

CHILDHOOD VACCINATIONS

Vaccinations are one of the most important achievements of modern medicine and the most efficient way we have of fighting many serious and potentially deadly diseases.

Vaccination is a simple, efficient and safe technique. The doctors and nurses as well as family paediatricians who work as part of the Veneto Region's health services have long been strongly committed to ensuring all children are provided with the protection that vaccinations offer.

The high level of vaccination compliance among the children in Veneto does honour to the professionalism of our health care personnel. It has also shown the cultural maturity of the people who live here, to the extent that for children born from 2008 onwards, vaccination is no longer seen as an obligation but as a much desired opportunity.

It is very important that people should be adequately informed. This leaflet is an important information tool to that end. It contains essential information on childhood vaccinations and the diseases they prevent by giving parents the true ability to make informed choices.

We invite you to read this preliminary information leaflet carefully. Your paediatrician and the staff of the vaccination office are always available to discuss this topic and clarify your doubts.

March 2013

The Local Health Officer

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INTRODUCTION

Vaccinations are one of the most important achievements of medicine. Sometimes we need to know more, especially when we receive the call for our child's first vaccinations. [More information](#)

Vaccines vary according to the disease they prevent. They can contain micro-organisms that have been inactivated (dead) or attenuated (made harmless) or they can contain substances they produce, namely toxins, which have been inactivated. [What vaccines contain](#)

Vaccines work by stimulating our body's natural defences, our immune system. This system's job is to produce antibodies and special cells to protect us, and that can prevent illness. [How vaccines work](#)
Over the course of our lives, we need to defend ourselves from thousands of bacteria and viruses that are present everywhere in the environment around us.

Vaccines fight dangerous infectious diseases for which no cure exists (polio) or those for which therapy is not always successful (diphtheria, tetanus, haemophilus and meningococcal meningitis, invasive pneumococcal diseases, hepatitis B, chicken pox) or diseases which can cause serious complications (measles, whooping cough and rubella). Today we also have vaccines to prevent diseases caused by some viruses which can sometimes cause cancer (human papillomavirus, hepatitis B virus). [Which diseases do they prevent?](#)

To vaccinate with awareness, parents need to obtain information and answers to their questions from the vaccination office and their family paediatrician. [Before the vaccination](#)

Before vaccinating, medical personnel in the vaccination office will make sure that there are no contraindications and will examine the child's medical documentation (personal medical booklet).

Parents are requested to contact the vaccination office and their family paediatrician if they need more information or have any doubts.

The vaccination will be postponed if the child has an acute illness with fever or generally severe symptoms or if he/she has recently been given immunoglobulins (only for live vaccines). Mild common illnesses (cold, diarrhoea, upper respiratory infections) are not contraindications for vaccination.

When to postpone the vaccination

Sometimes, after the vaccination, there can be pain, redness and swelling at the injection site, which can be treated simply by using cold wet compresses. Any cases of fever above 38.5°C measured rectally, should be treated by giving medicines to bring down the fever. Rarely, other undesired effects may occur after vaccination. These cases should be communicated quickly to the paediatrician or vaccination office for evaluation and giving the most suitable treatment.

After the vaccination

Vaccination is a safe and effective preventive medical procedure. It is practised all over the world, thanks in part to the help of humanitarian organizations such as UNICEF, Doctors without Borders and many others.

It's important to know that...

In this way some diseases have been brought under control and others can be eradicated.

High vaccination cover in the child population reduces the circulation of infectious agents and thus protects even the few people who for different reasons have not been vaccinated.

Just as in the case of smallpox, we predict that poliomyelitis will also be eliminated all over the world in a few years. At that point it will no longer be necessary to vaccinate against polio.

What does the future hold?

Another short term objective is that of completely eliminating measles in Italy, by preventing its transmission at a local level, and to reduce and maintain the incidence of congenital rubella to values below 1 case for every 100,000 live births.

Veneto Region

VACCINATION CALENDAR FOR INFANTS AND ADOLESCENTS IN VENETO*

FREE SERVICE

<i>Vaccine</i>	<i>Birth</i>	<i>3rd month¹</i>	<i>5th month</i>	<i>13th month</i>	<i>14th month</i>	<i>15th month</i>	<i>6th year</i>	<i>12th year</i>	<i>15th year</i>
DTP		DTaP	DTaP	DTaP			DTaP		dTap
Tetanus									
IPV		IPV	IPV	IPV			IPV		
Hepatitis B	HB ²	HB	HB	HB					
Hib		Hib	Hib	Hib					
MPRV					MPRV		MPRV ³		
Chicken pox ⁴									Chicken pox
PCV ⁵		PCV	PCV			PCV			
Men C ⁶				Men C			Men C		Men C
HPV ⁷								HPV	
Influenza ⁸									

*extrapolated from appendix A to Dgr no. 411 of 26.02.08

Legend:

DTaP: diphtheria-tetanus-acellular pertussis vaccine;

IPV: inactivated polio virus vaccine;

Hib: haemophilus influenzae type B vaccine;

PCV: pneumococcal conjugate vaccine;

Men C: meningococcal group C conjugate vaccine;

HB: hepatitis B vaccine;

MMRV: measles, mumps, rubella and chicken pox vaccine;

dTap: diphtheria, tetanus and pertussis vaccine for adults;

