- Ministry of Health of Ukraine
- Poltava State Medical University

- LECTURE
- THE GENERAL PRANCIPLES END METHODS TREATMENT OF PATIENTS WITH TUBERCULOSIS.
- Prophylaxis of tuberculosis

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PLANE LECTURE

Definition of the concept of the treatment of TB
Metodes of the treatmet of TB
Principles of the treatment TB
Basis antituberculosis preparations
Protokoles of the treatment TB
Patogenetic treatment of TB
Surgical and other methods of treatment TB
Definition of the prophylaxis
Vaccination against TB
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Organization exposures of the consumption
Category of the clinical supervision

- The treatment of tuberculosis is very important means in the anti tubercular fight. The clinical recovery of the tubercular patient is annulled of the sources of tubercular infection and tubercular epidemiology situation improves.
- At the treatment of tubercular patients of any localization following such principles:
- 1. **Early** and **timely** treatment. At early diagnostics of tuberculosis the efficiency of treatment come up to 100%,
- at timely treatment efficiency may reach to 95-100%,
- at untimely this index composed near 85% and
- the late diagnostics efficiency treatment is not more then 30% of cases.
- 2. The **duration** of treatment. The optimum duration the main course of the treatment is from 6 to 24 months. Untimely and cessation of treatment are results in the reversal of persisting MBT into their initial forms and the emergence of aggravations and relapses of the specific process.

- 3. The **continuity** of treatment. At presence of the pauses in antimycobacterial treatment can development of medicinal resistant of MBT.
- 4. **Multistage** treatment includes: stationary, sanatorium and dispensary stages of treatment. Stationary stage of treatment includes: at first 2-3 months continued intensive treatment with appoint daily 4-5 antimycobacterial drags is performed.
- The second stage makes 4-6 months, when the MBT has decreased or absent, the treatment may be prolong by 2 drugs, in particular, by the intermittent method at the sanatorium or dispensary stages.

- 5. **Combined chemotherapy.** Monotherapy of the tubercular patients with any drugs is inadmissible because resulting to rapid development resistance of MBT to it. Therefore only 4-5 anti tubercular drugs is used then can prevent the development medicinal resistance of MBT. That way the treatment of tubercular patients must be the combination of izoniazid, rifampicin, streptomycin, pyrazinamid and etambutol.
- 6. **Controlled chemotherapy.** The treatment of tuberculosis must be controlled since the patients often irregularly or arbitrarily terminate their treatment. At a hospital patients should take antimycobacterial drugs under the supervision of the medical staff, and during the ambulant therapy it is performed to. All this enables to increase on 10-15% of the treatment efficiency.

- 7. **The complex treatment of tuberculosis includes:** antimycobacterial drugs, pathogenetic treatment, surgical and other methods of treatment.
- **ANTIMYCOBACTERIAL DRUGS (ETHIOTHROPIC TREATMENT)**
- The antimycobacterial drugs are divided into three groups: 1(A), 2 (B) and 3 (C).
- **1 group** (1th row) it is basic ATP and included drugs, that bactericidal action on MBT:
- Isoniazid (H);
- Rifampicin (R);
- pirazinamid (Z);
- streptomycin (S);

- **II group** it is reserve ATP (II row) – show a bacteriostatic action on MBT:
- phtivazid, metazid, saluzid;
- canamycin, florimycin, viomycin;
- ethionamid, prothionamid;
- tioacetason;
- flurenisid;
- salutison;
- capreomycin.

- **III group** is preparations with moderate influence on MBT:
- oflocsacin;
- tarevid;
- ciprofloxacin: ciprobay, cifran;
- sporfloxaciun;
- maxacvin;
- cicloserin;
- PASA

- **Isoniazid** is a specific antitubercular chemodrug, obtained in laboratory Fox (Great Britain) at 1951, and it is a main representative of hydrazide isonicotine acid (HINA) group. Isoniazid is manufactured in tablets of 0,1 g, 0,2 g, 0,3 g and in ampules of 5 ml of 10% solution. A daily dosage of the isoniazid is 8-10 mg/kg, for adults 0,3-0,6 g, at once or two intakes, after meal. Isoniazid also may be entered intravenously, intramuscularly and in aerosols. Isoniazid is rapidly absorbed after per oral intake and during 1,5 to 3 hours the maximum drugs concentration in the blood is noted. From blood isoniazid is well penetrates through cell and the tissue membranes and through hematoencepha-lic barrier and the specific acts only on MBT located extra- and endosellularly. H is efficiently acts to MBT that multiply rapidly and the less efficiently to MBT of multiply slowly.

