

Vaccines for infants, children and adolescents

**I GET INFORMED,
I PROTECT YOU,
I CHOOSE TO
VACCINATE YOU.**

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**I GET INFORMED,
I PROTECT YOU,
I CHOOSE TO
VACCINATE YOU.**

Benefits

Vaccination has contributed to eradicate from the world severe infectious diseases like smallpox, or to greatly reduce the spread of diseases like poliomyelitis, tetanus and diphtheria. **Only when a disease has been completely eradicated from the world, vaccination can be discontinued.** If on the contrary the disease still exists even if less frequently, **it would be extremely risky to discontinue vaccination because the disease could re-emerge and spread among people.** The goal of vaccines is to provide specific defence against viruses or bacteria - mimicking the natural response of the immune system - using very small parts of the same or their toxins, or by using the viruses themselves after weakening and making them harmless. In this way a vaccinated person who is exposed to live and harmful bacteria can defend him/herself and does not develop the disease or develop only a mild form of the disease.

Vaccines are usually well tolerated and do not cause any health problems. Severe reactions are exceptionally rare and far less frequent than the complications caused by the diseases.

Vaccines are beneficial to the community too. In most cases, a vaccinated person does not get sick and does not spread the disease. On the contrary, non-vaccinated individuals can spread the disease during incubation period, or as carriers. By vaccinating a large percentage of a population, we indirectly protect **newborns who are too small to get vaccinated and diseases may be very dangerous for them**; we also indirectly protect the individuals having conditions for which vaccinations are ineffective or dangerous and also pregnant women who can receive only some vaccines.

This process named herd immunity greatly reduces the number of cases of the disease or may even result in the eradication of the same.

BEFORE SHOTS

- AT ALL REGIONAL VACCINATION OFFICES, SPECIALISED HEALTHCARE WORKERS WILL GIVE YOU COMPREHENSIVE INFORMATION ABOUT VACCINES.
- BEFORE VACCINATION, THEY WILL ASSESS ANY REASONS TO DELAY VACCINES. CONTRAINDICATIONS TO VACCINATION ARE RARE, BUT THE EXCHANGE WITH THE HEALTHCARE WORKERS WILL MAKE IT POSSIBLE TO CHECK FOR ANY DISORDERS OR CONDITIONS DUE TO WHICH VACCINATION MUST BE AVOIDED OR POSTPONED.
- PARENTS WILL BE GIVEN THE INFORMATION MATERIAL ABOUT VACCINES AVAILABLE AT THE OFFICE AND, AS IT IS THE CASE FOR ANY MEDICAL PROCEDURE, WILL BE ASKED TO SIGN AN INFORMED CONSENT FORM.
- THEY WILL ALSO BE INFORMED OF THE MILD REACTIONS THAT MAY OCCUR AFTER VACCINATION AND WHAT TO DO.
- SOME VACCINES REQUIRE MORE THAN ONE SINGLE DOSE.
- CHILDREN CAN EAT AND DRINK BEFORE GETTING VACCINATED.

**THE BENEFITS
OF VACCINES
BOTH FOR THE INDIVIDUAL
AND THE COMMUNITY
FAR OUTWEIGH
THE RISKS.**

AFTER SHOTS

Adverse events after vaccination are extremely rare, but not impossible. Once a child has been vaccinated, parents should remain in the waiting room with the child for at least 30 minutes to observe for any adverse reactions. In extremely rare cases, allergic reactions may occur right after the shots - even severe ones like anaphylaxis - as it may happen following the administration of any drug. **All the regional vaccination offices are well equipped to best handle these situations.** It is important to know the most common side effects in order not to worry.

The most common reaction that usually occurs within 24-48 hours from the shots is fever, which may also be associated with irritability and lack of appetite. Vomiting and diarrhoea are far less frequent. Rarely, the body temperature increase can trigger febrile seizures, which should not be mistaken for epilepsy. Some reactions may be observed at the site of injection like swelling, redness, thickening and pain, which however disappear after a few hours or days. If you have any doubts, talk to the healthcare workers.

If you are worried about your child's symptoms in the hours or days following vaccination, you can contact your paediatrician or the doctor who vaccinated your child or you can take your child to the paediatric ER to have them treated.

Every possible adverse event to vaccines is reported and assessed by competent bodies based on the precautionary principle: any events even not necessarily associated with vaccines are nonetheless reported and analysed.

Combined vaccines

Combined (or associated) vaccines contain two or more vaccines (antigens) in the same vial. A combined vaccine is one single drug that protects against two or more diseases and not many different drugs administered at the same time.

THE FOLLOWING COMBINED VACCINES ARE NORMALLY USED:

- **HEXAVALENT** (poliomyelitis, diphtheria, tetanus, hepatitis B, pertussis, Haemophilus influenzae type B) vaccine is given in a three-dose schedule in the first year of life.
- **TRIVALENT MMR** (measles-mumps-rubella) vaccine is given at 12-15 months and 5-6 years.
- **TETRAVALENT MMRV** (measles-mumps-rubella-varicella) vaccine is given at 12-15 months and 5-6 years.
- **TETRAVALENT DTaP-IPV or dTap-IPV*** (tetanus, diphtheria, pertussis, poliomyelitis) is given as a booster dose at 5-6 years and to teenagers.
- **TRIVALENT dTap** (diphtheria, tetanus, pertussis) is given as a booster dose to teenagers/adults.
- Other combined vaccines are used occasionally.

Combined vaccines are beneficial to children because one single administration protects them against two or more diseases without making the vaccine "heavier". Vaccines and/or booster doses given to infants are also suitable for teenagers and adults, especially fertile women and individuals with some health conditions. Some vaccines are also recommended for pregnant women to protect the mother and baby. Vaccines are usually injected into the anterolateral thigh in infants and into the upper arm in older children. If you had one or more diseases the combined vaccine protects you against, you can nonetheless get vaccinated with no risks for the other diseases.

* DTaP is given to children. // dTap is given to teenagers/adults.

Poliomyelitis

Poliomyelitis is an infectious diseases caused by 3 different viruses that enter into the body mainly through the gastrointestinal tract.

It is a very serious disease that, in the most severe form, can lead to paralysis mainly of the limbs and sometimes can cause death.

There are no drugs to treat poliomyelitis. Prevention is the only way you have to avoid the serious effects of this disease.

The improvement in sanitation and hygiene conditions has contributed to reduce the spread of many infectious diseases, but this was not the case for poliomyelitis, which on the contrary spread even more. Such improved sanitation and hygiene conditions caused children to be exposed to the virus for the first time at a later age, when they were no longer protected by the mother's antibodies.

Vaccination is the only way to protect children and avoid epidemics.

In 1958, before the vaccine was introduced, many epidemics of poliomyelitis occurred in Italy, 3 of which with 8,000 cases of paralysis. Vaccination became mandatory in 1966. The result was extremely positive. The last two cases of poliomyelitis in Italy were recorded in 1982 in children who had not been vaccinated. In 2002 the World Health Organization (WHO) declared that Europe had been freed from poliomyelitis. However, in spite of all the efforts and commitment, poliomyelitis has not been eradicated from the world yet. It is still present in many countries in Africa and Asia.

THE VACCINE

SINCE 2002, IN ITALY, THE VACCINE AGAINST POLIOMYELITIS IS GIVEN IN 4 DOSES. THE VACCINE IS NAMED IPV (OR SALK) AND CONTAINS THE INACTIVATED, OR KILLED, VIRUSES OF POLIOMYELITIS.

