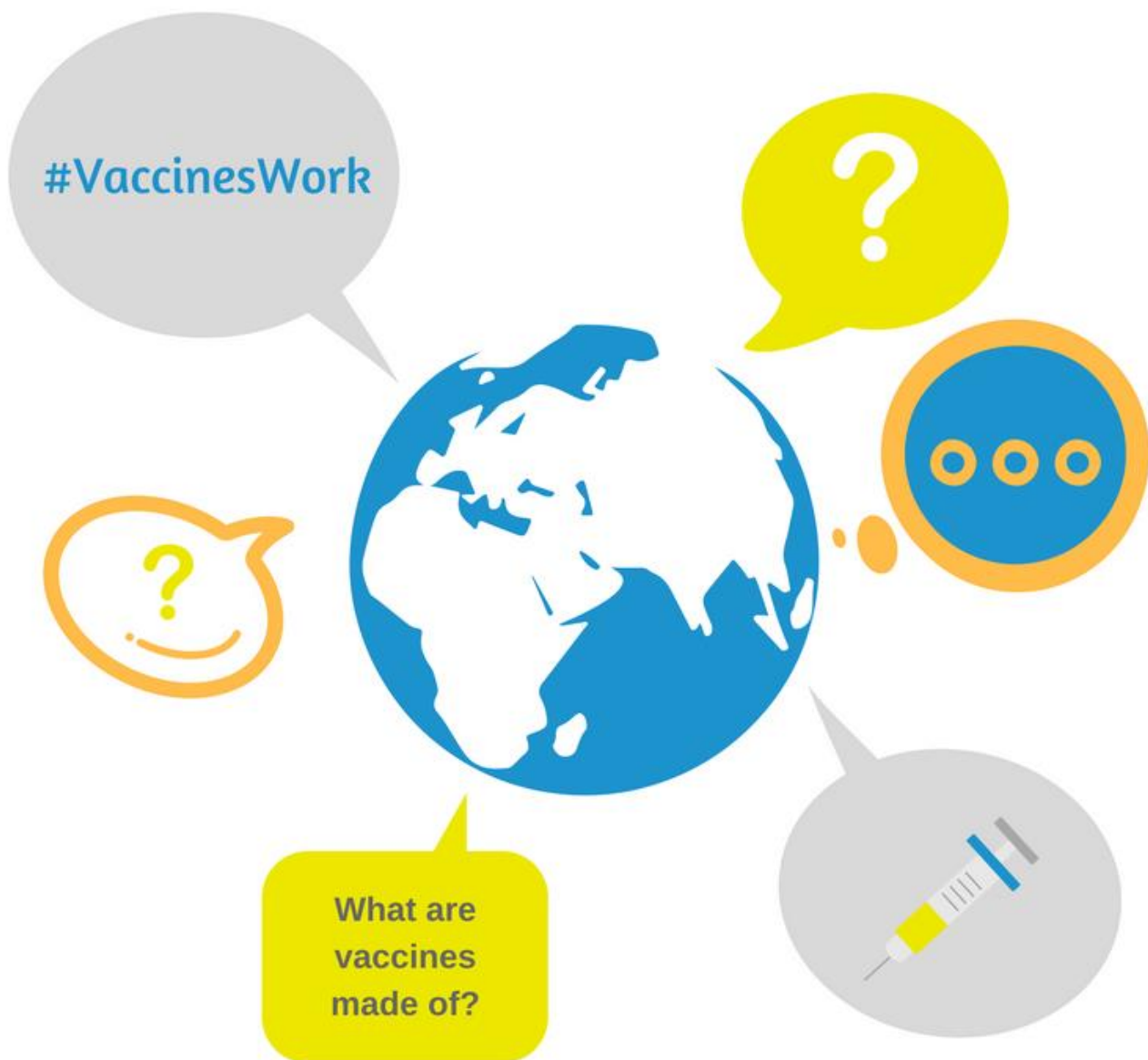


# Meningitis Vaccines

## Q&A Resource





## Vaccine Manufacture and Availability

### 1. What are vaccines made of?

Vaccines are made up of carefully chosen ingredients. These ingredients, both active and additional, make the vaccine work as effectively and safely as possible.