- The mechanism action of isoniazid is conditioned by blocking or inactivation of enzymes and co-enzymes of a microbes cell, resulting in the disturbance of protein metabolism, RNA, DNA and phospholipids synthesis, blocking its multiplication.
- During 12 hours isoniazid is excreted with urine.
- Side effect and complications of isoniazid are headache, lowering of memory, cardialgy, artralgya, hepatitis, peripheral neuritis, allergic eruption. The prophylaxis of neurotoxin complication are vitamins B1, B6.

- **Rifampicin** is a semi synthetic antibiotic with a wide action spectrum. Proposed Maggy (Italian) at 1966. Rifampicin is manufactured in capsules of 0,15 g, 0,3 g or in ampoules. A daily dosage is 8-10 mg/kg, in average for an adult of 0,45-0,6 g at once per orally, after 30 minutes before a meal. Rifampicin may be entered intravenously drop by drop and endo bronchially.
- Rifampicin acts to the MBT located extra- and endocellularly, as well as to the ones that multiply quickly and slowly. Rifampicin penetrates well through hematoencephalic barrier, into various tissue of an organism, areas of specific lesion and caseose. The peak concentration of rifampicin in the blood comes in 1,5 to 4 hours after its intake.

- The mechanism action of rifampicin is consists in depression the synthesis of ribonucleic acid of MBT, by blocking RNA-polymerase.
- Side effect and complications are hepatotoxic action, hyperthermia, myalgia, artralgia, dyspeptic disturbances, obstructive respiratory disturbances, skin eruptions, hemorrhages, anaphylactic reactions. Hepatoprotectors (carsil, essentiale, legalon, thiotriasolin), vitamins B1, B6, C are prescribed with a prophylactic purpose.
- The contraindicated appoint of the drug is a liver diseases.

- **Streptomycin sulphas** is antibiotic discovered American microbiologist S. Vacsman at 1944. Streptomycin is antibiotic with a wide action spectrum, it is manufactured in small bottle of 1 gr. Streptomycin infusion intramuscular, a daily dosage is 15-20 mg/kg (averagely for an adult – 0,75–1 g). The drugs may be administered intrapleurally, endobronchially, in aerosols. For endolumbar administration only calcium chloride of Streptomycin in the dose of 0,1-0,2 g is used. Streptomycin acts bacteriostatically on MBT, that rapidly multiply and are located extracellularly. The mechanism action of Streptomycin is consists in inhibits oxidation processes and blocking protein synthesis in a bacterial cells.

- Side effect and complication of str. are neurotoxity, ototoxity, anaphylactic shock, bronchispastic.
- At anaphylactic shock used physiology solution, with noradrenalin, prednisolon are infused intravenously. For the prophylaxis of ototoxic and neurotoxic complications is prescribed calcii pantotenatum of 0,4 g twice a day or 2 ml of 20% solution twice a day intramuscularly.
- The drug is contraindicated at lowered ear and deafness.

- **Pirazinamidum** is a specific antituberculous chemo drug, which acts on MBT are locating intra- and extracellularly. The drug is more active to phagocyte MBT, in comparison to the ones distributed extracellularly. The mechanism of tuberculostatic action of Pirazinamid consists in MBT oxygen intake suppression. Pirazinamid absorbs well in the digestive canal, the maximum concentration in the blood comes in 3 hours after an intake; is has good diffusive properties (internal); penetrates through hematoencephalic barrier. The manufacturing forms are in tablets of 0,5 g. A daily dosage is 25-30 mg/kg, 1,5-2 g a day, after meal.
- Side effect and complications: hepatotoxic action, dyspeptic disturbances, artralgia, allergic dermatitis. To prevent hepatotoxic action apoitment hepatoprotectors, vitamins B6, B12.