THE FIRST THREE DOSES ARE ADMINISTERED IN THE FIRST YEAR OF LIFE, USUALLY IN ONE SINGLE INJECTION ALONG WITH OTHER VACCINES - THIS IS THE HEXAVALENT VACCINE. THE FOURTH BOOSTER DOSE IS GIVEN BETWEEN 5 AND 6 YEARS OF AGE, USUALLY WITH TETRAVALENT VACCINE DTaP-IPV (SEE "COMBINED VACCINES", PAGE 5). THE NEW NATIONAL PLAN FOR VACCINE PREVENTION ISSUED IN 2018 INTRODUCED A FIFTH BOOSTER DOSE GIVEN TO TEENAGERS TOGETHER WITH TETRAVALENT VACCINE (dTAp-IPV).

THE VACCINE IS HIGHLY EFFECTIVE.

ALMOST ALL VACCINATED PEOPLE RESPOND POSITIVELY AND ARE PROTECTED FOR LONG.

THE LIVE ATTENUATED VACCINE GIVEN ORALLY (SABIN) WAS DISCONTINUED IN ITALY IN 2002.

SIDE EFFECTS

IPV is greatly safe. Most of vaccinated children have no reactions after being vaccinated. Some rare reactions may include pain or swelling at the site of injection or fever or discomfort. Allergic reactions to vaccine components are exceptional, as it is the case for any vaccine. The vaccine against poliomyelitis is greatly effective and safe!

**THERE IS NO CURE FOR POLIOMYELITIS,
BUT YOU CAN PREVENT IT
BY VACCINATION!**

Diphtheria

Diphtheria is a very serious infection that mainly spreads through the air when an infected person talks, sneezes or coughs. It is caused by a toxin produced by *Corynebacterium diphtheriae* bacterium, which causes serious lesions to many organs including the heart and nerves, and forms membranes in the nose, throat and larynx that might cause suffocation. **Diphtheria can be fatal in about 1-2 cases in 10, even if treated with antibiotics.** In Italy, in the early 1900, 20-30,000 cases of diphtheria were recorded each year in children, with about 1,500 deaths per year. After the vaccine against diphtheria became mandatory in Italy in 1939, the number of cases dropped significantly.

In the countries of the former Soviet Union, the drop in vaccination rates due to the severe political and economic crisis resulted in a large-scale diphtheria epidemic in the early 1990s, which lasted many years and caused thousands of deaths. Between 1990 and 1998 three cases of diphtheria were registered also in Italy - all of them had not been vaccinated. The death of unvaccinated children in the UK, Spain and Belgium has recently demonstrated that the bacterium is still circulating in Europe and we cannot let down our guard. Despite the success achieved in controlling diphtheria, the frequent movements of people from one country to another are a risk factor for the spread of the disease.

THE VACCINE

THE VACCINE AGAINST DIPHTHERIA IS PREPARED USING THE DIPHTHERIA TOXIN, AFTER MODIFYING IT TO MAKE IT INACTIVE (TOXOID), BUT AT THE SAME CAPABLE OF STIMULATING A RESPONSE OF THE BODY AGAINST THE DISEASE.

DIPHTHERIA VACCINE IS ADMINISTERED TOGETHER WITH OTHER VACCINES IN VARIOUS COMBINATIONS. THE CURRENT VACCINATION SCHEDULE IS BASED ON THREE DOSES TO BE GIVEN AT THE 3RD, 5TH AND 11TH MONTH OF LIFE THROUGH THE HEXAVALENT VACCINE.

A BOOSTER DOSE IS GIVEN AT 5-6 YEARS AND A SECOND ONE AT 13-14 YEARS THROUGH COMBINED VACCINES (SEE "COMBINED VACCINES", PAGE 5).

BOOSTER DOSES ARE ALSO RECOMMENDED FOR ADULTS, EVERY 10 YEARS, ALONG WITH TETANUS AND PERTUSSIS VACCINES.

DIPHTHERIA VACCINE IS HIGHLY EFFECTIVE: ALMOST 90% OF VACCINATED INDIVIDUALS ARE PROTECTED AGAINST THE DISEASE.

SIDE EFFECTS

The vaccine is well tolerated and most reactions are mild. Fever is the most common reaction that occurs in about 1/3 of vaccinated children. Temporary swelling, redness and pain may appear at the site of injection. These reactions usually occur within 48 hours from the shots. Local reactions increase as the number of doses received increases: about 40% of children have swelling and pain at the arm when receiving the fourth booster dose at 5-6 years.

DIPHTHERIA IS STILL PRESENT IN EUROPE AND CAN BE FATAL!

Tetanus

Tetanus is a very serious infection caused by a toxin produced by *Clostridium tetani* bacterium. The disease is serious and underestimated, because the spores of the bacterium can remain in the environment for years and contaminate the soil and house dust. They can enter the human body through an invisible wound as small as a prick from a rose thorn. Once inside the body, the spores can transform into a vegetative form that produces the toxin. The bacterium does not penetrate the tissues, but the tetanus toxin can reach the central nervous system through the blood and lymphatic vessels, causing muscle contractions and spasms. Tetanus patients are often hospitalised for a long period, mainly in the intensive care unit. Four cases out of 10 can be fatal. **The disease is not contagious, but highly life-threatening. In Italy, tetanus vaccination is mandatory for all newborn babies since 1968.**

Every year in Italy, about 60 people get the disease. They are mostly unvaccinated people or individuals who did not complete the vaccination schedule, mainly women over 65 because tetanus vaccination became mandatory in Italy for all newborns in 1968. Before 1968, the vaccine was mandatory only for the military personnel and some at-risk categories of people, such as farmers, mainly men. Following the introduction of the vaccine, the number of neonatal tetanus cases dropped dramatically. Neonatal tetanus is a form of tetanus that affects babies born from unvaccinated mothers, who did not receive protection from the mother's antibodies during the first months of life. This almost exclusively happens in developing countries.

THE VACCINE

AS FOR DIPHTHERIA, TETANUS VACCINE IS MADE OF THE TOXOID, THAT IS THE INACTIVATED TOXIN SPECIALLY TREATED TO SUPPRESS TOXICITY, WHICH HOWEVER IS CAPABLE OF STIMULATING THE PRODUCTION OF PROTECTIVE ANTIBODIES.

THE CURRENT VACCINATION SCHEDULE IS BASED ON THREE DOSES TO BE GIVEN AT THE 3RD, 5TH AND 11TH MONTH OF LIFE THROUGH THE HEXAVALENT VACCINE. A BOOSTER DOSE IS GIVEN AT 5-6 YEARS AND A SECOND ONE AT 13-14 YEARS THROUGH COMBINED VACCINES (SEE "COMBINED VACCINES", PAGE 5).

TETANUS VACCINE IS HIGHLY EFFECTIVE: ALMOST 100% OF VACCINATED INDIVIDUALS ARE PROTECTED AGAINST THE DISEASE. BOOSTER DOSES ARE RECOMMENDED EVERY 10 YEARS.

SIDE EFFECTS

The vaccine is well tolerated and most reactions are mild. Fever is the most common reaction that occurs in about 1/3 of vaccinated children. Temporary swelling, redness and pain may appear at the site of injection. These reactions usually occur within 48 hours from the shots. Local reactions increase as the number of doses received increases: about 40% of children have swelling and pain at the arm when receiving the fourth booster dose at 5-6 years.

**TETANUS IS NOT
CONTAGIOUS, BUT HIGHLY
LIFE-THREATENING!**

Hepatitis B

Hepatitis B is a viral infection that attacks the liver. 85 to 90% of hepatitis B infections clear up spontaneously and completely, because the body reacts effectively. **Nonetheless, some infected individuals may have symptoms like weakness, nausea, vomiting, fever, jaundice (yellowing of the skin and the sclera) or, sometimes, the infection becomes chronic and can lead to liver cirrhosis and cancer.** Once infected, some patients remain chronic carriers even when asymptomatic. The disease progression depends on the age at which the patient got infected. 10% of infected adults will develop a chronic hepatitis B infection. 90% of infected newborns and babies will develop a chronic hepatitis B infection. Up to 50% of infected children (1-4 years) will develop a chronic hepatitis B infection. 25% of patients who were infected during childhood die because of complications like liver cirrhosis, failure and cancer.