- *Active ingredients:*

Active ingredients make a person produce their own immunity before encountering the disease. They are made of live harmless germs, germs that have been killed, or carefully selected parts of the germ; sugar coat or purified germ proteins. Gene technologies have been used more recently to make some of the newest meningitis vaccines.

- *Additional ingredients:*

Tiny amounts of special chemicals also need to be introduced in vaccines:

- ✓ **Adjuvants** to improve immune response
- ✓ **Stabilizers** to keep the contents of the vaccine vial constant
- ✓ **Preservatives** to prevent the growth of any unwanted germs in the vaccine
- ✓ **Sterile water** to dilute the vaccine for injection.

### 2. How do vaccines work?

Although we have millions of germs on and in our bodies, very few make us unwell, because our immune systems are designed to protect us from harm.

But some of these germs or new germs that enter our bodies can make us ill. The medical word for this kind of germ is 'antigen'. Humans have adapted to fend off these infections by triggering the immune system into action to produce 'antibodies' to the germs. Once our immune systems have met a new germ they memorise it, and can produce the right antibodies when they meet it again. For some diseases, the response is too slow and occurs too late to prevent the potential damage of the disease.

Vaccines work by introducing tiny amounts of the antigens to make our immune systems remember it, and produce antibodies that protect against that disease. It is rare for a person not to be able to receive vaccines, and it is especially important for people who have chronic illnesses to be vaccinated.

If enough people in the community are immunised, the germs become less common so that everyone, even the most vulnerable, are protected. This is called [Herd Protection](#).

There are several vaccines used to prevent disease caused by many of the meningitis germs. This is because each of the bacteria and viruses (disease-causing germs) are unique, and our immune systems need to make a special antibody to each of these germs.





### 3. Which vaccines can protect my child from bacterial meningitis?

Currently, there are vaccines available to protect against most strains of the three major causes of bacterial meningitis: meningococcal disease, pneumococcal disease and *Haemophilus influenzae* Type B (HiB) disease.

*“While I was aware that a vaccine existed for meningococcal disease, I did not have Jamie vaccinated. I was not educated in the risks of the disease and doctors never discussed with me the importance of vaccination.”*

- Patsy, The JAMIE Group, USA. [Read full story »](#)

