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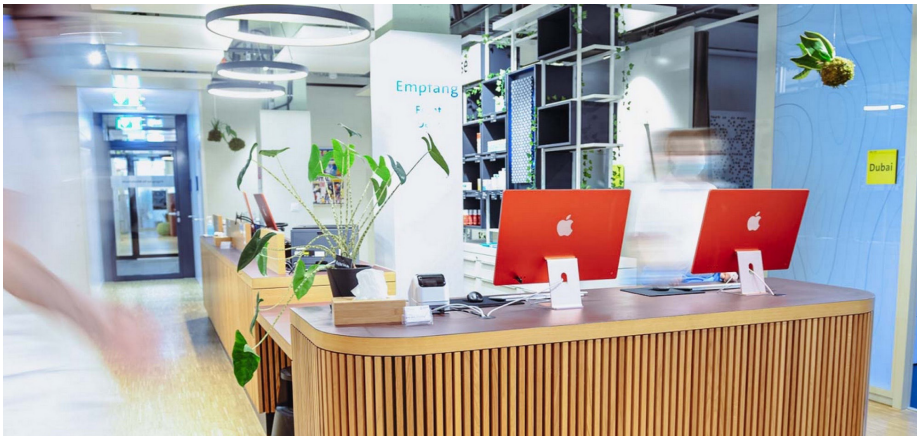
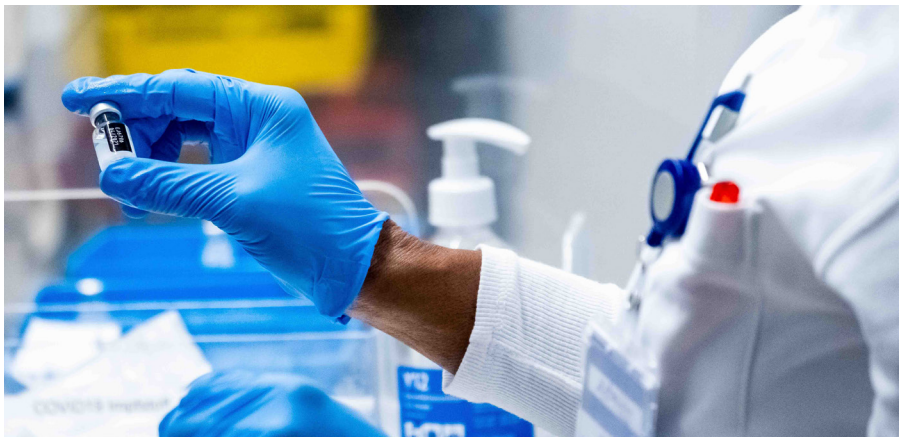
Contents





The Importance of Travel Medicine for A Healthy Trip

For those planning to travel to a new country, proper travel health preparation is essential, which is why travel medicine is important. Let's further discuss what travel medicine is and why you should add an appointment with a travel medicine specialist to your pre-trip checklist.

What Is Travel Medicine?

Travel medicine is a specialty within the medical field focused on preventive care before traveling. It is a highly dynamic specialty, meaning it has to continually adapt to new health crises that arise. When a new virus or health concern appears, travel medicine adjusts to include it within its field.

In addition to preventing various contagious health concerns, travel medicine also includes assessing each traveler's risk based on their:

- health
- travel destination
- trip itinerary

The travel medicine specialist uses this information to advise the traveler on what risk management interventions will promote good health while traveling. Travel medicine is important because it helps to ensure your health and safety while traveling. It is also an excellent opportunity to become better informed about what you might be at risk of based on your location and itinerary.

The Role of the Travel Medicine Specialist

If you're planning on traveling outside of your home country, it is important to make an appointment with a travel medicine specialist at least 6-8 weeks before you plan to leave. When you meet with a travel medicine specialist, they will do the following:

Evaluate Vaccinations

Traveling places, you are at risk of various types of viruses that do not impact your home country, meaning you might have no immunity or protection against them. This is why knowing what vaccines are recommended (or necessary) before traveling to a specific location is essential.

Travel medicine specialists can look at your previous vaccines and trip location to suggest vaccines that protect against preventable illnesses, such as typhoid or Hepatitis A. They can also see which routine vaccinations are not up-to-date and require a booster, such as the flu shot. By receiving these vaccines, you can help protect yourself against infections that might otherwise be significantly hazardous to your health.