HPV: human papillomavirus vaccine

Notes referring to the Table

1. The third month means the period between the 61st day and the 90th day of life, in other words, the end of the 8th week of life until the 12th week.
 2. HbsAg positive children should receive a first dose of hepatitis B vaccine (HB) and a dose of hepatitis B immunoglobulins (HBIG) simultaneously within 12-24 hours at separate sites. The vaccination cycle should be completed with a second dose 4 weeks later, a third dose after the eighth week of life (which can coincide with the first dose of normal vaccinations) and the fourth dose at 11 months (which can coincide with the 3rd dose of the normal cycle).
 3. The second dose of MMRV is given during the 6th year of life.
 4. Active research and vaccination programme for adolescents with a negative history of chicken pox.
 5. Pneumococcal conjugate vaccine: active research and vaccination programme for subjects at elevated risk. Vaccination of newborns as per specific regional programme.
 6. Active and free vaccination campaign for a single dose for three age groups: 13th month, 6th year and 15th year.
 7. Since 2008, there has been an active and free vaccination campaign for girls in their 12th year of life. The vaccination cycle consists of three doses.
 8. Offer of free vaccination at the beginning of autumn, following indications given in the Ministerial Circular, with particular attention for categories at risk.
- N.B. We would like to point out that the indications for the free and active vaccination offer for categories at risk defined by Italian and regional regulations remain valid.



Vaccination calendars and ages as well as vaccines themselves have been carefully selected so that this preventive measure is simple and effective in ensuring the health of our children. Vaccinations are offered increasingly frequently in an associated (multiple) form so as to cut down the number of injections.

Slight differences in vaccination intervals do not influence the efficacy of the vaccination; however a delay in starting and completing the vaccination cycle means that there is longer period when the child is not properly protected against these diseases.

Vaccination calendars and intervals should not be modified for pre-term or low birth weight babies, except for a few cases (such as vaccination against hepatitis B for babies under 2 Kg).

Vaccination against **Poliomyelitis**

What is poliomyelitis?

Poliomyelitis is an infectious disease caused by three different types of **virus** that enter the body mainly through the digestive system. It is a very dangerous disease as in the worst cases it can cause irreversible paralysis, especially of the limbs, and in some cases death. Unfortunately there are no drugs that can cure this disease once it has developed. The only real possibility of avoiding these serious health problems is to prevent them by vaccination.

Vaccinations have been required by law in Italy since 1966. Before this, there were 6,000 cases in 1958 and about 3,000 cases a year in the sixties. The last known case occurred in 1983.

Mass vaccination has been able to eliminate polio in the majority of countries in the world, but it is still present in some developing countries. As long as polio has not been defeated all over the world, there is an ever present risk that it can return to our country. For this reason, it is important to continue to protect children by vaccination.



Vaccine against poliomyelitis

The vaccine against poliomyelitis (also known as "Salk" or IPV) contains killed (inactivated) poliomyelitis viruses and is given by intramuscular or subcutaneous inoculation. The complete poliomyelitis vaccination cycle calls for 4 doses.

The vaccine is available singly as well as in several other combinations with other vaccines.

The vaccine used previously, called Sabin, contained live attenuated viruses. In our Country it has been substituted by a more effective inactivated vaccine without significant side effects.

When it should be postponed

Poliomyelitis vaccination should be postponed temporarily if your child has an acute illness with fever and other general clinically significant symptoms.

When you should not vaccinate

The Salk vaccine should not be given if your child has had serious allergic reactions to the components of the vaccine or to previous vaccinations of the same type.

Side effects

This vaccination is well tolerated.

The polio vaccine, like any substance that is foreign to the body, can cause allergic reactions on rare occasions.

diphtheria and tetanus

What is diphtheria?

Diphtheria is a serious infectious disease caused by a substance (a **toxin**) produced by a micro-organism, called *Corynebacterium diphtheriae*. It is transmitted mainly through saliva droplets.

Diphtheria toxin causes serious damage to many organs including the heart, kidneys, and nervous system. A membrane that forms in the nose, throat and larynx and the paralysis of the uvula can lead to suffocation. Approximately 5-10 cases out of every 100 can be fatal even though they are correctly treated.

In Italy, at the beginning of the 1900s, there were 20-30,000 cases of diphtheria every year with about 1,600 deaths.

After the introduction of vaccination against diphtheria by law in Italy in 1939, the cases of illness decreased and have been sporadic in recent years.

The last case in Italy occurred in 1991 with an unvaccinated child.

Not many years ago, thousands of cases of diphtheria occurred in Eastern Europe as a result of a vaccination campaign that was incorrectly carried out.



What is tetanus?

Tetanus is a serious disease caused by a substance (a **toxin**) produced by a micro-organism (*Clostridium tetani*) that can enter the body through a wound, even a small one. This tetanus toxin causes strong muscular contractions that can lead to

death when they affect respiratory muscles. In all cases, and despite therapy, this disease calls for a long stay in hospital, much of it in critical care.

A law passed in 1968 made it compulsory to vaccinate all newborns using a vaccine against tetanus associated with another vaccine against diphtheria.

Every year in Italy about sixty unvaccinated adults get the disease.

Vaccine against diphtheria and tetanus

The vaccine against diphtheria and tetanus is prepared by modifying the toxins produced in these diseases so that they are no longer dangerous to us, but can still stimulate the body to defend itself against both diseases.

The vaccine is given by intramuscular injection.

The vaccine against tetanus and diphtheria is also available in multivalent formulations, associated with vaccines for pertussis (whooping cough), poliomyelitis, haemophilus influenzae type B, and hepatitis B in different combinations.

When it should be postponed

This vaccination should be postponed temporarily if your child has an acute illness with fever and other general clinically significant symptoms.

When you should not vaccinate

There are no special health conditions that preclude this vaccination, except for serious allergic reactions to the components of the vaccine or to previous vaccinations of the same type.

This vaccine can also be given to pregnant women.

Side effects

This vaccine is well tolerated and, as a rule, does not cause reactions.

In some cases, within 48 hours, a temporary irritation at the injection site may appear. There may also be redness, swelling and pain.

There may also be fever, which is usually mild.