- **Ethambutol** is a specific anti tubercular chemodrug, which inhibits only the MBT, that rapidly multiply, distributed extra- and intracellular. The mechanism action of Ethambutol on MBT consists in blocking and exclusion from metabolic processes of Magnesium ions and suppression of nucleic acids synthesis.
- Ethambutol is manufactured in tablets of doses 0,1 g, 0,2 g, 0,4 g. A daily dosage is 20-25 mg/kg, an average dose for an adult is 1,2-1,6 g, after breakfast.
- Side effect and complication: retro bulbar neuritis with lowering the sharpness visual, pain in the eyes, epileptiform phenomena, hepatitis. For prevent side effect of Ethambutol is administered tocoferol acetate 1 capsule (0,05-0,1g) once or twice a day.
- The drug is contraindicated at eyes diseases such as neuritis and retinitis.

- **Kanamycini sulfas** belong to aminoglycozide antibiotics, with a wide action spectrum. The drug is reserved, instead Streptomycin is used. Bacteriostatic action MBT is lower, in comparison to Streptomycini, and toxicity is higher. The method administration, dosages, side effect and complication is analogous to that of Streptomycini.
- **Florimycini sulfas** is an antibiotic, its bacteriostatic actrivity on MBT is lower and toxicity higher. Florimycini acts on MBT, stable to Streptomycini and Kanamycini, however a MBT, resistant to Florimycini, is at the same time insensitive to both antibiotics. The method administration, dosages is analogous to the Streptomycini.

- **Ethionamid and Protionamid** are chemo drugs. Bacteriostatic activity of both chemo drugs are 10 times lower, comparing to Isoniazid. A daily dosage to 10-20 mg/kg, for adults – 0,25 g three times a day, after meal. In bottles of 0,5 g Ethionamidi chloride for intravenous drop by drop infusion.
- Side effect: neuritis, depression, dyspeptic symptoms, hepatitis, endocrine disturbances, psychic discord, cardialgia, hair shedding, allergic responses. To **prevent** ethionamid side effect, nicotinamid, group B vitamins are administered simultaneously.
- Ethionamidum is contraindicated at hepatitis, the digestive canal illnesses, during pregnancy (due to teratogenous action).
- At present times the combined antimycobacterial drugs (ryfinach, rifater, mairin) and also other antibiotics such as rifabutin, rifapentin, ofloxacin, ciprofloxacin, claritromycini, amycacinum are used for the treatment of tubercular patients.

- Ethiothropic treatment of tuberculosis patient is performed differentially, depending on the clinical form of tuberculosis, drug tolerance and mycobacterial sensitivity to them.
- At present times the most effective regimes of chemotherapy of tuberculosis patients, recommended by the WHO, are used in various countries of the world.
- Antimycobacterial therapy is consists of two stages: initial (intensive) during 2 months and proceeding (rehabilitation) during 3-8 months. All patients divided into four categories, for which the WHO recommends appropriate schemes of treatment.

- **CATEGORIES AND TREATMENT SCHEMES:**
- **1 cat.** - **4-componently regimes** for firstly revealed patients with tuberculosis lung with secreting MBT, the patients with tuberculosis divided without secreting MBT and patients with easy forms out of lung tuberculosis - in initial intensive stages are prescribed 4 drugs (isoniazidum, rifampicinum, pyrazinamidum, ethambutolum) during 2 month;
- in proceeding stages – 2 drugs (isoniazidum, rifampicinum) are prescribes, intake daily or tree dails of week during 4 - 6 month.

- **2 cat. -** the patients with a relapses of tuberculosis, after break of treatment, after of the treatment fiasco. 5 drugs (isoniazidum, rifampicinum, pyrazinamidum, etambutolum, streptomycinum) are prescribe during 2 months; further 4 drugs **(**isoniazidum**,** rifampicinum, pyrazinamidum, etambutolum) are prescribed during 1 month; afterwards, in proceeding stages, 3 drugs (isoniazidum, rifampicinum, pyrazinamisum) are prescribed during 5 month.
- **3 cat. –** new case, firstly revealed patients with small forms of tuberculosis lung without MBT, limited forms extra pulmonary tuberculosis: in initial stages 3 drugs (isoniazidum, rifampicinum, pyrazinamidum) are prescribed during 2 month; in proceeding stages 2 drugs (isoniazidum, rifampicinum) are prescribed during 4 month daily or three times of week.