Prevent Diseases

One of the most common conditions affecting those who travel is traveler's diarrhea. This digestive tract disorder results from drinking contaminated water or eating contaminated food. It can leave you a frequent bathroom visitor, which we can all agree does not make for a pleasant trip.

There are precautions you can take to prevent traveler's diarrhea, which your travel medicine specialist will discuss with you. This includes a review of food and water precautions, which also helps to prevent other health concerns stemming from ingesting contaminated substances.

Your travel medicine specialist will also discuss important hygiene habits to adopt for further reducing the risk of disease.

Evaluate Mosquito and Tick-Borne Disease Risk

Mosquitos and ticks are two insects that can carry disease, which can then transmit to you with a single bite. Diseases such as malaria, Lyme disease, and yellow fever can stem from these insects, which is why it is essential to know what precautions to take.

A travel medicine specialist will explain any risks you are at because of your travel location and the steps you can take to prevent a bite. Additionally, if you are traveling to a place at risk of malaria, your specialist can discuss pre-trip medication options for preventing malaria.

Proactive Steps

Viruses are not the only detriment to your health that you may come across while traveling. Jet lag, motion sickness, blood clots, and altitude illness are all problems you may face while traveling, which can decrease your health and wellness.

Your travel medicine specialist will help you be proactive in preventing these occurrences. They will also provide you with valuable information on what to do should you suffer from any of them to ensure the rest of your trip is not ruined.

Manage Pre-existing Conditions

Various pre-existing conditions may need to be managed more closely depending on your travel itinerary. With your travel medicine specialist, you can ensure that your pre-existing conditions will be well-managed, and you won't be pushing your body further than it can physically keep up with.

The Importance of Health Preparation

No matter your reason for travel, whether to visit family, study abroad, or for business or vacation, you can put your health and wellness in harm's way. Here's where we enter; your key to proper travel preparation for the most important thing going on your trip, yourself.

Our medical consultants in our Travel Clinic offer a wealth of information needed to keep yourself safe. They play a key role in educating travelers on the health risks of a certain area, good habits to adopt, and recommended vaccines. We'd also love to evaluate your current health to provide guidance on managing pre-existing conditions.

If you want to return home in the same health as you set out for your trip in, our travel medicine specialists can help you achieve this, making them a crucial visit before setting off on your trip.