#### Special notes about vaccines against bacterial meningitis

<p><u>Meningococcal vaccines</u></p>	<p>Meningococcal disease is the leading cause of bacterial meningitis in many countries, but there are different types of meningococci (so called “strains”). There is a need for different vaccines to be effective against the main types of meningococcus germs: A, B, C, W, and Y.</p> <p>There are 3 main versions of meningococcal vaccines: conjugate vaccines, polysaccharide vaccines, and serogroup B meningococcal vaccines. They are made quite differently.</p> <p><i>Conjugate vaccines</i> exist for routine immunisation of infants, children and adolescents and protect against multiple strains of meningitis. These vaccines link a specific meningococcal sugar coat to a protein known for its strong immune response and selected from another germ. Conjugate vaccines are highly effective in young infants and produce much higher and sustainable levels of protection than the pure polysaccharide vaccines.</p> <ul style="list-style-type: none"> <li>✓ Conjugate group C vaccine (e.g. MenC)</li> <li>✓ Conjugate groups A-C-Y-W vaccine (eg. MenACYW)</li> <li>✓ A conjugate Group A vaccine for use in Africa has been developed by the Meningitis Vaccine Project. MenAfriVac® is being used to reduce and control epidemics of meningococcal meningitis in the meningitis belt of Sub-Saharan Africa.</li> </ul>
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	<p><i>Plain polysaccharide vaccines</i> are made from the purified sugary outside shell of the different germs. These vaccines are used less now as they are not effective in children under 2 years of age and because the immunity they induce is short lived. However, polysaccharide vaccines are still used to control epidemics in the meningitis belt as they are less expensive than other vaccines and are effective at stopping outbreaks on the short term.</p> <ul style="list-style-type: none"> <li>✓ Group A- C vaccine</li> <li>✓ Group A-C-W vaccine</li> <li>✓ Group A-C-Y-W vaccine</li> </ul> <p>Recently <u>meningococcal serogroup B (MenB)</u> vaccines to protect against MenB meningitis have become available in Europe, Canada, and USA. These vaccines consist of proteins from the outer membrane of the MenB bacteria that are known to stimulate efficiently the immune response.</p> <p>One of these vaccines is now part of the infant immunization programme in some European countries.</p>
<p><u>Pneumococcal vaccines</u></p>	<p>Pneumococcal vaccines exist to protect against the bacteria <i>Streptococcus pneumoniae</i> that can lead to meningitis, as well as blood poisoning (septicaemia), pneumonia and ear infection. A large number of different <i>S.pneumoniae</i> exist (over 90 in fact!); however, only some of these are known to eventually provoke a disease.</p> <p>The vaccines available can be conjugated (PCV) or polysaccharide (PPV) and can offer specific protection against many different strains of <i>S.pneumoniae</i>.</p> <p><i>Conjugate Vaccines:</i> Conjugate vaccines are effective from 6 weeks of age at preventing meningitis and other severe pneumococcal infections and are recommended for infants and children up to the age of 5 years, and in some countries for adults aged over 65 years. There are two different conjugate pneumococcal vaccines, the number tells us how many strains are included in the vaccine.</p> <ul style="list-style-type: none"> <li>• <b>PCV10</b> conjugate vaccine protects against the 10 most common strains</li> </ul>



	<ul style="list-style-type: none"> <li>• <b>PCV13</b> conjugated vaccine protects against the 13 most common strains.</li> </ul> <p><i>Polysaccharide vaccine:</i> <b>PPV23</b> is a combined polysaccharide vaccine against the 23 most common strains causing pneumococcal disease, and is used mostly in those aged over 65 years but not in children under 2 years of age. In adults at risk and/or elderly a combined approach with both <b>PCV13</b> and <b>PPV23</b> is now recommended in several countries.</p> <p>As for other polysaccharide vaccines (e.g; meningococcal) this type of vaccine is considered as less effective than conjugate vaccines.</p>
<u><b>Haemophilus influenzae Type b (Hib) vaccines</b></u>	Hib conjugate vaccines protect specifically against <i>Haemophilus influenzae</i> Type b. They are highly effective in preventing Hib disease and are largely recommended for routine use in infants and are included in the so-called penta- or hexavalent vaccines recommended in vaccine calendars.
*Access to all these vaccines varies by country depending upon the national licensing and immunisation programme.*	

#### 4. Which vaccines can protect my child from viral meningitis?

Although there are no vaccines for most causes of viral meningitis, there are effective vaccines against a few dangerous viruses which can sometimes cause viral meningitis and encephalitis (inflammation of the brain). These viruses are: measles, mumps and rubella (MMR vaccine), chicken pox (also called varicella), and influenza ('flu).

##### *Special notes about these vaccines*

MMR and MMRV	The viruses included in the vaccines are 'live attenuated'. This means that they are made from live germs which have been treated so they are inactive. They either cause no disease or only a very mild form of disease (this sometimes happens with measles and chicken pox vaccines). They are supplied in freeze-dried form and mixed with sterile water to make them injectable.
Please note that following extensive international and independent research, strong evidence has been found that measles vaccine and MMR vaccine are NOT associated with the development of autism.	
Varicella	Currently available as a single vaccine, some countries have already introduced this vaccine in a routine immunisation programme, including for





	children who have already had chicken pox (Varicella). Soon this vaccine will be added to MMR as MMRV. Varicella vaccines are made from live germs that have been made inactive ('live attenuated')
Influenza	The most common method for producing 'flu vaccines is by incubating 'flu germs on egg yolk, but other methods include growing them in mammal cells, or by using parts of a wild 'flu variety combined with another common and non-disease-causing virus. Once the 'flu germs have grown they are collected and either killed (for the usual inactivated 'flu jab) or made inactive ('live attenuated') for the newer nasal spray vaccine.