Other side effects such as neuritis (inflammation of nerve endings) are seen in

adults on rare occasions, and especially when they have had a large number of booster shots. To avoid unnecessary shots therefore, we recommend that you always have your vaccination booklet (or certificate) handy, in case you need to go to the hospital Emergency Room.

Like any substance that is foreign to the body, this vaccine can also cause allergic reactions on rare occasions.



Vaccination against hepatitis B

What is hepatitis B?

Hepatitis B is an infectious and contagious disease that affects the liver. It is caused by a **virus** entering the body by contact with infected body fluids (blood and its derivatives, body secretions containing blood, sperm and vaginal mucous) of sick people or healthy carriers (called HBsAg positive people).

The disease has a long incubation period (45-160 days, average 120 days) and can show up in different ways. 65-70% of infected people show no symptoms (asymptomatic form). Frequently, in small children, a mild form of disease is seen, with all over discomfort, weakness, joint pain, nausea, vomit and fever with or without jaundice (yellow colouring of skin and eyes).

On rare occasions the disease may be fatal, especially in adults.

The main problem with hepatitis B is that it becomes chronic. The frequency of this problem varies with the person's age. A chronic disease develops in 80% of babies infected at birth by their mothers, whether they are active or inactive carriers, and decreases to 10% in older children and adults. Chronic hepatitis carries the risk of cirrhosis and cancer of the liver. People who have chronic infections are also a potential source of contagion.



Vaccination against hepatitis B

The vaccine against hepatitis B currently in use contains only a part of the virus that is obtained in the laboratory using sophisticated genetic engineering techniques. This means it cannot cause the disease, but it is able to immunize us against it. The vaccine is highly effective (more so in children than in adults) and offers long term protection. The vaccination cycle calls for 3 doses. For children of carrier mothers, there is a specific schedule that begins at birth. At this time, there is no plan for booster shots.

The vaccination is given by intramuscular injection.

Since 1991, it is mandatory for all newborns in Italy to be vaccinated against hepatitis B. The vaccine is also offered free of charge to some categories of people for professional reasons (e.g. doctors and nurses) or for personal reasons (those who live with healthy carriers of the virus, i.e. HbsAg positive people) as they are at an especially high risk of being infected with the disease.

When it should be postponed

This vaccination should be postponed temporarily if your child has an acute illness with fever and other general clinically significant symptoms.

When you should not vaccinate

This vaccination should not be given to those who have had severe allergic reactions to components of the vaccine (e.g. brewer's yeast) or previous doses of the same vaccine.

Side effects

The hepatitis B vaccine is well tolerated. Temporary and mild redness, swelling and pain may be seen at the injection site. Side effects, which are very rare, can include mild and brief episodes of fever, headache, nausea, giddiness, and muscular and joint pain. Peripheral neuritis has been reported even more rarely, and only in adolescents and adults.

Like any substance that is foreign to the body, this vaccine can also cause allergic reactions on rare occasions.

whooping cough (pertussis)

What is whooping cough?

Whooping cough is an infectious disease caused by a **bacterium** (*Bordetella pertussis*). It is spread through the air. Before vaccination was introduced, there were epidemics every 3-4 years.

The first symptoms are like a cold: discomfort, tiredness, a slight increase in temperature, sneezing and cough, especially at night. These problems usually last for 1-2 weeks. After this, severe attacks of cough typical to this illness appear, with the characteristic sound on breathing in that gives it its name. Every coughing fit is made up of a series of fast, suffocating coughs that make it hard to breathe and end with the typical "whoop" on inspiration. Often the coughing attack can cause vomiting and compromise the child's nutritional status.

This phase of the disease lasts about 4-6 weeks and is followed by a few weeks of convalescence when the coughing attacks become gradually less frequent and intense.

The disease is not usually life threatening, though complications such as laryngitis, pneumonia, convulsions and asphyxia leading to brain damage are possible. The illness is especially serious and severe during the first year of life. Complications occur frequently in babies as they have special difficulty in breathing, leading to suffocation, and consequently hospital admission. Brain complications causing permanent damage and in the most serious cases death, are more frequent in young babies.



At all ages, however, whooping cough causes significant problems due to strong bouts of coughing which limit the child's play, movement, eating and night time sleep.

Vaccine against whooping cough

The vaccine against whooping cough is also known as "acellular" vaccine because it contains only some highly purified parts of the micro-organism. It is given by intramuscular injection and combined with other vaccines in the same vial. The base cycle calls for 3 doses. Booster shots at 5-6 years and 14-15 years of age are also recommended.

Vaccination is recommended from the 3rd month on to ensure the baby's protection during his/her first year of life when the disease is at its most dangerous.



When it should be postponed

Pertussis vaccination should be postponed temporarily if your child has an acute illness with fever and other general clinically significant problems. The vaccinating physician will evaluate whether it is necessary to postpone the whooping cough vaccination, especially in case of neurological problems whose cause has not yet been adequately identified, until a final diagnosis has been made.

When you should not vaccinate

If a child has a serious neurological disease that could deteriorate over time, the vaccinating physician will evaluate on a case-by-case basis whether it is advisable to proceed with this vaccination.

The vaccine can also be given to children who have had "febrile convulsions" in the past, taking care to check for any fever.

Those who have had serious allergic reactions to the components of the vaccine or

to previous vaccinations of the same type should not be vaccinated.

Side effects

In some cases, redness, swelling and pain may be seen at the injection site within 24-48 hours. These are usually mild and transitory reactions.

The child may have fever (usually low, rarely high), cry inconsolably for two to three consecutive hours, and be irritable or sleepy, in the first two days after the injection. These are usually temporary reactions and, as already said, they are rarer today thanks to the use of acellular vaccinations.