- **4 cat.** – the patients with chronic tuberculosis (relapses of tuberculosis after of repeat courses treatment), tuberculosis with multi tolerance MBT, are treated individually with 5 drugs in initial stages during 6 month and the 4 drugs in proceeding stages during 12-24 month, seeing of MBT drugs sensitivity and of patient's drugs tolerance.
- **SURGICAL TREATMENT OF TUBERCULOSIS PATIENTS**
- Surgical treatment of tuberculosis patients includes the methods such as:
- 1. radical (of segment, lobe, lung resection, pleural ectomies);
- 2. collapsosurgical (thoracoplasty are 4-7 ribs resection on purpose to squeeze lung),
- 3. collapsotherapeutic (medicinal pneumothorax, pneumoperitoneum – insufflation air in pleural or abdomen cavity on purpose stint mobility of diaphragm),
- 4. intermittent (cavern plasticity, cavern drainage).

THE PROPHILAXIS OF TUBERCULOSIS

- **A prophylaxis** is a complex of state and sanitary measures, directed on warning distribution of tuberculosis.
- Select a specific and nonspecific prophylaxis.
- **A specific prophylaxis** is a complex of measures, directed contra of the pathogen of tuberculosis. That are vaccination, revaccination and chemoprophylaxis.
- **A nonspecific prophylaxis** is a complex of the social and sanitary measures in country.
- **Vaccine of BCG** it is living, hyposthenia, apathogenous, with the maintenance of immunologic properties of the culture MBT. Get it growings of culture of MBT on the special artificial substratum and after the vacuum drying, package a vaccine for 1 mg (20 doses) into a 1 small bottle to which add ampoules from 2,0 ml solution. One dose for an inoculation makes 0,05 mg of dry vaccine in which is 50-60 thousand of body MBT.

- Inoculations BCG conduct on 3-5 day life of child at the absence of contra-indications. Vaccine in the volume of 0,1 ml, enter endodermic in the overhead third shoulder. In 4-6 weeks hyperemia, papule, with formation of crust are appears in place of introduction of BCG. Under it an ulcer which heals formation of after vaccinated scar is formed. In a norm an ulcer can not heal to 6 months. If it is saved more than 6 months, a vaccination is considered as complication.
- After vaccinated a scar is the important element of estimation of the conducted vaccination. If an inoculation is conducted correctly, a scar has the rounded form, elastic, soft and shallow.

  Complication of vaccination maybe abscess, phlegmon and very rarely is dissemination tuberculosis, caused by the vaccine of BCG

Contra-indication of vaccination:

- Premature baby is mass of body at born less then 2000 grammes ;
- Antenatal infection;
- Festering are septic diseases;
- Hemolytic diseases of new-born (middle and heavy forms);
- Heavy maternity traumas are with neurological symptoms;
- Generalize skin disease;
- Sharp disease;
- Disseminated infection of BCG, discovered for other children in family;
- Fermentopati;
- Born injury.

Revaccination is conducted in 7 years at the terms of absence of sensitiveness to the tuberculin (negative test of Mantoux). The technique of the lead of revaccination is such, as well as vaccinations.

- **Contra-indication for revaccination are**:
- infected tuberculosis or tuberculosis in the past;
- positive or doubtful reaction of the test Mantoux with 2 TU;
- reactions are complicated on previous introduction of vaccine of BCG (coarse scars, lymphadenitis and others like that);
- including sharp diseases (infectious) period of reconvalescense, chronic diseases in the stage of sharpening, or decompensation. It contra-indications are temporal, as inoculations conduct not early than 1 month after convalescence. At a contact with infectious patients, an inoculation is conducted upon termination of term of quarantine or maximal term of latent period;

- allergy (skins and respirator) are in the stage of disease. However after convalescence or achievement of remission of these illnesses, after the conclusion of specialist, revaccination is rotined;
- malignant diseases of blood and new formations;
- immunodeficiency state, treatment immunosupressive drugs
- VIL-infecting of child.
- The persons are with presence contraindications of revaccination, taken to be under a supervision and inoculating BCG makes at condition of the convalescence and the permission a doctor-specialist, but not early than after in 1 month