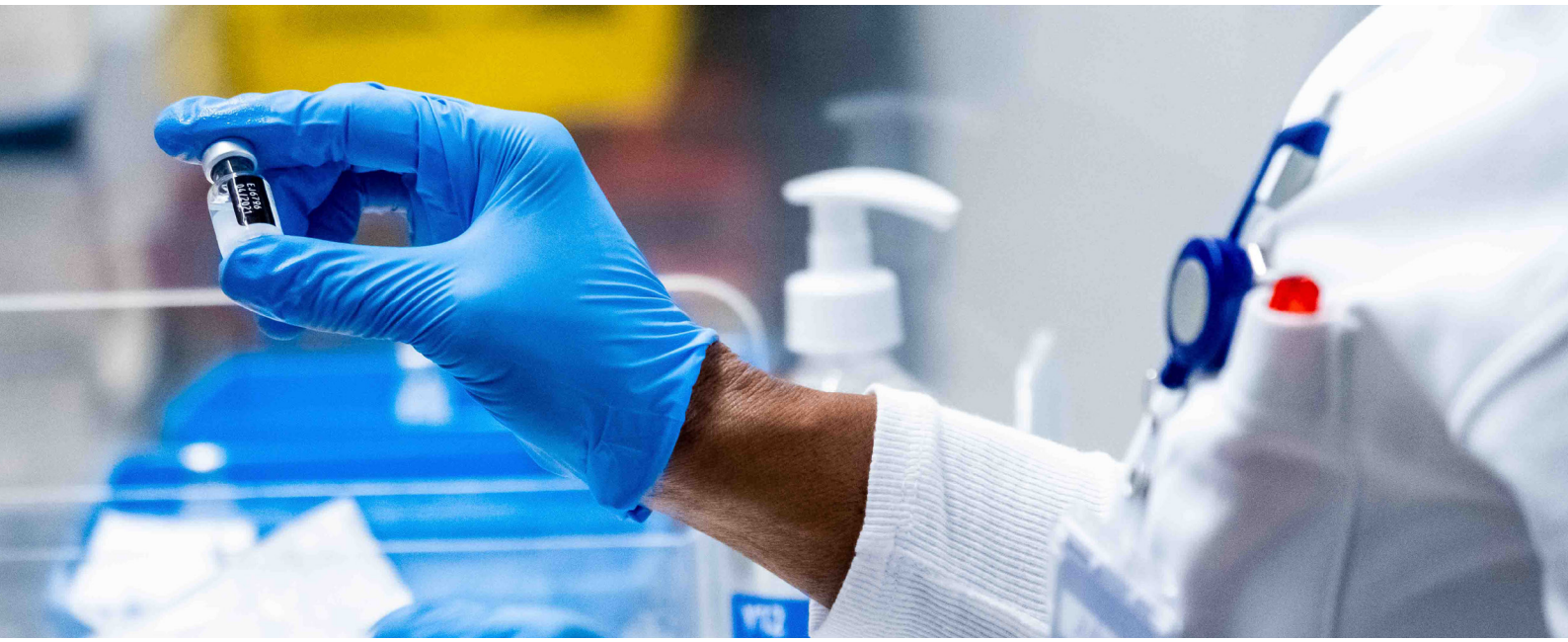
Sources

Aw, B., Boraston, S., Botten, D., Cherniwchan, D., Fazal, H., Kelton, T., Libman, M., Saldanha, C., Scappatura, P., & Stowe, B. (2014). Travel medicine: what's involved? When to refer?. Canadian family physician Medecin de famille canadien, 60(12), 1091–1103.

Han, C., & Flaherty, G. (2015). Profile of Travelers with Preexisting Medical Conditions Attending a Specialist Travel Medicine Clinic in Ireland. Journal Of Travel Medicine, 22(5), 312-317. doi: 10.1111/jtm.12221

Rowe, K., Chaves, N., & Leder, K. (2017). Challenges to providing pre-travel care for travellers visiting friends and relatives: an audit of a specialist travel medicine clinic. Journal Of Travel Medicine, 24(5). doi: 10.1093/jtm/tax038

„We were ready and willing to help!“



Annmarie Haerry at work in the reference vaccination center (Photo: Fabio Schönholzer)

Annmarie Haerry

Nursing Specialist

Our nursing specialist Annmarie Haerry reports on her personal experiences gained during the pandemic.

There is no denying that the COVID-19 pandemic caused by the SARS-CoV-2 virus has affected our personal and professional lives in ways we could not have imagined before. Who knew that we would one day live in a world where embracing family and friends would be inadvisable? But that was our reality at the beginning of 2020!
It became clear very quickly that COVID-19 was not to be trifled with, as the number of people infected, and the mortality rate increased daily. In China, where the virus first appeared, two facts were obvious:

1. the virus is deadly even to young and healthy people, and
2. drastic measures such as locking down and thoroughly disinfecting an entire city were needed to eradicate the virus or at least contain its spread.

The rest of the world followed the events in China with bated breath. But like goods from China being transported to every corner of the world, so it was with the SARS-CoV-2 virus. It was spreading around the world.

Ready for action

The events at the Institute of Epidemiology, Biostatistics, and Preventive Medicine (EPBI) where I work as a nurse practitioner mirrored what was seen in many public health settings: These institutions have been challenged to expand their daily missions and take a leadership role in the fight against coronavirus. According to the EBPI‘s director, Prof. Jan Fehr, M.D., the EBPI was ready for action because of its long experience with travel clinic vaccination and counseling services and through epidemiological and preventive medicine research.

Restructure facility

The living and working conditions at EBPI then changed quickly. Immediate challenges included building the infrastructure to handle the influx of people for Corona testing and providing the additional staff. The EBPI needed to provide testing for at least 300 people daily. IT staff quickly set up a computer network to register test takers and enter their medical histories and laboratory test results. The reports from the Federal Office of Public

Health (FOPH) on the number of COVID-19 infections provided the planning team with the data for further work: If the number of cases in the canton of Zurich increased, the center had to react quickly in each case and adapt its infrastructure to meet the demand for more COVID-19 tests. The EBPI testing center relieved the burden on hospitals by identifying those who tested positive early and encouraging them to stay at home to contain the spread.