HBV is transmitted through contact with blood or other body fluids like breast milk, semen or vaginal discharge of the infected person or chronic carrier of the virus. The virus can also enter the body through very small lesions of the skin or mucous membranes when sharing contaminated personal hygiene items like toothbrushes, scissors, razors. It is known that people living with a person infected with HBV or HBV carrier, are at risk of contagion. Babies born from mothers who are chronic HBV carriers are at high risk of get infected and this is why they are given the first vaccine dose at the hospital, the day they are born. Hepatitis B vaccine became mandatory in Italy in 1991 and since then hepatitis B cases have decreased significantly especially among people aged 15 to 24. The cases of liver cancer are also expected to drop in the future.

THE VACCINE

THE VACCINE CONTAINS THE INACTIVATED HEPATITIS B VIRUS SURFACE ANTIGEN, WHICH CANNOT TRANSMIT THE DISEASE BUT CAN STIMULATE A RESPONSE FROM THE BODY.

IT IS HIGHLY EFFECTIVE, ESPECIALLY IN CHILDREN WHO ARE PROTECTED UP TO 98%.

THE VACCINE IS USUALLY GIVEN IN THE HEXAVALENT COMBINED VACCINE (SEE PAGE 5).

THE HEPATITIS B VACCINE IS HIGHLY EFFECTIVE, ESPECIALLY IN CHILDREN.

SIDE EFFECTS

The vaccine is well tolerated. Mild swelling, redness and pain may appear at the injection site and disappear within a few days. Some rare reactions may include low-grade fever, headache, nausea, vomiting, dizziness, mild short-term muscle and joint pain. Extremely rare cases of peripheral neuritis after vaccination in teenagers and adults were reported, which causes motor and sensory disorders.

IF A NEWBORN GETS HEPATITIS B INFECTION, IN MOST CASES IT WILL BECOME A CHRONIC INFECTION CAUSING FATAL CONDITIONS.

Pertussis (whooping cough)

Whooping cough is a highly contagious infection caused by *Bordetella pertussis* bacterium, which **spreads in the air by droplets of saliva from talking, sneezing or coughing**. Initially whooping cough appears as mild cough, nasal discharge and, sometimes, fever for 1 to 2 weeks. Then cough becomes stronger and bouts of coughing sometimes followed by vomiting occur. This phase lasts for about 4 weeks. During recovery, bouts of coughing become gradually less intense and frequent. Individuals usually recover from whooping cough with no problems. Some complications may however occur like ear infection, laryngitis, pneumonia, seizures and brain damage. The disease can be extremely serious during the first year of life. Newborns and infants with whooping cough may have periods of not breathing (suffocation) and they usually need hospital treatment. At this age, whooping cough can cause brain and respiratory damage, which may lead to permanent damage and even death. **Whooping cough is extremely serious during the first year of life.**

Unlike other infectious diseases, the immunity given by pertussis does not offer lifetime protection but fades over time, and an adult who got whooping cough during childhood could get it again. In adults the disease is not so serious, but lasts long. These "attenuated" forms of the disease are often not even recognized and can be easily transmitted to younger children. The infection is often transmitted by the mother. After the introduction of the vaccine, the number of cases dropped significantly all over Italy.

THE VACCINE

THE ACCELLULAR VACCINE AGAINST WHOOPING COUGH HAS BEEN USED FOR MANY YEARS NOW. THIS VACCINE IS MADE OF ONLY SOME SMALL HIGHLY PURIFIED "PARTS" OF THE BACTERIUM, AND IT CAUSES FEWER REACTIONS THAN THE PAST ONE.

THERE IS NO VACCINE AGAINST WHOOPING COUGH ONLY. IT MUST BE ADMINISTERED WITH OTHER VACCINES IN VARIOUS COMBINATIONS (SEE PAGE 5).

THE WHOOPING COUGH VACCINE IS GREATLY RECOMMENDED FROM THE SECOND MONTH OF LIFE, SO AS TO PROTECT THE BABY WHEN THE DISEASE CAN BE MORE DANGEROUS. NEWBORNS ARE HOWEVER AT RISK IN THE FIRST MONTHS OF LIFE. THIS IS WHY **WE SHOULD ENSURE HERD IMMUNITY THROUGH HIGH VACCINATION COVERAGE** AT ALL AGES (SEE "BENEFITS" AT PAGE 2).

TO PROTECT INFANTS WHO HAVE NOT BEEN VACCINATED YET OR YOUNG CHILDREN WHO HAVE NOT COMPLETED THE VACCINE SCHEDULE, **IT IS ALSO RECOMMENDED THAT PREGNANT WOMEN GET VACCINATED**. THE BEST TIME IS BETWEEN 27 AND 32 WEEKS OF PREGNANCY WHEN THE PLACENTAL ANTIBODY TRANSFER IS MOST EFFICIENT. IF A MOTHER WAS VACCINATED WHEN SHE WAS A CHILD OR HAD PERTUSSIS IN THE PAST, THE ANTIBODIES SHE TRANSFERS TO THE BABY DO NOT OFFER ENOUGH PROTECTION.

ABOUT 85% OF VACCINATED INDIVIDUALS ARE PROTECTED AGAINST THE DISEASE, ESPECIALLY AGAINST THE MOST SEVERE FORM.

AFTER THE THREE DOSES WHICH ARE GIVEN IN THE FIRST 12 MONTHS OF LIFE, PROTECTION LASTS AT LEAST UNTIL 5 YEARS OF AGE.

Pertussis (whooping cough)

AT PRESENT, TWO BOOSTER DOSES ARE RECOMMENDED AT 5-6 YEARS AND 13-14 YEARS, AS WELL AS EVERY TEN YEARS IN ADULTS (COMBINED WITH TETANUS AND DIPHTHERIA), IN ORDER TO MINIMIZE CIRCULATION OF THE PERTUSSIS BACTERIUM IN THE ENVIRONMENT AND PROTECT NEWBORNS.

SIDE EFFECTS

Side effects are usually mild and short-term. Pain, redness and swelling may appear at the site of injection within 24/48 hours from the shots. Local reactions increase as the number of doses received increases. About 40% of children have swelling or tenderness at the arm when receiving the fourth booster dose of tri/tetravalent vaccine at 5-6 years. In the first 2 days after the shots, fever, irritability or drowsiness may appear. More serious reactions are extremely rare. They include episodes similar to collapse, inconsolable crying and very high-grade fever, which however do not cause complications. Whooping cough vaccine can be given to children with neurological conditions which are stable, following a doctor's evaluation.

Haemophilus (HIB)

Haemophilus b (Haemophilus influenzae type b) is a bacterium normally found in the throat or nose, where it does not cause any problem, and spreads from person to person through the air. Almost all children are exposed to haemophilus soon or later, without this causing any damage. **Sometimes** however, **in the first 5 years of life and mostly in the first 2, it can cause very serious diseases. The most common is meningitis**, which can be deadly even today and can cause serious permanent damage like epilepsy, deafness, blindness, paralysis and mental retardation. Haemophilus can also attack the throat and cause a severe inflammation (epiglottitis) which is life-threatening due to suffocation, or can attack the lungs, heart or bones causing severe conditions like bronchial pneumonia and pericarditis. If the bacterium reaches the blood, it can attack the whole body (sepsis).

Potentially all children may get severe infections from haemophilus, but some are at higher risk:

- children with immune deficiency due to health conditions or drugs;
- children without a spleen or whose spleen does not work properly;
- children with leukaemia or other tumours, or some congenital diseases;
- children who grow up in a numerous family or go to the nursery school, due to frequent contacts with other children.