### 5. Which causes/forms of meningitis have no vaccine?

Meningococcal meningitis due to serogroup B is not yet largely prevented as the MenB vaccine is expensive and still not widely approved or used yet.

There are no vaccines to prevent the most common causes of meningitis in new-born babies, which include those due to Group B Streptococcal disease, E.Coli, and Listeria. There are no vaccines available for some types of viral or any types of fungal meningitis.

*"I thought all my children had been vaccinated and that this would protect them. It didn't cross my mind that having the jab is not protection against all strains of the disease"*

- Bev, Meningitis Now, UK. [Read full story »](#)

There are other things you can do to minimise the risks of contracting meningitis.

[Click here](#) to learn more.

### 6. Why does it take so long to develop a vaccine and why are they so expensive?

Vaccines can take up to 30 years from first research to being available to protect people. This is because there are many stages to the manufacturing process, including strict safety and quality assessments at every stage.

First of all, the need for the vaccine has to be proved through health department information about the numbers of cases and how severe the disease is. Once the need for a vaccine is proven, the first



step is to carry out research to identify the best antigens, or bits of the germ, responsible for triggering the production of the right protective antibodies.

Next, the step by step approach of clinical trials, first in animals and then in humans, ensure that the vaccines are safe and effective. These trials are numerous and respond to official guidelines. They are also published in scientific journals so that the whole research community knows about it, and can comment on this work.

The last step includes large-scale efficacy or effectiveness and safety studies to prove the vaccine works with a big positive benefit (called efficacy) compared with any risk.

Before being licensed, each vaccine must gain approval of international drug agencies. For the vaccine to be manufactured on a large scale, government health agencies need to be convinced of the benefits to introduce the vaccine in a recommended schedule and thus to fund the vaccine. Want more detail?

[Click here.](#)

A panel of national and international infectious disease experts and doctors decide on the immunisation schedules for each country. They balance the need to provide protection to infants, children and adults with the age when the risk of the disease is the highest and the body's immune system will respond best, and thus recommend the earliest possible age to be given each vaccine.

*“Meningitis Research Foundation Canada is very excited about the vaccines that are now available, and hopeful that we will see an end to this insidious disease in our lifetime”*

- Kathryn, Meningitis Research Foundation of Canada, Canada. [Read full story >](#)

## Vaccine Protection

### 1. Who should get meningitis vaccines?

Hib and Pneumococcal Conjugate Vaccines are largely recommended within routine programmes for infants and young children. Pneumococcal polysaccharide vaccines are also recommended for adults over 65 years of age (and in some risk groups in a combined schedule with pneumococcal conjugate vaccines).

Recommendations for routine use of conjugate meningococcal vaccines vary in different continents: in many countries, routine infant vaccination is recommended (e.g. England, European Member States, Canada, Australia, and many countries in South America and Africa); in others, routine immunisation includes only teenagers (USA).





Vaccination is also recommended for persons of all ages who have medical conditions that increase their risk of severe disease with one or more of the meningitis germs. The vaccines may also be recommended for travellers to areas where meningitis outbreaks are occurring, at risk of occurring, military recruits, and other people at increased risk of exposure.

Vaccination may also be used to control outbreaks of meningitis.

Speak to a local health care professional or [meningitis organisation](#) to obtain recommendations for your area.