Putting fears aside

Of course, we of the staff had concerns, especially at the beginning, about close contact with people who might have been carriers of the coronavirus. The group of epidemiologists, female physicians, researchers, nurses, medical assistants, and administrators was augmented by medical students and other health care personnel. All were willing to put aside their fears and followed their sense of duty. We used scientific data on the transmission route of the SARS-CoV-2 virus to make the best use of personal protective equipment (PPE). Appropriate PPE and FOPH hygiene measures were essential to protect both staff and those being tested.

Comirnaty® by BioNTech/Pfizer (Photo: Silvestro Superti-Furga)

In-house freezers

As the pandemic progressed, the EBPI was tasked with managing the second phase of the Corona pandemic, i.e., the introduction of the COVID-19 vaccination program in the canton of Zurich. The great excitement that accompanied the news of a vaccine against the SARS-CoV-2 virus and a possible end to the pandemic was overshadowed by the logistical nightmare associated with Pfizer/BioNTech's COVID-19 vaccine. The vaccine had to be stored in freezers at minus eighty degrees Celsius and required special handling to prevent destruction of the mRNA spike protein antigen.

Fortunately, the EBPI had in-house freezers to coordinate vaccine logistics with the cantonal pharmacy in Zurich. As a result, EBPI established itself as the reference vaccination center for the canton of Zurich for the planning and implementation of the mass vaccination of the Zurich population, which began in January 2021.

Good orchestrated teamwork

The culmination of events leading to the delivery of the first dose of Pfizer-BioNTech's COVID-19 vaccine to the first Zurich residents was a well-orchestrated team effort. Once again, the infrastructure was adapted to the new challenge, this time first to handle the influx of people in Group 1 (80 years and older), but also to provide additional workspace for healthcare professionals to deliver vaccinations. At this stage, it was important to establish standard workloads for staff to avoid chaos.

Honor and baked goods

We employees are a multicultural and multidisciplinary team. They include physicians and retired nurses, medical students, civil servants and administrators.

Dr. Tom Walker, retired physician and current director of emergency services at the Immunization Center, said, „I am honored to serve Zurich residents again in this capacity. I worked in a hospital emergency department for many years, so this is my life's work." The gratitude and relief of those willing to be vaccinated made the arduous task of countless vaccinations and the severity of the COVID-19 pandemic seem surreal for a moment. The sincere appreciation was palpable: employees were delighted not only to receive kind words, but also numerous gifts of baked goods and chocolates.

Ready for the booster shot

In essence, the COVID-19 pandemic has had many sad consequences in healthcare in recent years. But the story of what happened at EBPI is one of human compassion and cohesion in the fight against the spread of COVID-19. Although many of the staff members were only temporary at the center, each contributed to the experience that will always be in my memory. The work is far from over, with the focus on rapid identification of new variants, continuation of the vaccination campaign, the need for booster vaccinations for the immunocompromised, and the threat of a fourth wave of the pandemic.

Unsure if your vaccinations are up to date?

At the Travel Clinic of the University of Zurich, we offer more than just pre-travel consultations.

Here are just a few of our services:

- **Pre-Travel Advice**
  We offer scientifically sound advice, vaccinations and information tailored to each country on your itinerary.
- **Routine Vaccination Checks**
  We check your vaccination booklet and see if there is a gap in your vaccination history.
- **Just a Shot**
  These short consultations for a specific vaccine save you time when you have a particular question.
- **Special Services**
  Be it the monkeypox, the pox or the COVID-19 vaccine, our trained staff will gladly answer all of your questions.
- **Groups**
  We offer all of our services for individuals as well as groups, be it at our clinic or directly at your institution. Contact us if you want us to come to you!
- **In-house pharmacy**
  We go beyond mere advice and offer you a wide range of products for your travels or your home alike. Here you will find the available products in our shop.
- **And more....**

Check out all of our services on our website!

https://reisemedizin.uzh.ch/en/services

Why Is Everyone Excited About mRNA Vaccines?

The mRNA vaccine has been getting a lot more press within the past two years because of its implementation with the COVID-19 vaccine, and it's time to understand just why this type of vaccine is so promising for the future of medicine.