Severe reactions (for example, episodes of collapse and convulsions) have become the exception with the advent of acellular vaccinations. The effects of these reactions are not long lasting but they make it necessary for the doctor to evaluate the situation carefully before continuing the vaccination schedule with the whooping cough component.

Like any substance that is foreign to the body, this vaccine can cause allergic reactions on rare occasions.



Vaccination against

haemophilus influenzae type b

What is Haemophilus influenzae type b?

This **bacterium**, not to be confused with the virus that causes influenza, and which we will henceforth call simply Haemophilus to avoid confusion, is normally found in the throat and nose where it causes no problems and is spread from person to person by the aerial route. Almost all children come into contact with Haemophilus within the first 5-6 years of their lives. Usually, they come to no harm after this contact, and develop antibodies that protect them later on. But in some cases, Haemophilus does not limit itself to the throat and manages to get into the bloodstream, thus reaching other organs where it causes serious diseases. The most frequent of these is **meningitis**. This disease is always serious and can cause permanent damage such as deafness, serious or mild motor paralysis and mental handicaps.

More rarely, the germ can cause epiglottitis (serious and sudden inflammation of the upper respiratory tract with a sensation of suffocation) and sepsis (widespread infection of the blood).

These diseases are known as "invasive forms" and almost exclusively affect children below 5 years of age. Children in group day-care settings are at greater risk of the illness.



Vaccine against Haemophilus

Vaccination is the only way to prevent "invasive" Haemophilus infections. It contains a part of the micro-organism bound to a protein so as to stimulate immunological

protection even in a baby who is just a few months old.

The vaccine is highly effective both in preventing the disease as well as getting rid of carriers, because a healthy child, if infected, would contribute to the spread of bacteria and thus the disease.

The vaccine is given by intramuscular injection and is available singly or associated with other vaccines.

The number of doses required depends on the age of the child. Three doses are necessary for a child in its first year of life. After this one dose is sufficient.

When it should be postponed

This vaccination, like others, should be postponed temporarily if your child has an acute illness with fever and other general clinically significant problems.

When you should not vaccinate



There are no special health conditions that preclude this vaccination, except for serious allergic reactions to the components of the vaccine or to previous vaccinations of the same type.

Side effects

Redness, swelling and pain may be seen at the injection site. These are temporary and brief phenomena.

Rarely, there can be general symptoms such as fever, usually below 38.5°, mild irritability or sleepiness.

Like any substance that is foreign to the body, this vaccine can also cause allergic reactions on rare occasions.

The National Plan for the elimination of measles and congenital rubella



Rubella is a disease that can be eliminated by vaccinating all children in the same way as poliomyelitis and diphtheria have now been eliminated in Italy and could be eliminated forever, like smallpox. In Italy however there are still periodic epidemics that affect unvaccinated children and young adults. The last significant epidemic occurred in 2002, with over 40,000 cases and 6 deaths. In our region there are outbreaks of this disease every year. Although most Local Health Units (ULSS) offer a high level of vaccination cover, some areas with low cover still remain. The elimination of measles and congenital rubella is a priority in Italy in the field of diseases that can be prevented by vaccination.

In order to prevent children from dying or suffering from rubella, or be born with malformations because they get this illness from their mothers during pregnancy, the new "National plan for the elimination of measles and congenital rubella 2010-2015" has been approved.

In our Region, vaccination against measles, rubella and mumps is offered to:

- all children in their 14th month with another dose during their 6th year.
- adolescents and as yet unprotected adults.

“Triple” vaccine against measles, mumps and rubella (MMR) or “quadruple” vaccine against measles, mumps, rubella and varicella (chicken pox) (MMRV)

Besides the “triple” vaccine against measles, mumps and rubella, a “quadruple” vaccine also exists, incorporating a fourth component to prevent chicken pox. These vaccines are made up of three or four viral strains that have been “attenuated” (modified so they cannot cause the disease) yet still able to stimulate the production of disease fighting antibodies.

The multiple (“triple” or “quadruple”) formulations are recommended for these reasons:

- ❖ it offers an advantage to the child as he/she can obtain immunisation against multiple diseases simultaneously with a single injection
- ❖ it is an advantage for the community because fewer circulating viruses mean indirect protection of older children and adults.

The vaccination is given subcutaneously on the upper arm.

The combined vaccine is recommended for all children after they are a year old (from the 365th day of life). To complete the immunisation cycle, a second dose is given in the 6th year. The vaccine can be given at the same time as other vaccines.

The combined vaccination can also be carried out in people who have already had one or more of the diseases naturally (perhaps they did not even realise it, something that happens frequently with rubella and mumps) or have already been vaccinated against one of these diseases.

The precautions, contraindications and possible side effects of this vaccine are given under the individual descriptions of the vaccines.

measles

What is measles?

Measles is an infectious disease caused by a **virus** and is spread through respiration of aerial droplets. The symptoms are high fever, persistent cough, coryza (runny nose), conjunctivitis and a typical skin rash.

The child is usually very ill with measles, which can rightly be considered the most serious of the "common" infectious childhood diseases because of its acute symptoms and possible complications.

These can include ear infections, laryngitis, bronchial pneumonia, thrombocytopenia (reduction in platelets), seizures and above all, encephalitis. There is one case of encephalitis for every 1,000-3,000 children who are infected with measles. This is a serious infection of the brain and can cause death (15% of cases) or cause permanent damage (40% of cases) such as a tendency to convulsions, deafness and mental retardation. More rarely, irreversible neurological damage can appear 5-15 years later due to a persistent infection of the measles virus (Subacute Sclerosing Panencephalitis or SSPE).



Vaccine against measles

The vaccine against measles is made up of live measles virus attenuated so it cannot cause the disease yet still able to stimulate the production of disease fighting antibodies.

