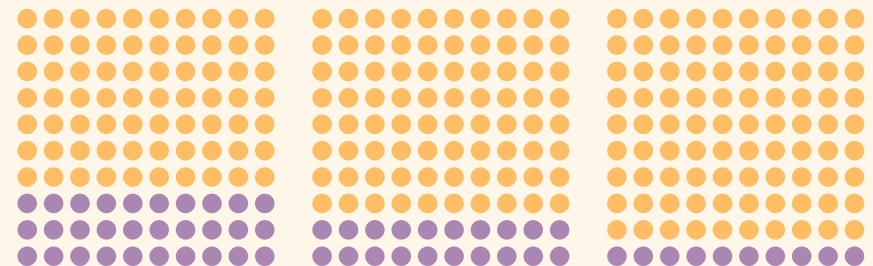
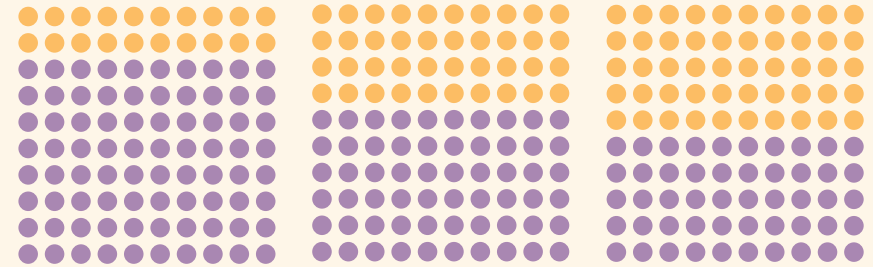
These side effects occur so frequently that it is no wonder that many have complained of a bad experience after their first anti-coronavirus shots.

Among the potential side effects of a vaccination shot are:

- ➔ Pain at the injection site
- ➔ Feeling tired
- ➔ Headache
- ➔ Muscle pain
- ➔ Chills
- ➔ Joint pain
- ➔ Fever



Percentages (rounded-up) of vaccinated individuals reporting side effects within 24 hours of injection of an mRNA vaccine.⁶



There is evidence that side effects become somewhat less severe with the frequency of vaccine doses.⁷

Source texts

⁶ RKI/BZgA, per URL 4

⁷ Hoge S. für Moderna, Inc. 2022, mRNA-1273.214 Moderna COVID-10 Investigational Bivalent Vaccine (Original + Omicron). Vaccines and Related Biological Products Advisory Committee June 28, 2022. Slides MD9 and MD10.

Serious adverse reactions

Formation of various thromboses (blood clots) has been reported in fewer than 1 in 1000 cases following injection of Vaxzevria (AstraZeneca) and the COVID-19 vaccine Jcovden (Janssen-Cilag International). To date, this effect has been mainly observed in women aged under 55 years, although some men and elderly individuals have also been affected.⁸ A similar effect has not been observed after injection of the mRNA and protein-based vaccines.

Myocarditis (inflammation of the heart muscle) has been reported in fewer than 1 in 10,000 cases following injection of mRNA vaccines; as a rule, the progression of the inflammation was mild and it receded without lasting effects.⁹ However, it is not yet clear whether such inflammations can result in delayed effects, such as cardiac insufficiency (heart failure).

It is very unlikely that the COVID-19 vaccines will cause long-term adverse reactions that occur unexpectedly and a long time (such as several years) after vaccination.

Source texts

- 8 RKI: AUFKLÄRUNGSMERKBLATT Zur Schutzimpfung gegen COVID-19 mit Vektor-Impfstoffen. dated 19 October 2021. [webpublished]
- 9 RKI: AUFKLÄRUNGSMERKBLATT Zur Schutzimpfung gegen COVID-19 mit Vektor-Impfstoffen. dated 19 October 2021. [webpublished]]

Reporting any suspected adverse effects of vaccination

→ Please report these online or using the printed-out form to the Federal Ministry of Social Affairs, Health, Care and Consumer Protection (Bundesministerium für Gesundheit). For more information go to:



basg.gv.at/ueber-uns/covid-19-impfungen

→ Physicians are obligated to report suspected adverse effects together with anonymised medical information to the Austrian Federal Office for Safety in Health Care (BASG).



