

VACCINES AND SERUMS

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Vaccination (inoculation) and serums

Vaccines are a simple and efficient method of protection against contagious diseases for which they have been developed. Vaccines have eliminated several quite dangerous and lethal diseases, which are nowadays just a matter of theory, with no clinical examples, as they have been eradicated. However, since the microorganisms which cause those diseases still live in our environment, we are obliged to maintain a high level of protection in our community. This prevents those almost forgotten diseases to appear again. Upbringing and maintenance of communal immunity is achieved by the inoculation of every single man, woman and child, so it should not be perceived only as preservation of our own health, but also as a contribution to the health profile of the whole community.

Young children are in the greatest danger, and that is the reason why they should be inoculated as early as possible, even in the first days of their lives. Since mother gives not only food to the fetus, but also the antibodies she developed during her life, by inoculation or natural immunization, a child is usually protected for the first 6 month of its life. The child should develop its own antibodies as soon as possible, in order to enable longer protection. The 6 month period during which the child is protected by mother's antibodies is used for inoculation and stimulation of child's own defense system. The vaccines given in one or two doses provide much better and longer-lasting protection for the child. At the age of one or no later than 15 months after birth, a child should complete its inoculation and get all the necessary vaccines. Breast-feeding presents one way of inoculation and it is called „passive protection”, since colostrum, the thick yellow milk that mothers have in the first few days contains antibodies for all the diseases the mother had in her life. This is also one of the reasons why mother's milk is the best food for the baby, at least in the first 12 months. This way passive protection of the child can be prolonged for several months.

It has been well-known for centuries that when a person recovers from one disease, they can not succumb to it again. The idea to inject small amounts of smallpox fluid under the skin of healthy people (variolation) was an unsuccessful attempt to copy that natural phenomenon. In 1796, Jenner introduced inoculation with fluid from cow pox retrieved directly from cows as a prophylaxis against smallpox, and that was the first documented use of an attenuated vaccine which marked the beginning of the modern inoculation.

Vaccine production

Vaccine is a biological preparation which improves immunity to a particular disease. It is made of weakened or killed forms of the microbe or its toxins which are used to stimulate the immune system and create antibodies. Viruses and bacteria are previously killed or weakened in labs, so that our cells would be able to defeat them easily and create antibodies for any future attack of the same enemy. A vaccine creates immunity for a specific disease, and is the most effective and efficient prevention against diseases and lethal contagious diseases.

Diseases which can be prevented by vaccines

Tuberculosis, (difficult forms of TBE such as consumptive meningitis), diphtheria, tetanus, whooping cough, Polio (Poliomyelitis), meningitis caused by Haemophilus influenza type B, measles, mumps, rubella and infectious hepatitis caused by hepatitis B.

World Health Organization and health providers all over the world use following abbreviations and phrases for vaccines in mutual communication, administration and evidence:

BCG vaccine against T.B.E

T.D.P vaccine against diphtheria, tetanus and whooping cough

D.T vaccine against diphtheria and tetanus

Td vaccine against diphtheria and tetanus for older children and adults

TT vaccine against tetanus

OPV vaccine against Polio (attenuated)

IPV vaccine against Polio (inactivated)

MMR vaccine against measles, mumps and rubella

HepB vaccine against hepatitis B

HiB vaccine against hemophilic influenza type B

Full inoculation consists of two parts – vaccination and re-vaccination (for refreshing, firming and prolonging the effects of inoculation)

Vaccine can be applied in several different ways:

1. Orally – by swallowing
2. By injection – intramuscular, intradermal
3. By puncture – shallow under the skin
4. Nasally – through the nose

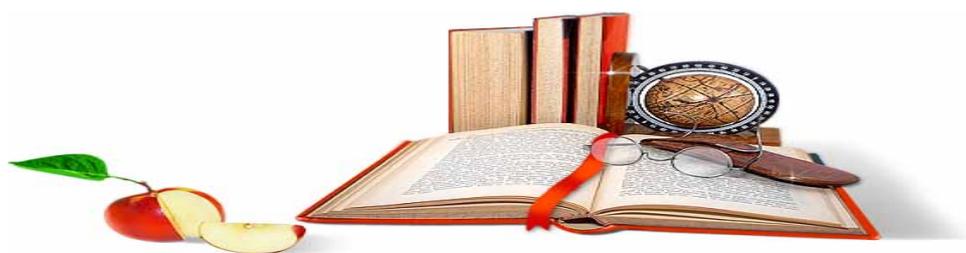
Types of inoculation

Inoculation causes creation of antibodies for an infective agent or its toxic products. It can also stimulate a cellular reaction of lymphocytes and macrophages. The most important antibodies are those which inactivate toxic protein bacterial products (antitoxins), facilitate phagocytosis – intracellular digestion of bacteria (opsonins), react with the serum complement components and damage bacterial membranes, leading to bacteriolysis (lysis) or prevent the proliferation of infectious virus (neutralizing antibodies).

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