The cases of serious illnesses caused by Hib dropped significantly in Italy after the vaccine was made available in the late 1990s, and Hib meningitis in children has been essentially eliminated. Some rare cases are reported among unvaccinated individuals.

Haemophilus (HIB)

THE VACCINE

THE VACCINE IS THE ONLY WAY TO PREVENT THE MOST SEVERE HIB INFECTIONS. THE VACCINE IS RECOMMENDED AND OFFERED FREE-OF-CHARGE TO ALL CHILDREN BEFORE 5 YEARS AND TO ALL INDIVIDUALS CONSIDERED AT HIGH RISK DUE TO OTHER DISEASES OR CONDITIONS.

A MONOVALENT VACCINE IS AVAILABLE, BUT NEWBORNS ARE USUALLY GIVEN THE COMBINED HEXAVALENT VACCINE (SEE "COMBINED VACCINES", PAGE 5).

HIB VACCINE IS HIGHLY EFFECTIVE (99%). VERY FEW CASES OF HIB MENINGITIS ARE REPORTED AMONG UNVACCINATED CHILDREN.

SIDE EFFECTS

The vaccine is well tolerated by children and the side effects are rare and mild. Redness, swelling or pain may appear at the site of injection from time to time. Other common reactions include low-grade fever, irritability, drowsiness, vomiting or diarrhoea that usually appear within 48 hours from the shots.

Measles

Measles is one of the most contagious viral diseases and still is one of the most common causes of illness and death in children worldwide. Measles spreads in the air through contact with discharge from the nose, mouth and throat. It is associated with high-grade fever, persistent cough, runny nose, conjunctivitis and red spots on the skin (exanthem). In about 30% of cases, mainly in very young children and adults, the disease can develop complications that require hospital treatment. The most common are diarrhoea, ear infection, pneumonia, seizures, thrombocytopenia (a dramatic drop in the platelet count resulting in bleeding), keratitis - which can impair vision - and encephalitis. Very rarely measles can cause subacute sclerosing panencephalitis (SSPE), which can result in severe permanent brain damage after some time. Cases of SSPE have essentially disappeared in countries where vaccination was made available time ago.

There is no specific treatment for measles, except for some medications that can relieve the symptoms. The vaccine to prevent measles was developed many years ago and is now in widespread use worldwide, with important results.

As the disease is highly contagious, vaccination coverage should be increased: **to avoid epidemics, over 95% of the population should get two doses of vaccine.** If this percentage decreases even slightly, new measles outbreaks may occur.

**99% OF PEOPLE WHO
RECEIVE VACCINATION
ARE PROTECTED AGAINST
MEASLES!**



Measles

In no developed country the problem is associated with a shortage of vaccine or health facilities. It is rather a social and cultural issue, since the number of families who do not vaccinate their children and underestimate the risk of complications is increasing. As a result measles is re-emerging even in developed countries, including the ones where it had been eradicated almost completely.

THE VACCINE

THE MEASLES VACCINE CONTAINS THE LIVE ATTENUATED VIRUS (WEAKENED), WHICH CAN HOWEVER STIMULATE A DEFENCE AGAINST THE INFECTION.

PEOPLE USUALLY RECEIVE THE COMBINED TRIVALENT MEASLES-MUMPS-RUBELLA MMR VACCINE OR TETRAVALENT MEASLES-MUMPS-RUBELLA-VARICELLA MMRV VACCINE (SEE "COMBINED VACCINES", PAGE 5).

MMR OR MMRV VACCINES ARE OFFERED TO ALL CHILDREN BETWEEN 12 AND 15 MONTHS OF LIFE (1ST DOSE) AND AT 5-6 YEARS (2ND DOSE). AFTER THE FIRST DOSE, PROTECTION AGAINST MEASLES IS ABOUT 95% AND GOES UP TO 99% AFTER THE SECOND DOSE. IF THE VACCINE IS ADMINISTERED WITHIN 72 HOURS FROM EXPOSURE TO THE DISEASE, YOU MAY AVOID CONTAGION OR GET A Milder FORM. YOU CAN GET VACCINATED AT ANY AGE. VACCINATION IS RECOMMENDED AND FREE-OF-CHARGE ALSO FOR ADOLESCENTS AND ADULTS WHO HAVE NOT BEEN VACCINATED AND FOR FERTILE WOMEN.



Mumps (parotitis)

Epidemic parotitis, commonly called mumps, causes painful enlargement of a salivary gland located in front of and below the ear (parotid). One or both parotid glands can enlarge, and also other salivary glands, resulting in painful chewing and swallowing. The disease is often associated with headache, stomach ache and fever. Mumps virus spreads through droplets of infected saliva or direct contact with items contaminated by saliva. The disease is transmitted from person to person only.

THE FEWER PEOPLE ARE PROTECTED, THE HIGHER THE RISK OF EPIDEMICS.

Mumps vaccine was introduced because of the frequent complications associated with the disease. These include damage to the central nervous system, pancreatitis, permanent deafness and, if males are infected after puberty, 20 to 50% of cases may develop orchitis - a testicular inflammation which may result in infertility. Females may more rarely experience swelling of the ovaries.

The risk of getting infected is associated with the spread of the virus among people. The fewer people are protected, the higher the risk of epidemics.

THE VACCINE

THE MUMPS VACCINE CONTAINS THE LIVE ATTENUATED VIRUS (WEAKENED), WHICH CAN HOWEVER STIMULATE A DEFENCE AGAINST THE INFECTION. PEOPLE USUALLY RECEIVE THE COMBINED TRIVALENT MEASLES-MUMPS-RUBELLA MMR VACCINE OR TETRAVALENT MEASLES-MUMPS-RUBELLA-VARICELLA MMRV VACCINE (SEE "COMBINED VACCINES", PAGE 5).

MMR OR MMRV VACCINES ARE OFFERED TO ALL CHILDREN BETWEEN 12 AND 15 MONTHS OF LIFE (1ST DOSE) AND AT 5-6 YEARS (2ND DOSE). THE PROTECTION AGAINST MUMPS OFFERED BY THE VACCINE IS NOT AS HIGH AS FOR MEASLES AND RUBELLA, BUT IN THE COUNTRIES WHERE VACCINATION IS WIDESPREAD THE CASES OF THE DISEASE DROPPED SIGNIFICANTLY. VACCINATION IS RECOMMENDED AT ANY AGE.

SIDE EFFECTS

The vaccine is generally well tolerated. The most common side effects are redness and swelling at the injection site, which however disappear soon. 5 to 14 days after vaccination, low-grade fever or other mild symptoms associated with the disease like exanthem and parotid swelling may occur. Fever seizures are very rare, and much more frequently associated with the disease. 1 to 3 weeks after vaccination, very rarely in children and most often in adolescent and adult women, short-term joint pain may occur. A temporary drop in platelet count (thrombocytopenia) is even more rare in the first 2 months after vaccination, but it is 10 times more frequent when associated with the disease. **It has been scientifically established that the measles-mumps-rubella (MMR) vaccine does not cause, stimulate or contribute in any way whatsoever to the development of ASD.**

Rubella

Rubella is an exanthematous and infectious disease caused by Rubella virus. **It is transmitted by droplets spread from an infected person who coughs, sneezes or simply talks to a healthy susceptible person.** Rubella virus can pass across the placenta, thus a susceptible woman who gets rubella during pregnancy may pass it to the baby. Rubella vaccine was introduced to protect unvaccinated newborns and eliminate congenital rubella. **If a woman gets rubella during pregnancy, particularly in the first weeks, it can cause miscarriage, fetal death or severe fetal malformations,** which in the newborn produce vision impairment, deafness, heart defects and mental retardation.