- Other prophylactic inoculations can be conducted with an interval 2 months to after revaccination of BCG.
- The children having the positive of tuberculin tests Mantoux the revaccination is not conducted, but taken on a dispensary account on a category 5.4 and appointed chemoprophylaxis them during 2-3 months by 2 anti tubercular drugs 2 times per a year. They are consist on a dispensary account under supervision of doctor during 1-2 years. At other diseases revaccination is conducted after convalescence and if will be negative of test Mantoux with 2 TU PPD.

- Looking after vaccination make pediatricians and medical sisters of general medical network, which through 3, 6 and 12 months after revaccination children and teenagers with registration of size and character of local reaction on vaccine BCG (papule, pustule with formation of crust, with a selection a pus or without him, scars and pigmentation). These information is registered in the medical document. If an after vaccination scar does not appear, and test of Mantoux with 2TU PPD remains negative, it is possible to consider that immunization is ineffective. It follows to repeat an inoculation BCG such children. But not early than as in 2 years after a vaccination and through one year after revaccination, with the obligatory execution of test Mantoux with 2 TU in two weeks to the inoculation of tuberculin.

- **Drugs prophylaxis** is setting of drugs with the purpose of warning of development of TB. Select primary and secondary drugs prophylaxis.
- **Primary drugs prophylaxis** conduct to the contactor with a patient having the opened form of TB, to the not infected children and adults. Duration of course of drugs prophylaxis are 2-3 months.
- **Secondary drugs prophylaxis** conduct after illness TB and infected children, by two anti tubercular preparations in spring and in autumn for 2-3 months, for preventing of relapse and development of disease TB.
- **In nonspecific prophylaxis are selects social and sanitary prophylaxis.**
- **A social prophylaxis** is a complex of national measures, which are directed on the guard of environment, social defence of man and improvement permanent of domicile of patient with open form TB, of without payment of treatment and increase healthiness. These measures are provide a 80% of efficiency of fight against morbidity on tuberculosis.

- **Sanitary prophylaxis** is a complex of medical measures on early discovered patient with TB, isolation of him, making healthy of hearth of tubercular infection, sanitary education among a population.
- It is necessary to know a domestic, district pediatrician, what the hearth of tubercular infection and what measures is conducted in him.
- **A hearth of tubercular infection it** is habitation, where lives a discharger MBT and other peoples lives together with him. In hearth TB infection take not only a patient, that with him live but also neighbors, colleagues on work, all of people, that with him communicate.
- During the first three days after an exposure sick of discharge MBT medical workers inspect a hearth TB infection and determine a group after the degree of epidemiology danger for environment.

- Subsequent measures foresee hospitalization of patient in an antitubercular dispensary, lead through of **final disinfection**, isolation of children, inspection of contact persons:
- laboratory inspection include general analysis of blood, analysis of sputum on the presence of MBT by bacterioscopic and cultural methods;
- x-ray (fluorographyc) examination of adults, at a necessity – children and teenagers;
- tuberculin test of Mantoux with 2 TU PPD inspect children and teenagers.
- Drugs prophylaxis is conducted to all contacted persons.
- Select **three groups of hearth of tubercular infection** depending on massiveness of secreting MBT, presence in the hearth of children and teenagers, sanitary-hygenic terms in which a patient lives and him social adapted.

- **To the first group it is unfavorable hearth,** most dangerous, groups take TB hearth where is lives patients with massive excreting MBT (MBT find at an ordinary backterioscopy or by the method of sowing – more than 20 colonies) or not massive (MBT find at an ordinary backterioscopy or by the method of sowing are single colonies), but lives with him in TB hearth children and teenagers and there also are bad housings conditions, violations of hygienic rules, abuse of alcohol, use of narcotic matters.
- **The second group of TB hearth are threatening hearths**, where a patient lives with wretched secreting MBT and children absent, or a patient behaves to formal (secreting MBT was halted, but a patient yet is on control) and there are children and teenagers in TB hearth, whether one of the resulted aggravating factors takes a place.