The measles vaccination is carried out simultaneously with rubella, mumps and sometimes chicken pox vaccinations ("triple" or "quadruple" vaccine). The vaccine is given subcutaneously on the upper arm. It is not currently available as a single vaccine.

The measles vaccination is recommended from the first birthday onwards (the 365th day of life).

In any case, it is beneficial for those who have not had the disease to take the vaccination at any age after the first birthday.

The vaccine is extremely efficient as it stimulates the production of antibodies in 95% of vaccinated children and this percentage increases after the second dose. The protection is active as soon as 7-10 days after the vaccination. Because it acts so quickly, measles vaccine can prevent the disease even after contagion has occurred, as long as it is given within 2-3 days of contact with the person with measles.

A 2nd dose of vaccine is recommended in the 6th year of life to increase the proportion of children with a good level of protection.

When it should be postponed

This vaccination should be postponed temporarily in these cases:

- ❖ acute illness with fever and other general clinically significant problems;
- ❖ recent administration of immunoglobulins, blood or plasma, which can prevent a good immune response to the vaccine;
- ❖ other recent vaccinations with live viruses.

When you should not vaccinate

This vaccine should not be given in the following cases:

- ❖ serious immune system deficiencies due to illness or therapy
- ❖ severe allergic reactions to components of the vaccine (e.g., neomycin or gelatine) or to previous vaccinations of the same type.

Side effects

The vaccine is well tolerated. The side effects of measles vaccine are infrequent.

Local reactions (redness and swelling) may occur at the injection site.

The child may have fever that is usually brief (1-2 days) and mild (up to 39°C in 5-15% of children) at 7-14 days from the vaccination.

At times he/she has symptoms of a common cold or an illness that is similar to mild measles with reddish spots on the skin, cough and sore eyes. This lasts briefly and the child recovers spontaneously. It is not contagious and does not cause complications. More severe side effects such as thrombocytopenia (a reduction in platelet count) are very rare and resolve spontaneously. The natural illness can however cause serious and long lasting complications.

Like any substance that is foreign to the body, this vaccine can cause allergic reactions on rare occasions.

Vaccination against **rubella**

What is rubella?

Rubella is an infectious disease caused by an airborne **virus**.

If a child gets this illness after birth, its form is mild and benign with a low fever, swollen lymphatic glands (especially at the sides and back of the neck) and a rash of brief duration. Occasionally bleeding is seen on the surface of the skin, in adolescents and adults and especially in females as well as joint pain.

Severe complications are very rare.

Rubella is a serious disease if a woman gets it for the first time when she is pregnant. In this case there is a real chance that the virus can reach the unborn baby through the placenta and cause serious problems such as miscarriage, and various types of congenital malformations of the heart, brain, eyes and ears.



Vaccine against rubella

The vaccine against rubella contains live virus that has been attenuated so that it can no longer cause the disease, yet is still able to stimulate the production of protective antibodies by the body.

The rubella vaccination can be carried out singly (when available) or in combination with measles, mumps and chicken pox vaccinations ("triple" or "quadruple" vaccine). The vaccine is given by subcutaneous injection on the upper arm.

The rubella vaccination is recommended for all children from the first birthday onwards (the 365th day of life).

Women who do not have immunity to rubella are strongly advised to get vaccinated before they plan to become pregnant or right after giving birth to protect them from infection in case of future pregnancies.

Today the vaccination is also offered to men, not so much for their own protection as individuals, but to reduce the levels of virus in the population and make it even less likely that a woman can be infected in pregnancy.

The vaccine is very efficient and offers an estimated protection of over 99%.

When it should be postponed

This vaccination should be postponed temporarily in these cases:

- ❖ acute illness with fever and other general clinically significant problems.
- ❖ recent administration of immunoglobulins, blood or plasma, which can prevent a good immune response to the vaccine;
- ❖ recent vaccination with another vaccine made of live attenuated viruses.



When you should not vaccinate

The rubella vaccine, either single or in combination, should not be given in the following cases:

- ❖ significant immune system defects due to illness or therapy;
- ❖ severe allergic reactions to components of the vaccine (e.g., neomycin or gelatine) or to previous vaccinations of the same type.

Side effects

The rubella vaccine, both on its own or in combination with measles, mumps and chicken pox vaccination is well tolerated.

Side effects from giving the rubella vaccine are infrequent.

A small number of children (5-15%) may have mild fever, limited skin rashes and enlarged lymph glands of the neck about 5-12 days from the date of the vaccination. Very rarely in children and more frequently in adolescents and adult women, joint pains of brief duration are noted 1-3 weeks after the vaccination.

Even more rarely, this can result in chronic arthritis in adults.

Like any substance that is foreign to the body, this vaccine can cause allergic reactions on rare occasions.

mumps (parotitis)

What is mumps?

"Mumps" or parotitis is an infectious disease caused by a **virus** which is spread by airborne droplets. The illness generally involves an enlargement of the area below the ear caused by the inflammation of a salivary gland, known as the parotid gland, on one or both sides of the face. Other salivary glands may also swell up. There may also be headache, moderate or high fever, and abdominal pain. This disease is important mainly because of its possible complications: meningo-encephalitis, damage to hearing, pancreatitis and if it occurs after puberty, orchitis and ovaritis (inflammation of testicles and ovaries) with the risk of causing sterility.



Vaccine against mumps

The vaccine against mumps is made from live attenuated measles virus so it cannot cause the disease, yet it is still capable of stimulating the production of disease fighting antibodies.

Measles vaccination is carried out simultaneously with rubella, mumps and sometimes chicken pox vaccination ("triple" or "quadruple" vaccine). Both types of vaccines are given subcutaneously on the upper arm.

The mumps vaccination is recommended from the first birthday onwards (the 365th day of life). In any case, the vaccine can be given at any age to people who are already immune (because of previous vaccination or having had the disease) and is well tolerated.