What is the potential risk to me?



How to evaluate the benefits and risks?

The probability of developing serious adverse reactions after COVID-19 vaccination is very low. Very much more serious are the risks associated with encountering the virus without protection.

- It was the case that every tenth person infected with the wild type or Alpha variants was more likely to experience severe COVID-19-associated symptoms.¹⁰
- Coronavirus disease can be manifested in various forms and not just in the lungs but also in other body organ systems, particularly in those individuals who belong to the high risk groups.
- The risk of becoming seriously ill or even dying after infection with COVID-19 is now lower after the mutation of the virus but this risk is still present.
- Undesirable long term effects are also possible after infection with Omicron.

Source text

¹⁰ FAQ COVID-Impfung des RKI, URL 5

Fact boxes

How safe is vaccination with BioNTech/Pfizer's Comirnaty for persons in my age group?

The diagrams on the following pages illustrate the various benefits and risks for vaccinated individuals (right-hand columns) compared with those for unvaccinated individuals (left-hand columns) in association with Omicron infection.

The probabilities of the various events have been calculated based on a group of 1000 individuals in each case so that comparison is possible.

How to read the diagrams: The coloured dots in the left-hand column ("Unvaccinated individuals") indicate the probability of developing COVID-19; e.g. 400 in every 1000 persons aged over 60 years, of whom 43 of 1000 require hospitalisation because of the severity of their symptoms. The right-hand column indicates how this probability is reduced by means of vaccination.

The following four diagrams are designed to illustrate the available information on the efficacy and safety of vaccination in each of four different age groups.

The fact boxes are for:

- Adults aged 60 years and older p. 20/21
- Adults aged under 60 years p. 22/23
- Young people aged 12 to 17 years p. 24/25
- Children aged 5 to 11 years p. 26/27

Am I adequately protected?

To find out whether you have an adequate level of protection in view of your age and the number of doses you have had, go to:

→ graz.at/willswissen



Fact box

The efficacy and safety of Comirnaty in adults aged 60 years and older

Status: 3 August 2022

This fact box compares possible outcomes for adults aged 60 years and older with no vaccination against COVID-19 (left-hand column) with those for adults who have been vaccinated (right-hand column) if these groups come into contact with persons infected with the Omicron coronavirus variant. Average observation period: four months.