A simple blood sample (rubeo test) enables you to know if you are protected against rubella. This is recommended to all women before pregnancy, who are offered the blood test free-of-charge by law for the protection of maternity. In the past, the rubella vaccine was offered only to unprotected girls and fertile women, but this strategy proved to be ineffective since the virus continued to circulate among males and, at the same time, it was not possible to ensure vaccination of 100% of susceptible women. The only effective strategy is to get at least 95% of children vaccinated, both boys and girls, so as to prevent the virus from circulating among the population. This target has not been achieved yet, and rubella, as well as measles, continue to circulate in Europe.

The diagnosis of rubella is not always easy, as in most cases the symptoms are mild and the disease is not recognized. Sometimes it is associated with moderate fever, general enlargement of glands, especially in the neck and nape, and the appearance of rose-coloured spots on the skin for a short time. A blood test is therefore necessary to confirm if you had rubella, since the same symptoms are common to other viruses.

THE ONLY WAY TO AVOID EPIDEMICS IS TO GET AT LEAST 95% OF CHILDREN VACCINATED.

THE VACCINE

THE RUBELLA VACCINE CONTAINS THE LIVE ATTENUATED VIRUS (WEAKENED), WHICH CAN HOWEVER STIMULATE A DEFENCE AGAINST THE INFECTION. NO SINGLE VACCINE IS AVAILABLE AGAINST RUBELLA AND PEOPLE USUALLY RECEIVE THE COMBINED TRIVALENT MEASLES-MUMPS-RUBELLA MMR VACCINE OR TETRAVALENT MEASLES-MUMPS-RUBELLA-VARICELLA MMRV VACCINE (SEE "COMBINED VACCINES", PAGE 5).

MMR OR MMRV VACCINES ARE OFFERED TO ALL CHILDREN BETWEEN 12 AND 15 MONTHS OF LIFE (1ST DOSE) AND AT 5-6 YEARS (2ND DOSE). **THE RUBELLA VACCINE IS HIGHLY EFFECTIVE AND OFFERS A LONG-TERM PROTECTION IN 95-100% OF THE CASES. VACCINATION IS RECOMMENDED AT ANY AGE.**

SIDE EFFECTS

The vaccine is generally well tolerated. The most common side effects are redness and swelling at the injection site, which however disappear soon. 5 to 14 days after vaccination, fever or other symptoms associated with the disease like exanthem and parotid swelling may occur. Fever seizures are very rare. 1 to 3 weeks after vaccination, very rarely in children and most often in adolescent and adult women, short-term joint pain may occur. A temporary drop in platelet count (thrombocytopenia) is even more rare in the first 2 months after vaccination, but it is 10 times more frequent when associated with the disease. **It has been scientifically established that the measles-mumps-rubella (MMR) vaccine does not cause, stimulate or contribute in any way whatsoever to the development of ASD.**

Varicella

Chickenpox (varicella) is a highly contagious infectious disease caused by Varicella zoster virus. It is associated with itchy red spots on the skin that rapidly change to blisters, pustules and then crusts, which will fall off.

The virus can be transmitted through droplets of saliva released into the air when an infected person breathes or speaks, or by direct contact or airborne spread of the fluid from a blister. This may happen from two days before the appearance of the blisters until they turn to crusts.

During pregnancy, the virus can be passed to the embryo or foetus through the placenta causing congenital varicella syndrome. If the mother gets chickenpox from five days before delivery to two days after delivery, the newborn may get a severe form of chickenpox, with 30% mortality rate. The disease can be associated with fever and discomfort.

The disease can be extremely dangerous for immunocompromised people because it can lead to pneumonia and other serious conditions. Neurological complications are rare. The most common one is cerebellar inflammation that causes balance disorders, although it usually disappears without any damage.

Once a person has recovered, the virus is not eliminated from the infected body but remains in its latent form in specific nervous structures for a life time.

In 10 to 20% of cases, the virus reactivates after years or decades, usually after 50 years of age, causing herpes zoster, which is commonly known as shingles. It is characterised by blisters and crusts like varicella, which are however typically located along the pathway of a nerve (mainly in the chest and head), and associated with intense pain. Herpes zoster is more frequent in individuals who got the disease during the first year of age, and this is why the older children of pregnant women should be vaccinated.

THE VACCINE

THE CHICKENPOX VACCINE CONTAINS THE LIVE ATTENUATED VIRUS (WEAKENED), WHICH CAN HOWEVER STIMULATE A DEFENCE AGAINST THE INFECTION.

IT IS ADMINISTERED FROM 12 MONTHS OF LIFE.

TWO DOSES ARE RECOMMENDED: THE FIRST BETWEEN 12 AND 15 MONTHS, AND THE SECOND ONE AT 5-6 YEARS. PROTECTION REACHES 99% AFTER THE SECOND DOSE. IN CASE OF EXPOSURE, IF YOU GET VACCINATED WITHIN 72 HOURS/5 DAYS MAXIMUM FROM EXPOSURE, YOU CAN BE PROTECTED AGAINST CONTAGION OR AT LEAST WILL GET A MILD FORM OF THE DISEASE.

THE VACCINE (2 DOSES WITH A MINIMUM INTERVAL OF ONE MONTH) IS ALSO INDICATED FOR PEOPLE WITH RISK FACTORS, SUCH AS SUSCEPTIBLE INDIVIDUALS LIVING WITH PEOPLE WITH SEVERE IMMUNOSUPPRESSION AND FERTILE WOMEN WHO HAVE NOT HAD THE DISEASE, TO AVOID INFECTION DURING PREGNANCY AND THUS PREVENT DAMAGE TO THE BABY.

PROGRESSION OF THE DISEASE AND COMPLICATIONS ARE MORE FREQUENT IN ADOLESCENTS AND ADULTS.

Varicella

THE VACCINE IS ALSO RECOMMENDED TO SUSCEPTIBLE ADOLESCENTS AND ADULTS WITH NO CONTRAINDICATIONS, AND ESPECIALLY TO PEOPLE WHO ARE AT HIGH RISK OF GETTING THE INFECTION BECAUSE OF THEIR JOB - I.E. SCHOOL PERSONNEL - OR PEOPLE WHO COULD PASS IT TO INDIVIDUALS AT HIGH RISK OF SERIOUS COMPLICATIONS, LIKE HEALTHCARE WORKERS. THE CHICKENPOX VACCINE CAN BE GIVEN WITH THE TETRAVALENT MMRV VACCINE (SEE "COMBINED VACCINES", PAGE 5) AT 13-15 MONTHS OF LIFE AND AT 5-6 YEARS. IT IS ALSO AVAILABLE AS MONOVALENT VACCINE.

SIDE EFFECTS

The chickenpox vaccine is safe and usually well tolerated. The most common side effects are local and mild like redness, swelling and pain at the injection site. They clear up spontaneously and cause no problems. Fever and/or some blisters may appear 5 to 14 days after the shots. The incidence of severe adverse events is extremely rare. The first dose of the combined MMRV vaccine is associated with an increased risk of fever seizures. Therefore, if the individual or any first grade family member has a prevaccinal positive history of fever seizures, it is better to use the two vaccines separately (MMR+V). These are however rare reactions and the tetravalent vaccine is not contraindicated.

Pneumococcus

Diseases caused by pneumococcus are widespread worldwide. Pneumococcus (*Streptococcus pneumoniae*) is a bacterial family. More than 90 serotypes are known, but only some of them can cause invasive infections that can progress to meningitis or sepsis - invasion of bacteria into the bloodstream which may often have a fatal outcome. In the poorest countries, the situation is dramatic and about 1 million people die every year. Pneumococcal serotypes that cause serious infections can change in different geographical areas and can also mutate over time.

