MEASLES

General data

- Measles is a human specific disease known since antiquity. It is widespread, it is manifesting clinically and epidemiological in various forms, with or without severity; being caused by a virus discovered in 1954.
- For a long time, measles was mistaken with variola, scarlet fever and rubella.
- In the absence of vaccination, 80-90% of the children is passing through the measles infection, with risk of complication or death.
- In the countries where anti-measles vaccination is not populationally practiced, measles determines yearly the death of almost 1 million children less than 4 years old.
- In Romania, after the immunization program extension between 1967 and 1979, measles has recorded a non-epidemic morbidity (300-600‰ inhabitants in 1975; 100-110‰ inhabitants in 1994).

Characteristics with epidemiological importance

- Resistance in the environment is low, the measles virus can be destroyed by generally hygienization methods;
- The usual chemical decontaminates are used only in special epidemiological situations, in medical-social assistance collectivities;
- The chemical synthesis antiviral substances are useful to protect high risk persons, but they need an administration closely to the infection moment;
- The measles virus is antigenic homogeneous and stable, having a good immunogenic capacity, that makes it useful for the vaccines preparation;
- Thermolability and sensitivity of the measles virus even to very low amounts of antibodies require special measures for vaccine conservation and for selection of groups that are favorable to vaccination.
Epidemiological process

I. Sources of pathogenic agent

- **The sick man** with typical forms, with exanthema, or atypical ones, naturally benign or in vaccinated, is infections for 3-5 days from the beginning of the disease.

- **The virus carrier man** can be:
  - *pre-infectious*: is represented by the person in the last period of the incubation (3-5 days before the beginning of the disease) when he has a high level of infectiousness;
  - *healthy*: which has a reduced epidemiological role because he spreads very low amounts of virus and for a short period of time;
  - *after-ill*: which is practically not infectious in measles.

- The main sources of virus are: the sick man and the pre-infectious carrier. They are spreading the virus especially through rhino-pharyngeal, tracheal-bronchial and conjunctive secretions.

II. Modes and ways of transmission

- **Direct mode**: the measles virus, being a paramyxovirus with low resistance in the environment, is transmitted especially through septic drops (Flügge) in very low infectious doses, in crowds and generally in unhygienic life conditions.

- **Indirect mode**: air, objects and hands, recently contaminated, may contribute, especially in collectivities, to the measles virus spreading.
III. Receptivity

- Receptivity (susceptibility) is general for the persons that haven’t got the disease and haven’t been vaccinated.

- The preschool children and the pupils until almost 15 years old, in the absence of vaccination, are the major risk groups.

- The newborn children and the suckling until 6 months old are generally unsusceptible.

- The geographical isolated populations can accumulate in time a great number of susceptible persons.

- The post-infectious immunity is long lasting and the post-vaccination one, in the majority of cases, determines a long-term insusceptibility.

- The epidemiological and clinic evolution forms as well as the late complications prevalence depends very much on the general unspecified resistance of every person and on the measles virus strain characteristics.
Manifestation forms

- During the period that preceded the anti-measles vaccine introduction in the immunization extended program, measles manifested, frequently, epidemic, with high morbidity and mortality.

- *The sporadic manifestation* is characteristic for measles in the countries where vaccination is practiced on a program basis. The sporadic cases are registered in vaccinated people, children from the age groups not included in vaccination and adults.

- *The endemic manifestation* is not characteristic for measles but it can appear in collectivities for children medical-social assistance that are incompletely vaccinated.

- *The epidemic manifestation* was found in many geographical areas. Today is recorded in some African, South American and South Eastern Asiatic countries where immunization is not practiced or it realizes a low covering for the risk population groups. In the countries with anti-measles vaccination programs is possible to record “micro-epidemics” in social-economic unfavouring populations or in those mystical-religious outlooks.
Prevention

- *General prevention* consist in epidemiological surveillance of the children collectivities to assure their comprising in the vaccination program. The non-specific protection, by increasing the general resistance, is important especially for children with vaccination contraindications. Also, the pregnant women and immunosuppressed persons have to avoid crowd conditions and to adopt a hygienic life style. The population education about measles prevention assures its cooperation.

- *Special prevention* includes the limited use of immunoglobulines or antiviral substances in high-risk children and adults, non-immunized naturally or artificially. Immunoglobulines administration requires a period of 3 months before and after anti-measles vaccination.

- *Specific prevention* consists in vaccinoprevention realized by programs since 1963 in USA and 1979 in Romania, has created the premises for the discussion of future measles eradication after variola and poliomyelitis model.
• *A lot of efforts are done today for removing some obstacles in the way of increasing anti-measles vaccinoprevention efficiency:*

- the vaccine’s thermolability;
- the vaccine’s immunogenity blocking by the immunoglobulines and mother’s specific antibodies;
- the absence of seroconversion in 1-5% of the vaccinated;
- gradually decreasing, sometimes for a short term, of the post-vaccinal antibodies;
- the trend of infection movement towards the little children and the by ones, teenagers and even adults;
- other immune “gaps” causes: contraindicated persons unrecovery, population’s mobility, mystical-religious motivations, populational and medical-sanitary negligence.

• It is discussed the possibility of some vaccination schemes utilization for a better covering of all measles infection high-risk groups of age.

**Control**

• *Control of measles*, under vaccination program conditions, consists in all forms of disease detecting to avoid the virus spread and to assure the best treatment. The vaccination and revaccination in the focus and around it or, in case, with large populational covering, it’s the most efficient method.

• Also are indicated the measures for control of the influenza epidemiological process.