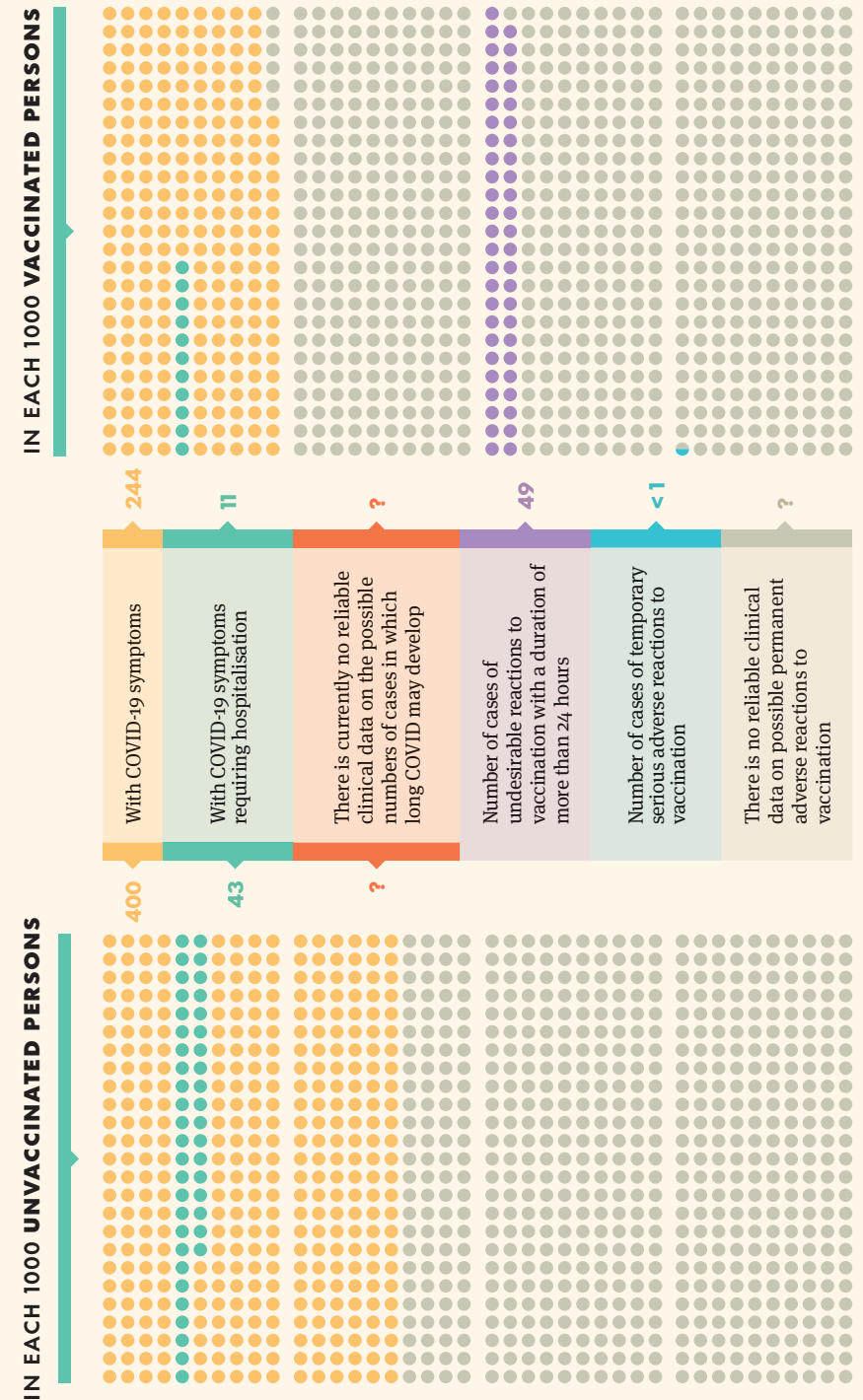
Thanks to the generosity of the Harding Centre for Risk Literacy, we have been able to make further fact boxes available on our website that show precise evaluation of the effects following the second, third and fourth booster doses of BioNTech/Pfizer's Comirnaty.

→ graz.at/willswissen

Source texts

The numbers are based on the results of studies of the mRNA vaccine Comirnaty (manufacturer BioNTech/Pfizer) and the comparable Moderna vaccine: Andrew 2022. NEJM, Baum 2022. medRxiv Preprint, Brandal 2021. Euro Surveill, Chemaitelly 2022, medRxiv Preprint, ECDC 2021, FDA 2020, Garrett 2022. J. Infect. Dis, Polack 2020, NEJM, STIKO 2021/46. Epid Bull, Sheikh 2021. Lancet Stowe 2022. medRxiv Preprint, Tartof 2022. Lancet, UKHSA 2021.

Comparison of outcomes in adults aged 60 years and older after contact with the virus



Fact box

The efficacy and safety of Comirnaty in adults aged under 60 years

Status: 3 August 2022

This fact box compares possible outcomes for adults aged under 60 years with no vaccination against COVID-19 (left-hand column) with those for adults who have been vaccinated (right-hand column) if these groups come into contact with persons infected with the Omicron coronavirus variant. Average observation period: four months.