Bacteria can be found in the throat and nose of people but do not cause any problems. They can cause mild but frequent disorders like otitis, sinusitis and bronchitis. **If they reproduce in areas of the body where they are usually not present, like the bloodstream, liquor or lungs, they cause serious diseases - sepsis, meningitis and pneumonia respectively.**

The bacterium is transmitted through droplets of saliva and mucus released by a carrier of the bacterium when sneezing, coughing or speaking. The cases of the diseases mostly occur during the winter season, when cold and flu are frequent. Children under 5 and most of all under 2, as well as older adults and immunocompromised people are more likely to get sick and develop serious forms of the disease. Risk factors include attendance of day care or school. **The cases of meningitis in children under 5 dropped considerably after the introduction of the vaccine, particularly in the Emilia-Romagna region where they decreased by 60%.**



Pneumococcus

THE VACCINE

TWO PNEUMOCOCCAL VACCINES ARE AVAILABLE AND BOTH INDUCE AN IMMUNE RESPONSE AGAINST THE VACCINE CAPSULAR POLYSACCHARIDES: 23-VALENT POLYSACCHARIDE PNEUMOCOCCAL VACCINE AND 10-VALENT AND 13-VALENT CONJUGATE VACCINES. CONJUGATE VACCINES ARE LINKED TO A PROTEIN TO STRENGTHEN THEIR EFFECTIVENESS. THEY ARE EFFECTIVE STARTING FROM 2 MONTHS OF LIFE AND PROTECT AGAINST THE SEROTYPES MOST OFTEN INVOLVED IN INVASIVE DISEASES. **THEY CAN PREVENT UP TO 100% OF THE MOST SERIOUS INFECTIONS.** PROTECTION AGAINST PNEUMONIA AND OTITIS IS LOWER, BUT DUE TO THEIR FEATURES, THEY ENSURE PROTECTION FOR A LONG TIME (IMMUNOLOGICAL MEMORY). 23-VALENT PNEUMOCOCCAL VACCINE CAN BE USED ONLY IN CHILDREN OVER 2 YEARS OF AGE, BECAUSE ALTHOUGH IT GIVES PROTECTION AGAINST A HIGHER NUMBER OF SEROTYPES, IT IS NOT CONJUGATED AND CANNOT STIMULATE THE IMMUNE DEFENCE IN YOUNGER CHILDREN. A BOOSTER SHOT IS REQUIRED FOR THIS VACCINE AFTER 3 TO 5 YEARS. IT DOES NOT ESTABLISH ANY IMMUNOLOGICAL MEMORY AND IS RECOMMENDED TO ENLARGE PROTECTION IN INDIVIDUALS WITH HEALTH CONDITIONS THAT INCREASE THE RISK OF SEVERE PNEUMOCOCCAL INFECTION.

PNEUMOCOCCAL CONJUGATE VACCINE IS RECOMMENDED AND OFFERED FOR FREE TO ALL NEWBORNS WITH THREE DOSES IN THE FIRST YEAR OF AGE **AND TO AT-RISK PEOPLE OF ANY AGE** WHO MAY DEVELOP SERIOUS COMPLICATIONS. SINCE 2017, THE VACCINE IS OFFERED TO OLDER ADULTS AGED 65 TOO.

AT-RISK PEOPLE SHOULD RECEIVE BOTH VACCINES ONE AFTER THE OTHER - 13-VALENT VACCINE FOLLOWED BY 23-VALENT VACCINE - TO GUARANTEE PROTECTION AGAINST A HIGHER NUMBER OF PNEUMOCOCCAL BACTERIA.

SIDE EFFECTS

Both vaccines are well tolerated. Reactions like redness, swelling and pain may sometimes occur at the injection site. Irritability and drowsiness may occur in children. Fever, usually low-grade, headache or weakness are not frequent. Fever seizures are even more rare.

Meningococcus

Meningococcus (*Neisseria meningitidis*) can be found in the throat and nose of many people - up to 30% of the population - where it does not cause any problems. In some cases, however, it can reach the meninges or spread throughout the body causing very serious infections like meningitis or sepsis, or more rarely pneumonia, arthritis, otitis and epiglottitis. **The virus spreads through the droplets from the nose or mouth of an infected person or a carrier.** Children under 5 are most affected by the virus, followed by teenagers and young adults under 25. Meningitis is characterised by sudden high-grade fever, intense headache, neck stiffness, seizures, nausea, vomiting, photophobia and altered consciousness. **If early detected, the chances to treat it with antibiotics are much higher than in the past.** Moreover, if you had close contact with a person with meningitis, taking specific antibiotics as soon as possible can prevent and interrupt infection transmission.

Despite medical advances, the disease caused by meningococcus can in some cases have very serious consequences or even cause death (10-15% of cases). In case of survival, complications may occur like amputation of limbs or limb segments, nervous system disorders (paralysis, seizures or stroke), deafness, psychological and emotional problems and mental retardation. Thirteen meningococcal strains are known, but only five of them - A, B, C, W-135 and Y - can cause invasive diseases and epidemics. Strains B and C are responsible for most of the cases in Italy, Europe and the United States, although even the cases caused by strains Y and W-135 are increasing.

THE VACCINE IS MANDATORY FOR PILGRIMS GOING TO MECCA.

THE VACCINE

MENINGOCOCCAL VACCINES ARE OBTAINED FROM BACTERIAL FRAGMENTS AND CANNOT GIVE YOU THE DISEASE. THREE VACCINES ARE AVAILABLE AND ADMINISTERED BY INTRAMUSCULAR INJECTION:

- **TETRAVALENT CONJUGATE VACCINE** AGAINST TYPES A, C, W-135 AND Y, WHICH CAN BE USED AFTER THE FIRST YEAR OF AGE;
- **MENINGOCOCCAL B VACCINE**, WHICH CAN BE ADMINISTERED FROM 2 MONTHS OF LIFE;
- **MONOVALENT MENINGOCOCCAL C CONJUGATE VACCINE**, WHICH CAN BE ADMINISTERED FROM 2 MONTHS OF LIFE.

TETRAVALENT MENINGOCOCCAL ACWY VACCINE IS RECOMMENDED AND OFFERED FOR FREE TO ALL CHILDREN BETWEEN 12 AND 15 MONTHS OF LIFE, WITH A BOOSTER SHOT AT 13-14 YEARS. MENINGOCOCCAL B VACCINE IS OFFERED FOR FREE IN THE FIRST YEAR OF LIFE SINCE 1/1/2017. ON THE PARENTS' REQUEST, CHILDREN CAN BE VACCINATED AT AN OLDER AGE AT A PREFERENTIAL PRICE. **BOTH VACCINES ARE OFFERED FOR FREE TO INDIVIDUALS OF ANY AGE WHO ARE AT HIGH RISK OF DEVELOPING SERIOUS DISEASES**, LIKE PEOPLE SUFFERING FROM CHRONIC DISORDERS WHICH WEAKEN THE IMMUNE SYSTEM.

TETRAVALENT ACWY VACCINE IS ALSO RECOMMENDED FOR PEOPLE TRAVELLING TO HIGH-RISK COUNTRIES FOR THE FOUR MENINGOCOCCAL STRAINS CONTAINED IN THE VACCINE, OR PEOPLE WHO STAY IN THESE COUNTRIES FOR A LONG TIME.

SIDE EFFECTS

Vaccines are well tolerated. Reactions like redness, swelling and pain may sometimes occur at the injection site. Headache, muscular or joint pain and fever, sometimes high, may appear for a short time. Irritability and drowsiness may occur in young children.