- **The third group it is favorable** hearth, where adults live only, and a patient is formal discharger MBT and there are no aggravating circumstances.
- If a patient leaves from an apartment quite (dies, change of residence) or convalesces, after final disinfection an apartment is not TB hearth.
- If a patient remains in an apartment illness acquires chronic motion, disinfection measures conduct permanently in TB hearth.

- **EXPOSURES CONSUMPTIVE (TB)**
- The important condition of effective disease fight against growth of morbidity on tuberculosis is a timely exposure, isolation and treatments consumptive and especially secretinger MBT. Depending on organization of this work of exposure of tuberculosis can be early, timely and ill-timed and late.
- The early exposure of infected is possible only for children and teenagers is establishment the turn (virag) of tuberculin reactions, that, diagnostics of infecting of tuberculosis an exciter in the period of immunological alteration. Prophylactics treatment in this period reduces authenticity of disease on tuberculosis in the future to 3%, against 60% without treatment.

- A timely exposure of tuberculosis is diagnostics of local forms of primary or secondary tuberculosis without destruction and complications. Provides the epidemiology unconcern of patients and 100% efficiency of treatment.
- An ill-timed exposure of tuberculosis is diagnostics of local forms of tuberculosis with destructive and complicated motion. Patients often are secreting MBT and carry the threat of infecting of other people. Efficiency of treatment of them does not exceed 85%, and in a 15% tuberculosis acquires chronic motion.
- Tuberculosis is started is the late exposure of tuberculosis with the heavy, complicated, sometimes chronic motion. It is most epidemiology dangerous patients, as there is constant, massive secreting MBT. Efficiency of their treatment does not exceed 30%.

- **Organization exposures consumptive** conducted on the basis of plan of tuberculin diagnostic, which engulfs children and teenagers and **plan of fluorography** of grown man population. They are made by the deputy of main doctor of territorial treatment-prophylaxis establishment together with the deputy of main doctor of antituberculosis dispensary and managing epidemiology department of SES. A plan is made on the basis of plans of district hospitals and domestic out-patient's clinics. Co-ordinate plans accordingly with the organs of local self-government and state administration. Control and estimation of efficiency of these prophylactic measures is carried out by the first leaders of the system of health protection.

- Children and teenagers have mass tuberculin diagnostic the method of early and timely exposure of infecting and local forms of tuberculosis. Pediatric service conducts it, for what form a group in composition of pediatrician and 2 medical sisters which in the planned order conduct the tuberculin test of Mantoux and carry out an account and estimation of results. Methodical help gives phthisiopediatrician them.
- Endemic tuberculin test of Mantoux with 2 TU PPD is the less alternative method of early diagnostics of infecting of children by the exciter of tuberculosis. Conduct it children every year from 12-monthly age to 14, not depending on the results of previous reaction on a tuberculin.

- To the children which were not instilled the vaccine of BCG in the period of newborn the tuberculin test of Mantoux is conducted 1 time in a half-year to the lead through of inoculation. Teenagers which attributed to the groups of risk (5.2; 5.4; 5.5) are to put on account in ant tuberculosis dispensary. Their supervision and tuberculin test of Mantoux one time in a year conducts pediatrician.
- The children with sharp and protracted illnesses of the respiratory system, with chronic rino-faringitis, patients with diabetes, ulcerous illness of stomach, system illnesses, that long time treat oneself corticoids preparations and other immunosupressive drugs must an enhanceable risk to illness on tuberculosis, that it is needed to take into account at their appeal for medical help and to conduct the analysis of results of their sensitiveness to the tuberculin.

- The account of reaction on a tuberculin is conducted in 72 hours after his introduction. Take into account a papule, its sizes, vesicul, lymphangitis and lymphadenitis. Positive a reaction on tuberculin is counted, if first after negative previous tests a papule is formed 5 mm and anymore (except for the cases when a reaction arises up in a year after a vaccination or revaccination of BCG, it is needed will specific after vaccinated or infectious allergy). Increase of papule on 6 mm comparatively with previous, proof size it 10 mm, papule 12 mm and more, and also papule 17 mm and more, vesicul, lymphangitis, lymphadenitis (hyperergic reaction) are the certificate of infected of child or teenager.