The basic mechanism behind a vaccine is introducing the body to a harmless piece of a virus or bacteria which then triggers an immune response. For most vaccines, this involves injecting a weakened or dead virus or bacteria. mRNA vaccines however are a new type of vaccine that use a messenger RNA (mRNA) instead of a part of a virus or bacteria, which provides many advantages.

Traditional Vaccines

In order to understand just how exciting mRNA vaccines are, it's essential to first understand how traditional vaccines work.

With traditional vaccines, a weakened virus or piece of the virus's protein coat is injected into the body. Your immune system then recognizes the foreign protein and produces antibodies, which are specialized proteins that protect the body against infection. Their role is to recognize pathogens (such as viruses), attach to them, and mark them for destruction. The production of antibodies is not the only immune response that is triggered by the vaccine, but one of the most important ones.

The great thing about antibodies is that they stay in the body, even when the pathogen has been completely eliminated. This means that if you become infected again, your body can quickly eliminate the threat.

Traditional vaccines are undoubtedly effective, with some examples being the vaccines for measles and polio that helped to bring these serious illnesses under control. The problem with traditional vaccines though, is that they take a lot of time to create. Scientists must grow a large amount of the virus and then weaken it or extract critical pieces, which are time-consuming processes.

Around 30 years ago, scientists started looking into ways to simplify the vaccine-making process. Specifically, they considered what would happen if, instead of injecting a weakened virus or piece of the virus's protein coat, you instructed the body's cells to produce the desired piece of the virus. With this idea, the theory for mRNA vaccines was born.

What Are mRNA Vaccines?

RNA is a form of genetic material, and mRNA is a type of RNA needed for protein production. Essentially, mRNA uses the information in genes as a blueprint for creating proteins.

When people hear that mRNA creates proteins, they often wonder if mRNA vaccines alter their DNA. The fact is that, once a cell finishes making proteins, it breaks down the mRNA. This means that it never enters the nucleus and does not alter your DNA. mRNA is only used as a guide in the protein creation process.
mRNA vaccines introduce a piece of mRNA corresponding to a viral protein, typically a small piece of a protein that is found on the virus's outer membrane. Your cells are then able to produce this protein using the mRNA blueprint.

Creating mRNA Vaccines

The first part of mRNA vaccines, making the mRNA, was a relatively straightforward process to figure out.
However, the second part, injecting the mRNA into the cells of the body, has taken 30 years to figure out. This is because scientists had to figure out a way to protect the mRNA from chemicals in our body that would normally destroy it. Then, they had to figure out a way to modify the mRNA so that you did not experience an insufficient or overshooting immune system reaction with its injection. They also had to figure out how to bring the cells of the immune system to take in the mRNA as it passed them in the blood.
Currently, the only approved mRNA vaccines are those for SARS-CoV-2. However, researchers are studying alternative uses and applications for mRNA vaccines.

The Advantage of Time

Remember how we talked about how traditional vaccines take a lot of time to create? Previously, no new vaccine had ever been developed in less than four years. However, for the COVID-19 vaccine, the UK and US were able to confirm an mRNA vaccine for it that was effective and safely tolerated just 11 months after the discovery of the virus.
This type of turnaround for vaccines had previously been unheard of but opens a very exciting door for quickly getting a handle on newly emerging viral infections.
Of course, this quick turnaround also caused some concern regarding the safety of the vaccine. However, we have to remember that, creating these mRNA vaccines has been a 30-year project, and that this type of vaccine is much faster to manufacture. Knowing this one can safely assume that these vaccines were not just "jumbled together in haste" and have gone through all the necessary testing every other vaccine previously has had to as well. The only difference is that they only took weeks to manufacture, meaning they were able to begin testing faster.