Hepatitis A

Hepatitis A is a viral infectious disease that affects the liver. The virus is transmitted through the oral-fecal route. It is released through the stool both before and after symptoms show, and **it spreads by drinking contaminated water or eating contaminated raw food (vegetables, unpeeled fruits, seafood) and even through direct person-to-person contact.** After an incubation period of 15 to 20 days, signs of infection can appear like fever, discomfort, gastrointestinal disorders and jaundice - yellowing of the eyes and skin. The infection in newborns and young children is usually mild and asymptomatic, with a benign evolution, whereas older children and adults are at risk of developing more severe and long-lasting forms which may sometimes have fatal outcomes, especially in adults. Patients who get ill and recover, are not carriers of the virus. **Hepatitis A is widespread worldwide and especially in countries with poor hygiene and sanitary conditions where the safety of drinking water is not sufficiently monitored.**

People who travel to countries where the disease is very common like Central and South America, Africa, Middle-East, Asia and West Pacific, are at risk of getting infected. **Vaccination prevents hepatitis A** and is recommended for people travelling to at-risk countries who should also comply with proper hygiene and sanitation rules. **Vaccination is also recommended for people suffering from chronic diseases, people who are exposed to the virus at work, drug addicts and family members of individuals with acute hepatitis A.** The Emilia-Romagna region actively offers free vaccination to children under 6 who go abroad or to some Italian regions where the disease is very common.

To prevent infections through the oral-fecal route, general hygiene rules (personal hygiene, washing and cooking vegetables and shellfish etc.) and the control of seafood farming and sale **are extremely important.**

THE VACCINE

THE VACCINE IS MADE OF INACTIVATED - KILLED - VIRUSES AND IS GIVEN BY INTRAMUSCULAR INJECTION.

IT IS RECOMMENDED AFTER 1 YEAR OF AGE, IN TWO DOSES WITH A MINIMUM INTERVAL OF 6 MONTHS, WHICH ENSURE LONG-LASTING PROTECTION.

THE VACCINE IS HIGHLY EFFECTIVE AND SAFE AND GIVES YOU GOOD PROTECTION IF ADMINISTERED 2 TO 4 WEEKS BEFORE TRAVELLING TO A RISK COUNTRY.

SIDE EFFECTS

The vaccine is well tolerated. Mild local reactions may occur at the injection site like pain, redness, swelling and/or mild general short-lived reactions like migraine, general discomfort and fever.

**HEPATITIS A IS VERY COMMON
WORLDWIDE.
THIS IS WHY YOU SHOULD
GET VACCINATED BEFORE
TRAVELLING.**

Rotavirus

Rotavirus is the most common cause of gastroenteritis - diarrhoea and vomiting - in children, particularly in newborns and children under 5. A person infected by the virus does not develop an effective protection against the disease, although the infections he/she may get in the following years and during adulthood are usually mild. The disease is widespread worldwide. In Italy it occurs with seasonal peaks in winter, between November and March.

The virus mainly spreads through the oral-fecal route. It is released in the environment through the stools of the infected person and can infect another person who drinks contaminated water or eats contaminated food. The virus can also spread by contact and through the respiratory tract. **In places attended by groups of people, like nurseries, the transmission from person to person mostly occurs through hand contamination.** In young children, the gastroenteritis by rotavirus can, in some cases, cause severe diarrhoea associated with dehydration that requires hospital treatment and can rapidly progress and lead to fatal outcomes unless a supportive medical treatment is provided, as it often happens in developing countries.

Once the virus has entered into the body, symptoms will appear after about two days: mild to moderate fever, stomach ache, vomiting and watery diarrhoea. The disease lasts on average 3 to 8 days.

To prevent the spread of infectious diseases transmitted by the oral-fecal route it is important to maintain good hygiene conditions both at home and at places attended by children.

Washing your hands is extremely important, especially after changing nappies. This is even more important in case of contact with immunosuppressed individuals.

THE VACCINE

VACCINATION IS THE BEST WAY TO PROTECT CHILDREN FROM THE MOST SEVERE FORMS OF THE DISEASE CAUSED BY ROTAVIRUS. THE VACCINES CURRENTLY AVAILABLE HAVE PROVEN A TOTAL EFFECTIVENESS OF MORE THAN 80% AND A REDUCTION OF THE MOST SEVERE FORMS (NEEDING HOSPITAL TREATMENT) UP TO 100%.

THE VACCINE CONTAINS ATTENUATED LIVE VIRUSES AND CANNOT GIVE YOU THE DISEASE. IT IS TAKEN ORALLY AND CAN BE GIVEN ALONG WITH OTHER VACCINES. TWO DIFFERENT VACCINES AGAINST ROTAVIRUS ARE AVAILABLE, A 2-DOSE AND A 3-DOSE ONE. THE FIRST DOSE OF BOTH VACCINES IS GIVEN FROM 6 WEEKS OF AGE TO MAXIMUM 10-12 WEEKS. THE MINIMUM INTERVAL BETWEEN THE DOSES MUST BE 4 WEEKS AND THE VACCINE SCHEDULE SHOULD BE COMPLETED WITHIN 24 WEEKS OF AGE. THE THIRD AND LAST DOSE OF THE THREE-DOSE VACCINE CAN BE ADMINISTERED UNTIL 32 WEEKS OF AGE.

SIDE EFFECTS

After the shots, children can show irritability, lack of appetite, fever episodes, diarrhoea and/or vomiting. Recent reviews have shown that the vaccines used today do not increase the risk of intestinal intussusception.

THE VACCINE IS 80% EFFECTIVE AND HAS MADE IT POSSIBLE TO DECREASE SEVERE GASTROENTERITIS UP TO 100%.

Influenza (flu)

Influenza (flu) is a seasonal disease mostly occurring in winter, with a peak in December and March. It is an acute highly contagious respiratory disease caused by two different flu viruses - A and B - that each year can mutate in a more or less important way. The defence produced against the virus is not highly effective the following year against the new infection, since flu does not leave a life-long immunological memory, unlike other infectious diseases. **For the same reason the vaccine composition is updated every year, by adapting it to the virus strains that mostly spread during the previous epidemic period.**

Only in exceptional cases the viruses change so radically that are not "recognized" and cause serious epidemics that can spread all over the world (pandemics). **Flu is transmitted from person to person mainly through the droplets released by an infected person when he/she breathes (direct transmission), or by sharing objects that have just been contaminated with secretions from the nose or the throat and, especially in children, through dirty hands (indirect transmission).** The disease spreads more easily in closed and crowded places - like buses, stores, cinemas and classrooms -, where there is very little air circulation and it is more likely to be exposed to the virus. Flu usually starts suddenly with general respiratory symptoms like fever associated with chills, bone and muscular pain, headache, fatigue, lack of appetite, sore throat and cough. Fever lasts usually 2 to 3 days, but it can last even longer.

The severity of the disease may depend on the circulating virus and to what extent it is different from the one circulating the previous years, or from the conditions of the subject affected. Every year, about 10% of the Italian population gets the flu. Children particularly under 4 years, are most affected. Indeed, children have "met" few flu viruses in their life and have not developed sufficient immune defences yet. This is why they get sick more often than adults. Nonetheless they develop complications far more rarely. **On the contrary the disease can be dangerous in old adults or individuals with chronic diseases who are more susceptible to complications,** mainly respiratory ones like pneumonia, or to the worsening of the disease they suffer from. Pregnant women are also at higher risk of developing cardiorespiratory complications. The infection can cause miscarriage, neonatal death, preterm delivery and low birth weight.

THE VACCINE

THE FLU VACCINE, ALONG WITH ENVIRONMENTAL AND PERSONAL HYGIENE AND SANITARY MEASURES, IS THE MOST EFFECTIVE AND SAFE WAY TO PREVENT THE DISEASE AND BE PROTECTED AGAINST COMPLICATIONS.

FLU VACCINATION IS OFFERED FOR FREE TO ADULTS OVER 65 AND TO AT-RISK ADULTS AND CHILDREN.

