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PROBLEMS OF EPIDEMIOLOGY AT THE 14th ALL-UNION CONFERENCE OF EPIDEMIOLOGISTS,  
MICROBIOLOGISTS AND INFECTIOUS DISEASE SPECIALISTS

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PROBLEMS OF EPIDEMIOLOGY AT THE 14TH ALL-UNION CONFERENCE  
OF EPIDEMIOLOGISTS, MICROBIOLOGISTS, AND INFECTIOUS  
DISEASE SPECIALISTS

[Following is the translation of an article by V. E. Korostelev, Gamaleya Institute of Epidemiology and Microbiology, AMN USSR, published in the Russian-language periodical Zhurnal Mikrobiologii Epidemiologii i Immunologii (Journal of Microbiology Epidemiology and Immunobiology), #12, 1964, pages 3--8. Translation performed by Sp/4 Richard M. Koplen]

At the 14th All-Union Congress of Epidemiologists, Microbiologists and Infectious Disease Specialists, held in Moscow from 29 June through 4 July 1964, certain problems of epidemiology were discussed which were related to the problem of the reduction and liquidation of infectious diseases.

At the plenary meeting of the congress, I. I. Yelkin came forth with a report on the subject: "Tasks of epidemiology in connection with the problem of the reduction and liquidation of infectious diseases." The lecturer noted that the considerable successes attained in our country in the area of combating infectious diseases are explained by a well developed, advanced theory underlying all practical activities of Soviet public health care. The main mission of epidemiology is the study of the vast experience of anti-epidemiological work, making it possible to reveal particular regularities of infectious disease distribution under the conditions of a socialist society, and to equip public health workers with the knowledge for the successful reduction and liquidation of certain infectious diseases in the period of extensive building of communism.

The reporter emphasized that in combating infectious diseases, decisive importance is given to the strengthening of the national economy, the good organization of populated points, and also the cultural advance of the population. Together with these, in a modern situation there is importance in problems of organization and carrying out of measures for the prophylaxis of infectious diseases, in particular for the necessity of overcoming certain aspects of life in our country which further the intensification of the epidemic process. To a number of

such factors, the author attributes the exceptionally active migratory processes of the population, which are caused by the rapid growth of the national economy, measures for the development of new industrial and agricultural areas, and also the reviving of international communications and the fast rate of population shifting. Together with these, the sharp activation of contact between various groups of the population in cities and population points has vital importance. In modern conditions an especially important problem of scientific-research work is the clearing up of the role of children in the development of the epidemiological process.

It is important also to take up the study of reasons for seasonal rises of infectious incidence, since seasonal regularities remain, in respect to many infections, up to the present time, in spite of the fact that incidence is often expressed by isolated sporadic cases.

Besides the problems noted, the reporter considers it necessary to intensify scientific investigations in the area of a number of other problems, for example, a study of the periodicity of infectious incidence, a broadening of the circle of scientific investigations concerning epidemiological geography, etc.

The special attention of the congress was attracted to divisions of the report which were devoted to the treatment of problems of strategy and tactics for the prevention and liquidation of infectious diseases in the USSR. Professor I. I. Yelkin considers that under liquidation of infection there should be understood the eradication of specific illnesses and, consequently, the termination of the existence of the causative agent as a species on the given territory (oblasts, republics, states, groups of states). When using highly effective measures for the liquidation of infectious diseases, an influence on one link of the epidemiological process is sometimes sufficient. For example, the liquidation of leprosy is possible by means of strict quarantine of the diseased, liquidation of small pox is attained with the aid of the creation of collective immunity by organizations of preventive inoculations, etc.

Certain infectious diseases are liquidated by means of the simultaneous influence on two links of the epidemic process. Thus, exanthematous and recurrent typhus are liquidated due to the hospitalization of the diseased and the destruction of the carrier in the epidemic focus. The liquidation of malaria is accomplished with the aid of treatment of the diseased and destruction of the carrier.

Professor I. I. Yelkin, in his report, presented well-founded views concerning perspectives for the sharp reduction in our country of the incidence of dysentery, influenza, tularemia and certain naturally focal

diseases. As an example of these infections, it is possible to contemplate the real paths to the solution of the general problem of liquidation of infection in our country. In connection with this, in the reporter's opinion, the working out of problems of epidemiological prognosis is of vital importance. It is very important to foresee the development of the epidemic process with regard for all economic, domestic, and natural factors. Questions of methodology and methods of epidemiological prognosis should be developed and reflected in the plans of scientific-investigations and practical works.

Concerning definitions of the concept concerning epidemiological science, the lecturer declared that for the extent of many centuries epidemiology has arisen as a science concerning regularities of origin, distribution, and cessation of infectious diseases in human society, Soviet epidemiology is firmly built on this uniquely sound position, and there is no foundation whatever to change it. Of course, the method of epidemiology may be applied also to the study of other (including noncontagious) diseases.