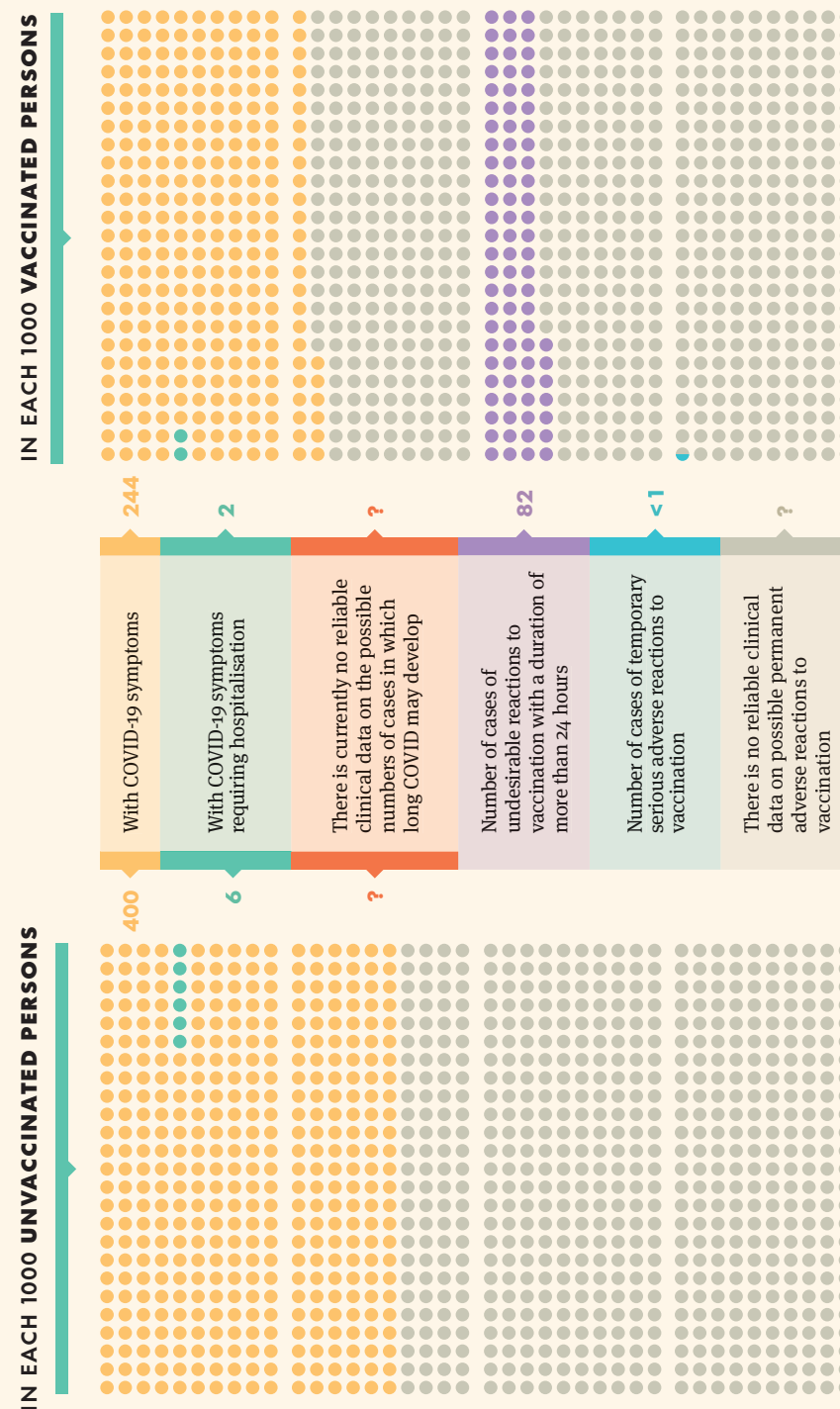
Thanks to the generosity of the Harding Centre for Risk Literacy, we have been able to make further fact boxes available on our website that show precise evaluation of the effects following the second, third and fourth booster doses of BioNTech/Pfizer's Comirnaty.