- With a diagnosis the «conversion (virage) of tuberculin tests» of such children is sent to consultation to the phthisiologist during 2 weeks with medical documents, in which the marked is given to anamnesis, state sick, term and results of vaccinated, revaccinated and results of annual tuberculin tests. At taking on a clinical account conduct the deep inspection of child (radiography, tomogram of organs of thorax, analysis of sputum on MBT, washing off of bronchial tubes, scourages of stomach on MBT by the of microscopy of stroke and cultural methods, blood and urine tests).

- As a result of inspection a phthisiologist draws a conclusion and determines the volume of treatment-prophylaxis measures.
- If a reaction on a tuberculin is positive, but a papule is pale, not expressly outlined and disappears in 7-10 days, diagnose a after vaccinated allergy and keep under observation.
- Beginning from 15-years-old age for the early exposure of tuberculosis is conduct the fluorography.
- Adults have mass **prophylactic fluorography** the methods of early exposure of tuberculosis, individual prophylactic fluorography inspection after an appeal, decreed contingents, persons from the groups of risk, that **backterioscopy of stroke sputum** sick, which cough 3 weeks and anymore.

- Mass prophylactic fluorography is conducted in the planned order with the continuous (100%) scope of population 1 time per 2 years, beginning from 18-years-old age. Carry out it movable and stationary fluorography.
- Stationary fluorography function at policlinics, antitubercular dispensaries. They are utilized for the annual inspection of groups of clinical account, decreed (obligatory) contingents and persons which appeared for a medical help first during a year.

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- The groups of clinical account form from persons which have an enhanceable risk of disease on tuberculosis. In **medical establishments of general network** persons, which are ill diabetes, ulcerous illness of stomach and 12-falling bowel, are subject **a clinical supervision;** patients with the chronic diseases of lungs, chronic, after the carried pleurisy, with dust borne professional illnesses, with chronic alcoholic intoxication and drug addiction, HIV-infication, patients with AIDS, patients which accept system immunosuppressive drugs (corticosteroids, citostatics and others like that), and also persons with small remaining changes in lungs after the carried tuberculosis and with large changes after carried NDL. In addition, the pregnant, after born, medical workers, refugees, migrants, unemployed, exempt from places imprisonments, persons which are in consequence insulators belong to the group of risk.

- **Obligatory contingents** are persons with the enhanceable epidemic risk of distribution of tuberculosis. The workers of preschool belong to the group, school, health-improvement, medical and other child's establishments; workers of trade, establishments of production and trading in products and service population workers. The groups of clinical account are subject an annual prophylactic fluorographic inspection and at employment. Control after the observance of this norm is carried out by the workers of SES.

- Movable fluorography utilize for a mass inspection the workers of large enterprises, educational establishments and rural population. The carrying capacity of movable fluorography makes to 500 people for a working day. Such fluorography work at regional, city hospitals and antituberculosis dispensaries. In accordance with the plan of fluorography after the concerted graph local medical workers conduct preparatory work with a population and leaders of establishments (prepare an order) and create terms for work of movable fluorography and his personnel.

- All of inspected one after another register in a magazine and accordingly with it conduct the review of fluorograms. For reliability of control fluorograms look over independently two radiologists or one - through a day. Found out on a fluorogram pathological changes register in a magazine and not later than a 48 o'clock of patient cause on full investigation. At the terms of failure to appear a call is repeated in 10-14 days. For subsequent diagnostic investigation fill a form № 05210, cut out a fluorogram, inlay in an envelope, connected with a card. At sending to the inspection a patient give out «Coupon of sending to consultation» (form № 02810) which is returned in fluorography office after establishment of diagnosis with the proper record. The set diagnosis is registered in the map of form № 05210 and report a district hospital, domestic out-patient's clinic Maps with the set diagnosis make to fluorotec and keep in alphabetical order for to the nosology forms.