THE FLU VACCINE IS RECOMMENDED AND OFFERED FOR FREE EVERY YEAR TO ALL PEOPLE WITH VULNERABLE HEALTH CONDITIONS, ADULTS OVER 65, PREGNANT WOMEN AND HEALTHCARE WORKERS. **YOU SHOULD GET VACCINATED AGAINST FLU EACH YEAR, AT THE BEGINNING OF THE NEW EPIDEMIC SEASON, BETWEEN THE BEGINNING OF NOVEMBER AND THE END OF DECEMBER.**

THE VACCINE IS ADMINISTERED FROM 6 MONTHS OF LIFE IN DIFFERENT DOSES:

- ONE DOSE IN CHILDREN FROM 9 YEARS OR IF THE CHILD HAS BEEN VACCINATED THE PREVIOUS YEAR;
- TWO DOSES WITH AN INTERVAL OF 4 WEEKS IF THE CHILD IS UNDER 9 AND IS VACCINATED FOR THE FIRST TIME.


PROTECTION STARTS AFTER ABOUT 15 DAYS FROM COMPLETION OF VACCINE SCHEDULE AND STARTS TO FADE IN THE 5 TO 6 FOLLOWING MONTHS. THE EFFECTIVENESS OF THE FLU VACCINE MAY VARY FROM YEAR TO YEAR, DEPENDING ON HOW SIMILAR THE CIRCULATING VIRUSES ARE TO THE ONES CONTAINED IN THE VACCINE AND ALSO DEPENDING ON THE AGE AND HEALTH CONDITIONS OF THE VACCINATED PERSON.

SIDE EFFECTS

The flu vaccine is usually well tolerated. Mild side effects are rare.

Redness, swelling and pain may appear at the injection site within 48 hours from the shots. More rare side effects include fever, general discomfort, muscle and joint pain and headache from 6 to 12 hours after the shots. These symptoms are more often observed in people who get vaccinated for the first time and last only one or two days.

Allergic reactions to the vaccine components are exceptional.



**FLU CAN CAUSE
SEVERE COMPLICATIONS
IN OLDER ADULTS
AND IN INDIVIDUALS
SUFFERING
FROM CHRONIC DISEASES.**



HPV

The infection from Human papillomavirus or HPV is the most common sexually transmitted infection. It is estimated that over 80% of sexually active people get the infection during their life.

The risk of getting infected starts with the first sexual contact and can last for the whole life. The incidence in women is higher at the age of 25, while in men it remains high also at an older age. **Condoms reduce the risk but do not protect completely from the virus** which can also infect portions of the skin non protected by the condom. There are over 100 serotypes of the HPV which can infect humans. These are divided between high-risk (cancer-causing) serotypes and low-risk serotypes. Low-risk types 6 and 11, for instance, are associated with over 90% of genital warts and with rare respiratory papillomatosis. Among the virus types that can cause cancer lesions, types 16 and 18 can cause 70% of cervical cancers worldwide. In case of natural infection, your immune system does not produce enough antibodies and you can get the infection and recover several times throughout your life. **HPVs are also responsible, although to a less extent, for cancers to the anus and genital tract - vulva, penis, vagina - and to the oropharynx - lips, oral cavity and pharynx. This is why the vaccine is also recommended for male adolescents.**

In most cases, HPV infection is transient - the virus is eliminated by the immune system - and asymptomatic - the infected person does not know that he/she is infected. The infection usually clears up spontaneously within 1 to 2 years from contagion. However,

in 10% of the cases it persists and can cause cell degeneration and lead to cancer. **In particular, a persistent high-risk HPV infection in women can progress to cervical cancer**, but only a small percentage out of 10% will develop the cancer. The virus is indeed necessary but not sufficient for cancer development. Smoking, prolonged use of oral contraceptives, co-infection from HIV or other viruses, high number of partners are some of the factors that contribute to the progression of the infection to preneoplastic lesions. Cervical cancer is thus the rare outcome of a common infection.

It can take up to 20 years for an infection to progress to cancer. **Screening programmes are available and make it possible to early detect precancerous and cancerous lesions and treat them.** Even after getting vaccinated, it is important to undergo regular screening tests. Cervical carcinoma is one of the most frequent cancers in women worldwide, but **its incidence has dropped significantly in countries where screening through Pap test or HPV test is widespread.** In Italy, screening is recommended for women aged between 25 and 64. The Emilia-Romagna region started the screening programme for the prevention and early diagnosis of cervical cancer over 20 years ago and since then, the number of new cases and deaths has been constantly decreasing. This programme is updated and monitored according to the most advanced guidelines.



HPV

THE VACCINE

DUE TO ITS FEATURES, HPV VACCINE IS RECOMMENDED AT THE BEGINNING OF PUBERTY RATHER THAN DURING CHILDHOOD.

THE VACCINE CONTAINS ONLY PARTICLES FROM THE EXTERNAL ENVELOPE OF THE VIRUS AND CANNOT CAUSE AND TRANSMIT THE DISEASE.

STUDIES HAVE SHOWN THAT THE VACCINE IS HIGHLY EFFECTIVE IN PREVENTING INFECTIONS AND PRECANCEROUS AND CANCEROUS LESIONS CAUSED BY THE HPV TYPES CONTAINED IN IT.

THE VACCINE IS MOST EFFECTIVE IF IT IS ADMINISTERED BEFORE ANY POSSIBLE CONTAGION.

IT IS 90-100% EFFECTIVE BOTH IN WOMEN AND MEN BEFORE CONTAGION - BEFORE STARTING TO HAVE SEX - AND REGARDLESS OF THE AGE AT WHICH A PERSON STARTED SEXUAL ACTIVITY. THE VACCINE IS HOWEVER MORE EFFECTIVE IF GIVEN TO YOUNGER INDIVIDUALS. THE VACCINE SCHEME INCLUDES TWO INTRAMUSCULAR DOSES UNTIL 14 YEARS OF AGE, AND THREE DOSES IN OLDER BOYS AND GIRLS AND ADULTS.

IN IMMUNOCOMPROMISED INDIVIDUALS THREE DOSES ARE RECOMMENDED AT ANY AGE.

VACCINATION IS A PRIMARY PREVENTIVE MEASURE SINCE IT PREVENTS HPV INFECTION AND THEREFORE ELIMINATES THE AGENT CAUSING HPV-RELATED CANCERS.

THE VACCINE PROTECTS AGAINST ALMOST 90% OF CERVICAL CANCERS AND 80% OF PRECANCEROUS LESIONS. GIRLS WHO HAVE BEEN VACCINATED, SHOULD HOWEVER CONTINUE TO UNDERGO SCREENING, SINCE THE RISK OF CERVICAL CANCER IS NOT COMPLETELY CANCELLED.

IN THE EMILIA-ROMAGNA REGION, THE VACCINE IS OFFERED FOR FREE TO BOYS UNTIL THE AGE OF 18 AND TO YOUNG WOMEN UNTIL THE AGE OF 26.

ADULT WOMEN AND MEN CAN HOWEVER GET VACCINATED AT A PREFERENTIAL PRICE, SINCE THE COST IS PARTLY PAID THE REGION.

IN ITALY THE VACCINE IS ACTIVELY OFFERED FOR FREE TO 12 YEARS OLD YOUNG PEOPLE.

SIDE EFFECTS

HPV vaccine is highly effective and safe, as it is also confirmed by the results of the surveillance activity carried out on populations vaccinated for many years. Nonetheless, as it is the case for any drugs, some side effects may occur. The most common are redness, pain, swelling and itch at the injection site. Fever, headache, muscle and joint pain, gastrointestinal symptoms, itch, rashes and hives may also occur. These symptoms are mild and short-lived.



THE CERVICAL CANCER IS THE FIRST CANCER THAT HAS BEEN COMPLETELY ATTRIBUTED TO A VIRAL INFECTION!



For more information:

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salute.regione.emilia-romagna.it

Emilia-Romagna region

salute.gov.it

Ministry of Health

epicentro.iss.it

Italian National Institute of Health

ecdc.europa.eu

European Centre for Disease Prevention and Control (ECDC)

cdc.gov

Centers for Disease Control and Prevention (USA)

who.int

World Health Organization

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