→ graz.at/willswissen

Source texts

The numbers are based on the results of studies of the mRNA vaccine Comirnaty (manufacturer BioNTech/Pfizer) and the comparable Moderna vaccine: Andrew 2022. NEJM, Barda 2021. NEJM, Baum 2022. medRxiv Preprint, Brandal 2021. Euro Surveill, Chemaitelly 2022, medRxiv Preprint, ECDC 2021, FDA 2020, Garrett 2022. J. Infect. Dis, Gray 2022. NEJM, PEI 2022, Polack 2020. NEJM, STIKO 2021/46. Epid Bull, Sheikh 2021. Lancet, Stowe 2022. medRxiv, Tartof 2022. Lancet, UKHSA 2021.

Comparison of outcomes in adults under the age of 60 years after contact with the virus



Fact box

Efficacy and safety of Comirnaty in young people aged 12 to 17 years

Status: 3 August 2022

This fact box compares possible outcomes for young people aged 12 to 17 years with no vaccination against COVID-19 (left-hand column) with those for young people who have been vaccinated (right-hand column) if these groups come into contact with persons infected with the Omicron coronavirus variant. Average observation period: four months.

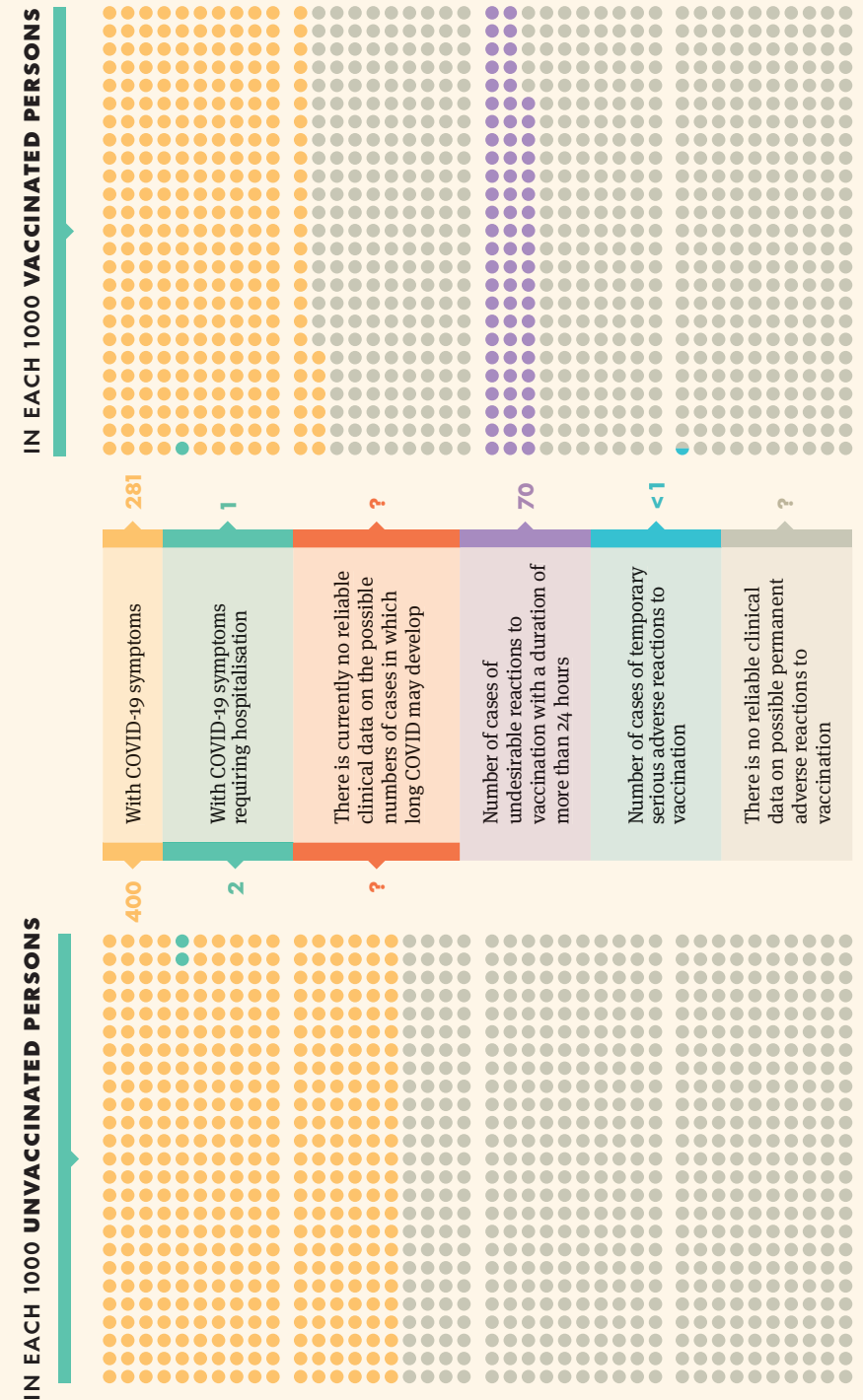
Thanks to the generosity of the Harding Centre for Risk Literacy, we have been able to make further fact boxes available on our website that show precise evaluation of the effects following the second, third and fourth booster doses of BioNTech/Pfizer's Comirnaty.