When it should be postponed

This vaccination should be postponed temporarily in these cases:

- ❖ acute illness with fever and other general clinically significant symptoms;
- ❖ recent administration of immunoglobulins, blood or plasma, which can prevent a good immune response to the vaccine;
- ❖ other recent vaccinations with live viruses.

When you should not vaccinate

The mumps vaccine should not be given in the following cases:

- ❖ significant immune system defects due to illness or therapy;
- ❖ severe allergic reactions to components of the vaccine (e.g., neomycin or gelatine) or to previous vaccinations of the same type.

Side effects

Side effects of the mumps vaccination are rare. A few days after the vaccination, the child may have enlarged parotid glands and brief fever. In rare cases there can be meningeal inflammation which resolves spontaneously.

Like any substance that is foreign to the body, this vaccine can cause allergic reactions on rare occasions.



Vaccination against **chicken pox**

What is chicken pox?

Chicken pox is an especially contagious infectious disease caused by a **virus** that is transmitted by direct contact with skin lesions or airborne droplets. The symptoms include moderate fever, general discomfort, a typical rash with small pink dots that appear in groups for 3-4 days, on the chest, face and limbs as well as the anus, vagina and ears.

These dots cause severe itching and become blisters, pustules and finally crusty scabs that fall off. In some cases, there can also be heavy coughing.

Complications in children are not frequent. If the mother gets chicken pox at the beginning of a pregnancy, it can cause foetal malformations (ocular lesions, misshapen limbs, mental retardation) and if she gets it at the end of her pregnancy it can cause a very severe form of chicken pox in both mother and baby with the risk of death.

In the case of people with compromised immune systems, and to a lesser extent in some adolescents and adults, chicken pox evolves into a more severe form, with a higher risk of pulmonary and neurological complications than in children.

Herpes zoster is a delayed manifestation of the disease. It is seen in 15 cases out of 100 due to the virus remaining dormant in the neural ganglia. This risk increases with age.

Vaccine against chicken pox

The vaccine against chicken pox is made up of live attenuated chicken pox virus. It can be given after 12 months of age on its own or in combination with the measles, mumps and rubella combination ("quadruple") vaccine. In our Region the chicken pox vaccination is offered to all newborns, as well as teenagers who have not had the disease and adults at risk.

Two doses of the vaccine are given subcutaneously.

When it should be postponed

This vaccination should be postponed temporarily in these cases:

- ❖ acute illness with fever or general symptoms considered clinically significant;
- ❖ recent administration of immunoglobulins, blood or plasma, which can prevent a good immune response to the vaccine;
- ❖ recent vaccination with another vaccine containing live attenuated viruses.

When you should not vaccinate

The chicken pox vaccination should not be given in the following cases:

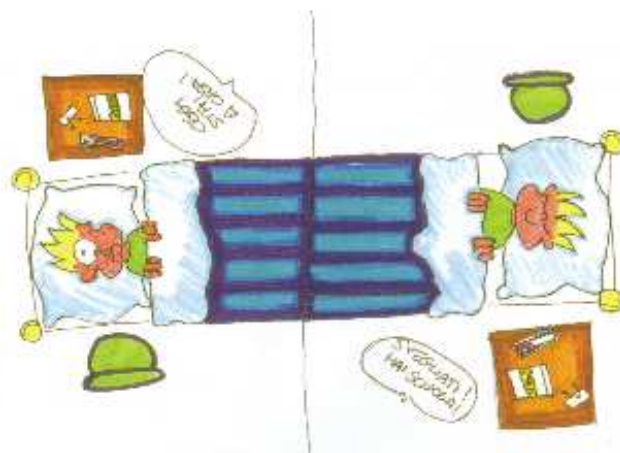
- ❖ serious immune system deficiencies due to illness or therapy
- ❖ severe allergic reactions to the components of the vaccine or to previous vaccinations of the same type.

Side effects

The chicken pox vaccine, both on its own or in combination with measles, mumps and rubella vaccine is well tolerated. The reactions to this vaccine are mild (redness and swelling at the site of the inoculation). Some children may have fever at 6-12 days from vaccination that is usually mild and brief. However in 5-15% of cases the fever can go up to 39°C.

5% of vaccinated people may have a mild skin rash. In this case, although rare, there is a chance that the vaccinated person is contagious.

Like any substance that is foreign to the body, this vaccine can also cause allergic reactions on rare occasions.



pneumococcus

(streptococcus pneumoniae)

What is pneumococcus?

It is a widespread **bacterium** that can be present without any symptoms in the throat and nose of healthy children and adults. The pneumococcus is spread from person to person by respiration through close contact.

There are many different types (serotypes) of this germ that are identified with numbers. Some of these are more frequently to blame when a germ enters the blood ("invasive" disease) and causes serious illness and even death.

Pneumococcus is one of the main causes of sepsis (also known as blood infection thanks to the huge quantity of bacteria and the toxins they produce, something that can cause grave danger to life) and meningitis (infection of the membranes that line the brain), a serious illness that can cause permanent damage such as convulsions, deafness, motor paralysis and mental retardation. Every year in Italy there are 1-3 cases of pneumococcal meningitis for every 100,000 children under 5 years of age.

This bacterium can also cause other diseases such as pneumonia, ear infections and sinusitis. In a few cases pneumococcus has shown resistance to the more common antibiotics.

The age range most at risk for the "invasive" form of disease is 0-5 years and adults over 64 years of age.