Further Uses of mRNA Vaccines

As mentioned, the quick turnaround of the mRNA vaccine is very exciting, and it has already started infiltrating vaccines for other infectious agents, such as the Zika virus, Ebola, and Influenza.
Not only can these vaccines be used against viruses, but the mRNA vaccine technology is also being tested as a way to treat cancer. Scientists are using the knowledge that cancer cells create unique pieces of protein which do not exist in healthy cells. By creating a vaccine that produces these pieces that only exist on cancer cells, the immune system can be taught to attack these cells specifically. There is already progress being reported in using this technology for melanoma, and its success will likely lead to expansion into additional cancer types.
There is also a potential for mRNA vaccine technology to help produce the proteins that are missing in those with certain diseases such as sickle cell anemia, cystic fibrosis, or diabetes. The ability of mRNA to help in this regard is purely theoretical at this point, but research may soon delve into this field.

mRNA Vaccines: The Future of Medicine

mRNA vaccines took a long time to become a reality, and that only makes each step in their fabrication process all the more meaningful. From ideation to overcoming challenges such as how to the uptake of the mRNA into the immune cells, a lot of time and effort has gone into these vaccines. However, with the quick turnaround in their production for viral agents, and their potential application to other fields, it's clear that mRNA vaccines have secured a spot in the future of medicine.

Sources

Jain S, Venkataraman A, Wechsler ME, Peppas NA. Messenger RNA-based vaccines: Past, present, and future directions in the context of the COVID-19 pandemic. Adv Drug Deliv Rev. 2021 Oct 9;179:114000. doi: 10.1016/j.addr.2021.114000. Epub ahead of print. PMID: 34637846; PMCID: PMC8502079.

Verbeke R, Lentacker I, De Smedt SC, Dewitte H. The dawn of mRNA vaccines: The COVID-19 case. J Control Release. 2021 May 10;333:511-520. doi: 10.1016/j.jconrel.2021.03.043. Epub 2021 Mar 30. PMID: 33798667; PMCID: PMC8008785.

The tangled history of mRNA vaccines. (2021). Retrieved 8 August 2022, from https://www.nature.com/articles/d41586-021-02483-w

Bidram, M., Zhao, Y., Shebardina, N., Baldin, A., Bazhin, A., & Ganjalikhany, M. et al. (2021). mRNA-Based Cancer Vaccines: A Therapeutic Strategy for the Treatment of Melanoma Patients. Vaccines, 9(10), 1060. doi: 10.3390/vaccines9101060

Seasonal Flu Shot: The Best Prevention Against the Flu

The flu shot is a valuable tool for our public health that offers protection against the four most common strains of the influenza virus. Not only does it protect those who are vaccinated, but it also protects those who are unable to be vaccinated.

If there is one thing that you can count on every year, it's seeing the signs reminding you to get a flu shot as we approach flu season. This can be confusing to some, as we receive most of the vaccines only once with an additional booster. Before the emergence of Covid-19, no other shot requires an annual dose, so why does the flu shot?
The reason for this lies in the quickly evolving nature of the influenza virus, and its many strains.

Seasonal Flu Shot: What Is It?

The influenza vaccine, also known as the flu shot, is a vaccine that protects against the four influenza viruses that are expected to be the most common during the upcoming flu season. These four viruses are predicted based on research.
Flu shots are most often given through a needle, but there are nasal spray vaccine options.
There are also different flu vaccines available intended for certain demographic groups. For example, flu vaccines authorized for use in children who are only six months old or for those over the age of 65.

A Brief History of The Flu Shot

In the 1930s, influenza viruses were first isolated from people, showing that a virus was the cause of influenza, not bacteria.

Creating the Flu Shot

The flu shot research began with the support of the U.S. Army, due to their significant loss of troops from the flu during WWI. This is because soldiers shared closed quarters, which made it easier for illnesses to spread. The very first flu vaccine utilized fertilized chicken eggs, a method that is still common for producing most flu vaccines today.
In 1940 the influenza B viruses were also discovered, and just two years later, a vaccine that offered protection against both the influenza A and influenza B viruses was produced.

Influenza Strains

In 1947 there was a seasonal flu epidemic, which caused scientists to realize that the influenza viruses undergo changes in the antigens they produce, resulting in insufficient protection of the flu shot. Antigens are the parts

of the virus that trigger your body to create an immune response. When the body detects an antigen, it creates antibodies that mark this specific antigen for elimination by other immune cells.
Vaccines work in a similar way; by causing the body to produce antibodies for a specific antigen. However, since the influenza virus constantly changes itself along with its antigens, antibodies for one strain will not provide sufficient protection against another strain. This was the first discovery that led to seasonal flu vaccines based on the most common strains.