→ graz.at/willswissen

Source texts

The numbers are based on the results of studies of the mRNA vaccine Comirnaty (manufacturer BioNTech/Pfizer) and the comparable Moderna vaccine: Ali 2021. NEJM, Brandal 2021. Euro Surveill, CDC 2022, Dorabawila 2022. medRxiv Preprint, Fleming-Dutra 2022. JAMA, Frenck 2021. NEJM, Garrett 2022. J. Infect. Dis, Mevorach 2022. NEJM, PEI 2022, Price 2022. NEJM, STIKO 2021/46, 2022/03. Epid Bull, Singer 2021. medRxiv Preprint.

Comparison of outcomes in young people aged 12 to 17 years after contact with the virus



Fact box

Efficacy and safety of Comirnaty in children aged 5 to 11 years

Status: 3 August 2022

This fact box compares possible outcomes for children aged 5 to 11 years with no vaccination against COVID-19 (left-hand column) with those for children who have been vaccinated (right-hand column) if these groups come into contact with persons infected with the Omicron coronavirus variant. Average observation period: four months.

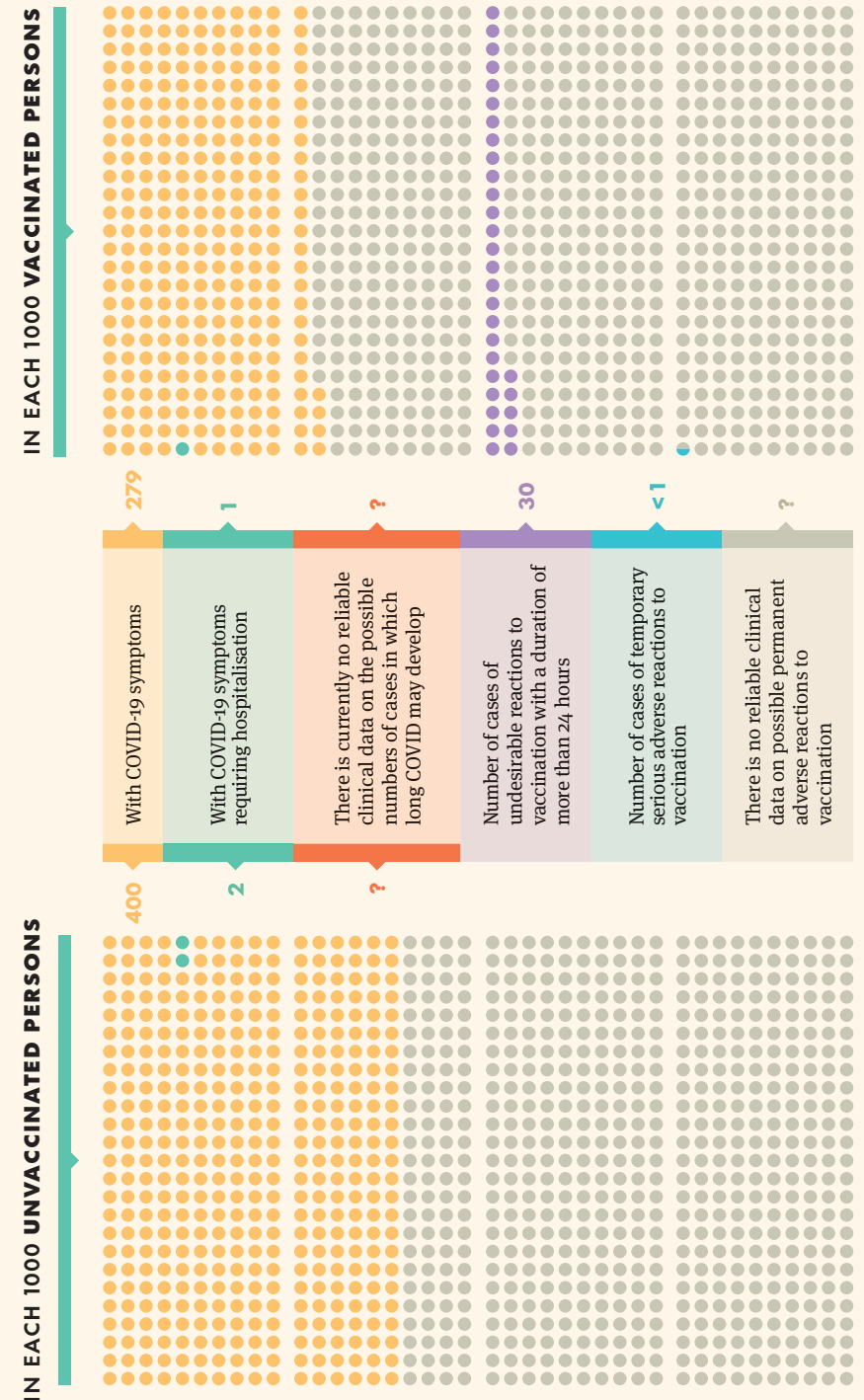
Thanks to the generosity of the Harding Centre for Risk Literacy, we have been able to make further fact boxes available on our website that show precise evaluation of the effects following the second, third and fourth booster doses of BioNTech/Pfizer's Comirnaty.

→ graz.at/willswissen

Source texts

The numbers are based on the results of studies of the mRNA vaccine Comirnaty (manufacturer BioNTech/Pfizer) and the comparable Moderna vaccine: Brandal 2021. Euro Surveill, CDC 2022, Creech 2022, NEJM, Flemming-Dutra 2022. NEJM, Garrett 2022. J. Infect. Dis, Mevorach 2022. NEJM, PEI 2022, Price 2022. NEJM, Singer 2021. medRxiv Preprint, UKHSA 2021, Walter 2022. NEJM.

Comparison of outcomes in children aged 5 to 11 years after contact with the virus



Is it better to wait until the adapted vaccine is available?



Talk with your doctor

Is it worth waiting until the adapted vaccine is commercially available before having the fourth booster dose? It is not advisable for persons in high risk groups to wait and they should ensure they get their next booster 6 months after the most recent (third) dose. Individuals who are not at increased risk of developing serious symptoms have the option of waiting.

Why is it taking so long to make adapted vaccines available?

When it comes to the technical aspects, adapted vaccines should already be available. The problem was that it was long undecided whether the usual complex trials would be needed for the reapproval of the vaccines because the vaccines themselves remain unchanged, only a few gene sequences needed to be modified.

Can my doctor give me more information?



It is always advisable to speak with your doctor. This is particularly important if you have health issues and are worried that the vaccine could harm you.

Is vaccination safe for me?

It is often the case that pre-existing disorders and medical treatments being received are mistakenly believed to be contraindications for COVID-19 vaccination. Such disorders and treatments include chronic heart, liver, lung and kidney disease, neurological conditions, the use of antibiotics, allergies (excluding allergic shock in response to COVID-19 vaccination), bronchial asthma and a history of family disease.