- In default of changes on a fluorography to the magazine a mark is added «norm» and the results of fluorography inspection are not cut out from tape a fluorography give out a patient after his requirement.
- **A clinical supervision** is carried out after a category 5, in which form 5 groups of persons of clinical supervision are groups 5.1, 5.2, 5.3, 5.4 and 5.5

- **Group 5.1** are persons with remaining changes after curing of tuberculosis of different localization. Term of clinical supervision of persons with small remaining changes 3 years, with large – 10 years, persons with tuberculom sizes more than 4 sm, by the widespread cirrhosis of lungs – for the term of life, and children and teenagers with mutations in lungs after TB - to 18-years-old age. Control inspections conduct in the first year a supervision 1 time in 6 months: sciagraphy of organs of thorax, laboratory researches and analysis of sputum, is on MBT, it is conducted the tuberculin of test adults after a testimony, to the children 1 time in a year. At the terms of decline of resistant of organism conduct antirecurrent treatment. To the children at antirecurrent treatment a blood and urine test is conducted monthly.

- **Group 5.2** are persons, which have contacts with patients with tuberculosis, which select MBT, and also with patients with tuberculosis by animals. To this group take the children of junior age, which contact with patients, which do not select MBT and with parents which contact with the animals infected tuberculosis. Control inspections are radiography is 1 time per 6 months of adult peoples and not infected children, for infected children radiogram makes 2 times per a year, blood and urine test to the adults 1 time in 6 months, to the children 1 time per 3-6 months, but at the drugs prophylaxis the people are examination monthly; analysis of sputum on MBT to the adults at suspicion on on tuberculosis, to the not infected children is microscopy examination of smear 1 time in 6 months; to the tuberculin test is 1 time in a year. The term of supervision of persons of this group is all of period of contacts with patient and yet 1 year after their stopping.
- Conduct the measures of making healthy of epidemic hearth of tubercular infection, drugs prophylaxis and revaccinated of BCG of not infected children.

- **Kategory of 5.3.-** is adults with the tubercular changes of indefinite or doubtful activity. Term of supervision 3 months (before determination of activity).
- A x-ray (radiography, tomography) inspection, analysis of sputum on MBT conduct at registering, and then are 1 time in 2 months, blood and urine tests makes 1 time in a month and the tuberculin test Mantoux makes at registering. At set activity conduct treatment on Kategory 3. At idle changes conduct drugs prophylaxis two drugs during 3 months

- **Kategory of 5.4.-** to put and teenagers which are infected tuberculosis and from the groups of risk (turn of tuberculin tests, hyperergic reaction on a tuberculin, increase of papule on 6 mm in the test of Mantoux for a year, chronic somatopathies). In this group take children which were not instilled the vaccine of BCG on 3 birthdays or have complication after the vaccination of BCG. Term of supervision 1 year. At the maintenance of hyperergic reactivity on a tuberculin and presence of chronic NDL term of supervision 2 years.

analysis of sputum, on MBT (backterioscopy) conduct at taking and removal from an account. A blood and urine test is conducted 1 time in 6 months, during drugs prophylaxis – 1 time per a month.

- At registering conduct the non-permanent course of drugs prophylaxis during 3 misses 2 ATP. At the maintenance of hyperergic reactivity the course of drugs prophylaxis is continued yet on 3 months

- To put, that were not instilled in the period of newborn subject an inspection not less than 1 time in 3 misses, to the lead through of vaccination. Their making healthy conduct in sanatorium daddy-garden, boarding-schools. A term of supervision is to the lead through of vaccination.
- To put from after vaccination complains is subject an inspection not less than 1 time in 3 months. Drugs prophylaxis it is conducted them it is differentiated. Term of supervision is 1 year.

- **Kategory of 5.5.-** to put and teenagers in which it is needed to specify etiology of sensitiveness to the tuberculin (after vaccinated or infected) or conduct differential diagnostics of changes in lungs and other organs, and also in the case of presence of tubercular changes of the indefinite activity in the organs of breathing. A radiogram, tomogram, blood and urine test, conduct at taking and removal from an account, 3-valid for one occasion bacterioscopy and 2-valid for one occasion cultural research of sputum on MBT and tuberculin diagnostic conduct at registering. Treatment of conduct is during 2-4 months with a complete inspection for the decision of question of etiology or activity of process. A term of supervision is to 6 months.

THANK YOU
VERY MUCH