Vaccines against pneumococcus

The pneumococcus vaccination is the only method for preventing diseases such as pneumococcal meningitis and blood infections (septicaemia). It can also prevent pneumococcal ear infections. The vaccination is free and strongly recommended for children (as well as adolescents and adults) who are at greater risk of serious pneumococcal diseases due to health problems such as sickle cell anaemia and thalassemia, functional or anatomical asplenia (insufficient function or lack of spleen), chronic bronchopneumonia, conditions associated with immunodepressive states, chronic cardiovascular problems, diabetes mellitus, renal insufficiency, chronic liver diseases (cirrhosis), loss of cerebrospinal liquid.

In our Region, pneumococcus vaccination is also offered free to all newborns.

There are two types of vaccines against pneumococcus. Both are made up of only part of the micro-organism and considered multivalent as they offer protection from several pneumococcal (sero) types.

Pneumococcal conjugate vaccine is given via intramuscular injection. The number of doses varies according to the age when the vaccination cycle was initiated; it is given from the 2nd month and up to 18 years of age.

The pneumococcal polysaccharide vaccine (23-valent) is given by subcutaneous or intramuscular injection. A single dose is sufficient. It can be given during the third year of life.

The protection becomes effective 2-3 weeks after vaccination.

For children below 2 years, only the conjugated vaccine is used.



When it should be postponed

This vaccination, like others, should be postponed temporarily if your child has an acute illness with fever and other general clinically significant symptoms.

When you should not vaccinate

There are no special health conditions that preclude this vaccination, except for serious allergic reactions to the components of the vaccine or to previous vaccinations of the same type.

Side effects

Redness, swelling and pain may be seen at the injection site. These are temporary and brief phenomena.

General symptoms can include fever, usually below 38.5°C, slight irritability or sleepiness and temporary loss of appetite.

Like any substance that is foreign to the body, this vaccine can also cause allergic reactions on rare occasions.

meningococcal

(neisseria meningitides)

What is meningococcus?

Meningococcus is a **bacterium** that is found quite frequently in the nose and throat where it usually does not cause problems. There are different types (serotypes) of this germ that are identified with the letters of the alphabet. Transmission takes place from person to person through respiratory droplets. In some cases the meningococcus enters the blood and in this way also other organs, causing invasive diseases, especially meningitis and sepsis (infection in the bloodstream). These are always serious illnesses and can cause permanent neurological or behavioural damage or lead to death. Other meningococcal diseases such as pneumonia or conjunctivitis are less frequent.

The illness especially affects children younger than 5 years and is particularly frequent in children below two years. Another group that can be affected, though less frequently, is that of adolescents and young adults. In Italy, the frequency of invasive meningococcal disease is lower than in other Countries, especially the Anglo-Saxon ones.



Vaccines against meningococcal

Vaccination is the most effective way to reduce the risk of death and permanent damage from meningococcal infections caused by the A, C, Y and W-135 serotypes.

The following "conjugated" or "polysaccharide" vaccines are available on the market. They all contain parts of the micro-organism.

- **The meningococcal C conjugate vaccine** is given by intramuscular injection and bestows long lasting protection. It is very effective against the meningococcal group C serotype, one of the most widespread in Italy and can be given even to children below two years. The number of doses varies according to the age when the vaccination cycle was initiated.

In our Region, the vaccination is offered free to all newborns during their 13th month and to children who have not been previously vaccinated during the 6th and 15th year of age.

- **The meningococcal conjugate vaccine for the A, C, Y and W-135 serotypes**
It is given by intramuscular injection and confers long lasting immunity. This vaccine is suitable for children after one year of age, and for adults at risk of infection due to specific pathological conditions. A single injection is given.
- Vaccine against meningococcus type B has been put on the market recently. It is given by intramuscular injection and bestows long term protection. It can be given from the 3rd month of life. The number of doses depends on when the vaccination cycle is started.

When it should be postponed

This vaccination, like others, should be postponed when the child has an acute illness with clinically significant symptoms such as fever or general discomfort.

When you should not vaccinate

There are no special health conditions that preclude this vaccination, except for serious allergic reactions to the components of the vaccine or to previous vaccinations of the same type.

Side effects

Redness, swelling and pain may be seen at the injection site. These are temporary and brief phenomena.

General symptoms can include fever, usually below 38.5°C, slight irritability or sleepiness, headaches, crying, vomiting, diarrhoea, lack of appetite and muscle pain.

Like any substance that is foreign to the body, this vaccine can also cause allergic reactions on rare occasions.

Vaccination against **papillomavirus**

What is papillomavirus?

The papilloma **virus** is found frequently on the skin and mucosa (oral cavity, genital organs). It is estimated that 75% of all people (men and women) will come in contact with this virus during their lives. There are several serotypes of this virus, each identified by a number. Person to person transmission takes place by sexual contact. In most cases the virus is eliminated by our body's natural defences, but at times it can cause disease.

Some types of virus cause diseases that are not malignant but they can be troublesome and hard to treat (genital warts). Other types, known as "high risk" strains, cause cancer of the cervix (neck of the uterus) because they are able to transform normal cells into abnormal cells which, over time, can develop into cancer. A simple and efficient test, the Pap test, which involves scraping off a few cervical cells, can detect any abnormalities of the cervix that could lead to cancer. This test is recommended every three years for all women between 25 and 64 years of age. If diagnosed early, cervical cancer can be treated successfully.

Vaccines against papillomavirus

The two currently available vaccines are simply made up of the genetically engineered outer coat of viruses that are responsible for most carcinomas. The vaccination cycle calls for three intramuscular doses.

The vaccine can protect us from infection by preventing the virus from entering the cells but it is not able to kill the virus once it has infected the mucosa. This is why the best time to vaccinate is during adolescence, before coming into contact with the virus. It is most effective at this age.

The vaccine is offered free to girls during their eleventh year. As the vaccine offers protection from most but not all "high-risk" viruses, the Pap test will

continue to be essential for all women.