## 2. Does having meningitis and surviving mean that I am immune?

No. Having the disease protects you only against the specific germ that caused your case of meningitis. Although it is rare, it is possible to contract meningitis more than once. In most cases, the body's immune system 'remembers' the disease-causing organism so that it is already prepared with antibodies before harm can be caused. However, as there are various causes of meningitis it is possible to contract meningitis from one of the other causes. Children who have had pneumococcal meningitis and septicaemia still need pneumococcal vaccination- any immunity they have acquired from the infection will be specific to the strain causing their disease, and there are over 90 different strains of pneumococcal bacteria. In addition, children who recover from Hib and all who recover from meningococcal C disease also need to be vaccinated.

Some viruses (including herpes simplex virus 2) can trigger a recurring rare non-infectious meningitis, known as Mollaret's meningitis. Read more about CoMO members' Mollaret Meningitis Association ([link to MMA](#)).

## 3. How quickly does a meningitis vaccine work?

Although all vaccines start working to protect you from the time they are given, it takes a week or more for full immunity to develop.

Some vaccines need boosters (one or several doses at intervals) to build long-lasting protection.





#### 4. How long does protection from a meningitis vaccine last?

The protection that a vaccine provides depends on the type of vaccine.

For most meningitis vaccines, more than one dose is needed for best protection.

The bacterial meningitis vaccines that are made from polysaccharides and other proteins need two or three doses for maximum immunity.

Immunity always begins to wear off after a certain time as the levels of protective antibodies in the blood decrease, so 'boosters' may be needed to 'reboot' the immune system and restore the levels of antibodies.

#### 5. Do meningitis vaccines offer complete protection?

Nearly no vaccine provides 100% protection.

The different meningitis vaccines protect against only the germs that cause the type of meningitis that they are designed for, but not against all the other strains.

*"I have had my children vaccinated because, like wearing a seatbelt gives you no guarantee that someone won't crash into you, at least having a belt on will give you a better chance of survival."*

- Tania, The Meningitis Foundation Aotearoa, New Zealand. [Read full story»](#)

Not all cases of meningitis can be prevented by vaccines but the vaccines that exist do protect many people who might become unwell if they didn't get vaccinated. Therefore, it is essential to be familiar with the [symptoms of meningitis](#) and [trust your instincts](#), seeking medical attention if at all worried.

#### 6. How effective are the meningitis vaccines currently in use?

After clean water, vaccines are the most effective way of preventing infectious diseases in a country. Bacterial meningitis and septicaemia are examples of diseases where vaccination can truly be the difference between life and death or life-long disability.

How effective a vaccine is for an individual depends on many things:

- How strong the immune system of the recipient is;
- How strong an immune response it produces;
- How widely it covers disease-causing strains circulating in the region;
- Whether it prevents germs from being carried and passed on;



- How long protection lasts; and
- Whether it works sufficiently well in all age groups.

In addition, the overall number of cases prevented depends on other things, including how widely the vaccine is offered and how many people choose to have it.

Overall, meningitis vaccines are extremely effective. In countries that include Hib, meningococcal, and pneumococcal vaccines in routine immunisation programs, meningitis and other severe infections caused by the meningitis bacteria have decreased to all time low levels with only one twentieth of the cases seen before vaccines were available.

*“I believe Mary-Jo would still be here if she had been vaccinated. Mary-Jo died from a vaccine-preventable strain of meningitis – meningococcal meningitis type C.”*

-Rose, MAK - Meningitis Awareness Key to prevention, USA. [Read full story »](#)

## 7. How important is it to follow the recommended schedule?

Babies, children and adults who are not vaccinated on time are at risk of serious diseases.

Recommended immunisation schedules are carefully worked out by experts, who clearly define the need to protect children and babies at the best possible age, often the earliest, and the best and safest way to do it. Experts identify key at risk groups in the population (children and adults) and so following the schedules at any age is important to avoid unnecessary illness.