Monitoring Strains
In 1952 the World Health Organization (WHO) created the Global Influenza Surveillance and Response System (GISRS), which monitors the influenza virus evolution. Since then, there has been a long history with the influenza virus, including finding avian and swine variants and working through multiple pandemics.

Who Should Get a Seasonal Flu Shot?

Everyone over the age of 6 months can get an annual flu shot. However, as some groups are more susceptible to contracting the flu and becoming sicker when infected with it. Therefore, the flu shot is highly recommended to the following patient groups:

- pregnant women
- those over the age of 65
- those with chronic debilitating diseases

It is especially recommended for those who fit the above categories to receive a flu shot, although everyone can benefit from it.
There are some rare instances in which someone should not receive a flu shot because of their health, age, or allergies. For example, those younger than six months, or those with allergies to any component of the flu vaccine, should not receive a flu shot. Your doctor can provide more information on if the flu shot is safe for you.

The Importance of Flu Prevention
There are many strains of the influenza virus, but the flu shot protects mainly against the four viruses that are predicted to be the most common.
Can you be unlucky enough to get the flu shot and then still get the flu? Unfortunately, yes, that is possible. If you contract a strain of the virus that was not covered in the flu shot, then you can still get the flu. However, by receiving protection against the four most common strains, you significantly reduce those chances.
Additionally, if you do end up getting the flu, multiple studies have shown that being vaccinated reduces illness severity. So, even though there is still a chance of you getting the flu, it won't be as severe.
However, getting the flu shot once is not enough for upcoming flu seasons. To truly protect yourself and others, you need to get the flu shot each year. This is because the influenza viruses adapt constantly, and so last year's flu shot offers different and most likely insufficient protection the year after.

Additional Benefits
The flu shot has also been associated with lower rates of certain cardiac events in people with heart disease. This is especially true for those who have had a cardiac event in the past year.
Getting your flu shot can also help reduce the risk of worsening preexisting chronic lung diseases due to the flu, which then often lead to hospitalization.
The flu vaccine is also recommended for those who are pregnant. Not only to protect the mother during her pregnancy, but also the baby during their first few months of life. This is a time when the baby is otherwise too young to receive a vaccination themselves.

The Flu Shot: Improving Public Health and Saving Lives

Overall, the flu shot is a valuable tool for public health that offers protection against the four most common strains of the influenza virus. Not only does this protect those who are vaccinated, but it also protects those who are unable to be vaccinated themselves.
There is a chance of still getting the flu, even if you have had a flu shot. This is because there are many different flu strains, and only the four most common can be included in the vaccine. However, the flu shot still offers benefits, such as reducing the severity of symptoms and lessening the risk of hospitalization.
The influenza virus has a long history of causing multiple pandemics, with a high burden on the Swiss health care system, showing the importance of doing your part to protect yourself and those around you from the flu. When it comes to this flu season, be sure to get your flu shot to lessen your chances of getting the flu and reducing the risk of severe infection should you still get infected.
We may not be able to get rid of influenza viruses completely, but getting a flu shot every year is your best protection against them.

Not sure if the flu shot is right for you?

Our staff will be happy to go through your questions and concerns with you.

https://reisemedizin.uzh.ch/en/book_appointment

Sources

Ferdinands, J., Thompson, M., Blanton, L., Spencer, S., Grant, L., & Fry, A. (2021). Mildert die Grippeimpfung den Schweregrad von Durchbruchsinfektionen? Ein narrativer Überblick und Empfehlungen für weitere Forschung. Vaccine, 39(28), 3678-3695. doi: 10.1016/j.vaccine.2021.05.011

Grippe (Influenza). Geschichte der Grippepandemie 1930 - heute. (2019). https://www.cdc.gov/flu/pandemic-resources/pandemic-timeline-1930-and-beyond.htm

Bouvier, N., & Palese, P. (2008). Die Biologie der Grippeviren. Vaccine, 26, D49-D53. doi: 10.1016/j.vaccine.2008.07.039

Smith, D., Lapedes, A., de Jong, J., Bestebroer, T., Rimmelzwaan, G., Osterhaus, A., & Fouchier, R. (2004). Mapping the Antigenic and Genetic Evolution of Influenza Virus. Science, 305(5682), 371-376. doi: 10.1126/science.1097211

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