If you have any of these medical problems and/or are receiving such treatment, this does not mean it is unsafe for you to get vaccinated against COVID-19; in fact, in many cases, they are the reason why you would be strongly advised to be vaccinated.

What is a "heterologous vaccine regimen"?

When a heterologous vaccine regimen is used, one and the same individual receives a booster shot of a vaccine different to that originally used – for example, a booster of Spikevax (Moderna) after receiving two shots of Comirnaty (BioNTech/Pfizer). The vaccines are not actually approved for use in combination in this way. However, a heterologous vaccine regimen has been found to be particularly beneficial in individuals who formed no or very few antibodies in response to the first shots of vaccine.

What is the point of antibody titre?

So-called antibody titre is a process used to measure the numbers of antibodies in blood. This makes it possible to identify persons whose immune systems have not formed antibodies in response to a shot of a vaccine.

However, antibody titre cannot be used to determine an individual's level of immunity to infection. Antibody titre blood tests are thus justified for medical reasons only in the small group of persons with impaired immune systems.

Where can I get my shot of vaccine?

It is best to contact your family doctor and ask them to vaccinate you.

These will be best informed about your medical history and can give you detailed advice on what vaccine you should have.

Practices offering vaccination and walk-in/drive-in vaccination sites in the Province of Styria:

→ impfen.steiermark.at/cms/ziel/162879324/DE/



Support services & information

As part of our vaccination campaign, we also offer the opportunity of a personal consultation through our mobile vaccination advice service "Impfwissen to go". The Graz vaccination advice bus "Wir machen vor keiner Pandemie halt" will also be out and about this autumn. This will be providing initial information and recommendations concerning all aspects of COVID-19 and vaccination.

Additional information

Recommendations of the National Vaccination Council (Nationales Impfgremium):

sozialministerium.at/Corona/Corona-Schutzimpfung/Corona-Schutzimpfung---Fachinformationen.html



Robert Koch-Institut, Germany: FAQs concerning vaccination against COVID-19:

rki.de/SharedDocs/FAQ/COVID-Impfen/gesamt.html



Online information

- URL 1: <https://www.ecdc.europa.eu/sites/default/files/documents/RRA-19-update-27-jan-2022.pdf>
URL 2: <https://wissenaktuell.ages.at/effektivitaet-von-impf-und-infektions-induzierter-immunitaet-gegenueber-der-infektion-mit-sars-cov-2-variante-omikron/>
URL 3: <https://www.rki.de/SharedDocs/FAQ/COVID-Impfen/gesamt.html>
URL 4: <https://www.zusammengegencorona.de/impfen/so-sicher-ist-die-corona-schutzimpfung/>
URL 5: https://www.rki.de/DE/Content/InfAZ/N/Neuartiges_Coronavirus/Steckbrief.html;jsessionid=1D46A15F2BBF72DB7D60BCA3D78DA201internet091?nn=13490888#doc13776792bodyText12

Disclaimers

The Office of Health of Graz local authority has taken considerable care with selecting the knowledge resources on which the information in this brochure is based. Please note that Graz local authority and the Office of Health can accept no liability with regard to the brochure contents. Please also note that in the information material issued in connection with the local vaccination campaign in Graz, certain complex aspects have been deliberately presented in a simplified form but without making any factual changes to these. The material in this brochure was compiled on 15 August 2022.

Information on aspects of liability in connection with potentially harmful effects of vaccination has been deliberately omitted as the authors cannot anticipate what the decisions made by courts in actions for damages might be. The authors would like to expressly point out that the information provided here represents an overview based on generalised statistics so that certain aspects may not apply to every individual.

Conflicts of interest

The client and authors of this brochure herewith affirm that the contents and information in this brochure do not constitute any conflicts of interest because of affiliations with those indirectly involved working in healthcare and the pharmaceutical and medical product industries.

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Vaccination info line

Until the end of November 2022, you will be able to obtain vaccination information on the phone from Mondays to Fridays.

The hotline service is provided not only in German but also in other foreign languages.

Visit our website for more information.

Still undecided?

[graz.at/willswissen](https://www.graz.at/willswissen)