## Vaccine Safety

### 1. Are meningitis vaccines safe?

The safety of meningitis vaccines is carefully verified in clinical trials before they are used in the general population.

After release for general use, major national and international monitoring systems continually keep a close eye on side effects and after effects of vaccines to monitor vaccine safety, so that every event occurring after any vaccination is carefully documented. Millions of doses of vaccines are used every



year worldwide, so this ‘pharmaco-vigilance’ database is very extensive and rigorous. This process goes on as long as the vaccines are licensed and administered.

In short, to vaccinate against serious childhood diseases is hundreds of times safer than not to vaccinate!

## 2. What are the side effects of meningitis vaccines?

All medicines, including vaccines, occasionally cause side effects. The side-effects from any vaccines are usually mild and include soreness, swelling, or redness at the site of injection, within the next 1 to 3 days after receiving the vaccine. Severe side effects are very rare. Occasionally, most of these vaccines have been linked to convulsions due to a raised temperature (this demonstrates the successful immune response of the vaccine).

Any health risk from the vaccines are far lower than the risks of severe complications, hospitalisation or death from meningitis or septicaemia.

## 3. Can vaccines overload the immune system of my child?

No. The immune system can cope with a very large number of vaccines at a time. Babies, from birth, are actually exposed to far more immune challenges from the surrounding environment than from all the vaccines contained in the routine immunisation schedule combined.

Even babies who are a little unwell (for example with a cold or teething) can produce excellent protective immune responses to vaccines.

In short, by providing protection against potentially fatal infections, vaccines help stimulate and strengthen the immune system before encountering the germ responsible for severe diseases.

## 4. What are the risks of not vaccinating?

Not taking up recommended vaccines, exposes you and your child to potentially life-threatening diseases. Not using recommended vaccines at the recommended dose and schedule can also threaten the health of family members and the local community.

*“Meningitis acts quickly and can seriously injure or kill a previously healthy child or teenager within hours.”*

- Greg, The Immunization Partnership, USA. [Read full story »](#)



If too many people – adults and children - are not vaccinated, they contribute to a collective risk in their community or household and open up opportunities for meningitis germs to spread. Very few people cannot receive vaccines but they are especially vulnerable. These people include those having treatment for certain cancers or other forms of immunosuppression).

*“We know that this dramatic story would not necessarily have happened if we had known of the existence of a vaccination against pneumococcal infections and had vaccinated our little Ondra. But we did not know about it until it was too late”.*

- Rudolf and Katherine, NAHLAS, Czech Republic. [Read full story »](#)

## 5. Who should not receive vaccines?

Certain individuals are not advised to receive vaccines. This group includes:

- anyone who is currently unwell with a high fever (until better)
- anyone with a history of allergic reactions to certain components of the vaccine  
Tell your doctor if you have any severe allergies.
- anyone with a weakened immune system should seek medical advice before receiving live vaccines
- pregnant women may have inactivated vaccines, but not live vaccines  
(For example, CDC recommends that pregnant women should wait until they have given birth before getting the MMR vaccine).

See these links for more information:

- <https://www.cdc.gov/vaccines/hcp/vis/vis-statements/mmr.html>
- <http://www.healthline.com/health/vaccinations/immunization-complications#meningococcal8>



## General

### 1. Where can I get more information on vaccines?

For the most up-to-date information specific to your area, speak to your doctor or local healthcare professional.

Most governments have websites with information about recommendations. Some excellent Government websites include the [UK Immunisation website](#), the USA [CDC website](#), the [Australian Immunisation website](#); all of these all have excellent and comprehensive local advice.

*“As a nurse, I didn’t know that the meningococcal vaccine did not protect against all of the common serogroups in the USA. As a parent, I had a false sense of security that my daughter was fully protected.”*

- Patti, Kimberly Coffey Foundation, USA. [Read full story »](#)

Lastly, our CoMO members have a wealth of knowledge and experience on vaccinations and the immunisation schedules. [Find a member in your area.](#)