When it should be postponed

This vaccination, like others, should be postponed in case of clinically significant illness with fever and other general symptoms.

When you should not vaccinate

There are no special health conditions that preclude this vaccination, except for serious allergic reactions to the components of the vaccine or to previous vaccinations of the same type.

Side effects

You may note redness, swelling and pain at the injection site. Other mild and brief reactions such as fever, usually below 38.5°C can occur.

Like any substance that is foreign to the body, this vaccine can also cause allergic reactions on rare occasions.



Hepatitis A

What is hepatitis A?

Hepatitis is an infectious disease of the liver, caused by a **virus** that is spread from person to person through faeces that can contaminate water and food.

The disease is widespread in several countries in Africa, South America (Amazon basin), Asia and Southern China. Travellers to these countries are especially advised to take this vaccination.

The characteristic symptoms are fever, yellow skin, light coloured stools and dark urine, loss of appetite, nausea and discomfort.

The symptoms usually last for 2 months, sometimes 6 months and it is contagious for a long time.

In children below 6 years the disease is usually asymptomatic and this increases the risk of contagion.

Vaccine against Hepatitis A

The vaccine is made from inactivated viruses and is given by intramuscular injection.

The paediatric dose (0.5 ml) is recommended for children from 1 to 15 years.

A booster dose given 6-12 months after the first one ensures better and longer lasting protection.

The vaccine is also indicated after contact with the virus (post exposure) if given within 1 week.

When it should be postponed

This vaccination should be postponed temporarily if your child has an acute illness with fever and other general clinically significant problems.

When you should not vaccinate

The vaccination should not be given to those who have already had serious allergic reactions to the components of the vaccine or to previous vaccinations of the same type.

Side effects

The hepatitis A vaccine is well tolerated. There may be temporary and mild pain, redness and swelling at the injection site. The general effects include low fever,

headache, loss of appetite, nausea, diarrhoea, some vomiting of short duration. Like any substance that is foreign to the body, this vaccine can also cause allergic reactions on rare occasions.



Rotavirus

What is rotavirus?

The rotavirus is a **virus** that causes a form of gastroenteritis.

The principal transmission route is orofaecal, but at times it also can be spread aerially and by contact. As the virus is stable in the environment, transmission can take place by drinking contaminated water or eating contaminated food or coming in contact with contaminated surfaces.

In Europe and the rest of the temperate world, the virus appears in seasonal peaks. Because of our weather these peaks occur in winter between November and March.

6 species of Rotavirus are present in the environment. It is the most common cause of viral gastroenteritis in children below 5 years. Notably, the virus can cause severe diarrhoea and dehydration in very small children (between 6 and 24 months). An episode of infection by this virus does not offer sufficient immunity to future attacks, though infections in later years tend to be milder.

Vaccines against rotavirus

Vaccination is one of the weapons we have available today to fight this infection.

Two oral vaccines are present on the Italian market, one that requires two doses and the other that requires three.

This vaccine must be given early with the first dose after six weeks of age and the last by the 32nd week. **It cannot be given after 32 weeks of life.**

This vaccination is available with co-payment (ticket).

When it should be postponed

The vaccination must be postponed if the child has acute and high fever or severe diarrhoea.

When you should not vaccinate

The vaccination is contraindicated in case of intestinal invagination, asymptomatic HIV infection, and severe allergic reactions to components of the vaccine or previous vaccinations of the same type. Extra care is advised with immunodepressed babies. Care must also be taken in giving the vaccination to people who are in close contact with immunodepressed individuals as transmission of vaccine virus to non vaccinated individuals has been observed.

Side effects

Fever, diarrhoea and vomiting are frequent.

Like any substance that is foreign to the body, this vaccine can also cause allergic reactions on rare occasions.



Whenever there are significant side effects related to vaccination, speak to your doctor or the vaccination service.



Useful advice... what to do if:

- your child is restless

After vaccination, children can appear restless because the vaccination site is painful or they have fever. In this case, they should be given "paracetamol", a medicine that helps to reduce the pain and the fever.

- your baby's leg (or arm) is hot, swollen or red

The injection site on the leg (or arm) can become red or swollen. The application of a clean cool pad on the painful and swollen area can relieve the irritation. If you think that the child is suffering from extreme pain because she/he reacts to minimal pressure, you can give paracetamol.

- your baby has fever

If it seems that your child is hot and flushed after the vaccination, measure his/her temperature. It is best to measure rectal temperature. Armpit temperature readings are generally lower and less reliable.

If the child has fever:

- offer lots of water to drink
- dress her/him lightly without too much covering
- bathe him/her in warm (not cold) water
- give her/him paracetamol (not acetylsalicylic acid) if the fever exceeds 38.2 - 38.5°C (38.7 - 39°C rectal temperature).

PARACETAMOL DOSAGE
to be given every 4-6 hours

Weight (kg)	Suppositories (mg)	Drops	Syrup (ml)
5-10	1 of 125	3 drops	$\frac{1}{2}$ ml
11-22	1 of 250	every kg	every kg
more than 23	1 of 500	by weight	by weight

Useful internet addresses for more information:



<http://www.levaccinazioni.it/demo/>

<http://www.pediatria.it>

<http://www.osservatorionazionale screening.it/content/le-100-domande-sullhpv>

<http://www.salute.gov.it/malattieInfettive/malattieInfettive.jsp>

<http://www.epicentro.iss.it/problemi/vaccinazioni/vaccinazioni.asp>

<http://www.ipasvi.it/per-il-cittadino/click-salute/le-vaccinazioni-pediatriche-id14.htm>

CHILDHOOD VACCINATIONS

7th edition

Information document for parents

- 2013 -

Venice, March 2013

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Printed by Mediagraf Padua

Number of copies printed: 100,000