The reporter subjected to criticism some principles of foreign epidemiology concerning introduction of the term "serological epidemiology", and the ecological opinions of Maxcy, Burnet and others, and also the erroneous statements of I. V. Davidovskiy in his works on the problem of infection.

The participants at the plenary session of the congress and at the meeting of the epidemiological section approvingly appraised the ideas stated by the lecturer.

The epidemiology section of the congress also heard and examined 20 reports devoted to epidemiology and prophylaxis of typhoid -- and paratyphoid infections, infectious hepatitis (Botkin's disease), diphtheria, and whooping cough.

Questions of epidemiology of typhoid and paratyphoid fever and problems of a sharp reduction of incidence with them were taken up in the report of V. A. Killeso (Central Scientific-Research Institute of Epidemiology, Ministry of Public Health, USSR). On the basis of the materials presented at the section, it was noted with satisfaction that in combating typhoid-paratyphoid diseases in our country, in a short historical period, considerable success was attained which confirms the effectiveness of a scientifically sound system of general sanitary, medical preventive, and antiepidemiological measures.

Together with this, the data referred to by the reporter shows that the occurrence of typhoid-paratyphoid infections is distributed irregularly

In various age groups. Attention is attracted to the high level of morbidity among children. It is a characteristic epidemiological peculiarity for separate areas of the country to have an outbreak of illness connected with the usage of open reservoir water. Less seldom recorded are diseases of typhoid and paratyphoid fever of alimentary origin, for example, cases connected with the use of milk. This was explained by B. F. Medzhidov (Vakinskiy IEM). An increase of the specific importance of paratyphoid fever (mainly paratyphoid fever B) was noted also in some areas.

In reports and speeches the question concerning the bacterial carrier of typhoid and paratyphoid fever was subjected to discussion; here it was established that till now the pathogenesis of this condition and causes of its formation are insufficiently studied, and also effective means are absent and methods of sanitation of chronic bacterial carriers are insufficiently developed. In I. N. Morgunov's (Kiev IEM) report, certain data of experimental investigations were introduced, making it possible to attribute the carriage of the typhoid bacillus to the infectious process, assuming a protracted latent form under the influence of compensators and immune reactions of an organism, established following the critical phase of this infection. In the reporter's opinion, the intracellular distribution of the causative agent inhibits the sterilizing action of immunity, due to the dynamic equilibrium established between the causative agent and the organism.

At the meeting of the section, detailed consideration was given to the question of the specific prophylaxis of typhoid -- paratyphoid infections. The principal materials on this question were introduced in Prof. M. P. Pokrovskiy's (Moscow IEM) report. The section noted that the problem of specific prophylaxis of typhoid continues to remain urgent and further research with the aim of the creation of low-reactogenic and highly effective vaccines is required. The development of new vaccine preparations and the cultivation of rational plans of immunization must be based on a careful study of the mechanism of immunity formation against the given infection. According to M. P. Pokrovskiy, at Moscow IEM a refined chemical preparation of Vi-antigen of the typhoid microbe was obtained. It is characterized by a weak toxicity and high immunogenicity. Observations on immunization of 3-6 year old children in complex epidemic conditions with the Vi-antigen preparation showed its comparatively high effectiveness.

In I. B. Kheyfets' report (Moscow Institute imeni I. I. Mechnikov) results were introduced of strictly controlled experiments devoted to the study of the immunological and epidemiological effectiveness of vaccines applied in practice against intestinal infections. The data obtained testifies to the highest effectiveness of heated corpuscular vaccine for two applications with an immunization interval of two years.

With the goal of a further reduction of typhoid and paratyphoid fever incidence, the section recommended an intensified study of the question of the bacterial carrier, its pathogenesis, methods of sanitation of carriers, and also the development of other preventive measures. Besides this, it is necessary to continue the construction of more effective, weakly reactogenic preparations for immunization against typhoid and paratyphoid fever.

The report by G. P. Nikolaevskiy and G. P. Stepanov (Ministry of Public Health, USSR and Moscow IEM), and also the reports by I. K. Musabayev (Tashkent IEM), Ye. A. Paktoris (Institute of Virology imeni D. I. Ivanovskiy) and L. I. Moteyunas (Vilnyuskiy IEM) were devoted to the problem of epidemic hepatitis (Botkin's disease).

The section noted that the epidemiology of Botkin's disease has been insufficiently studied. Up to the present time, specific laboratory diagnosis has not been developed and the path of spreading of the given infection has not been definitely determined. According to materials of I. K. Musabayev, in the Uzbek SSR some outbreaks of an aqueous origin were registered. Analysis of these outbreaks showed that the aqueous path of transmission plays a significant role in the origin and development of the epidemic process in populated points which are connected to the community of natural water supplies (irrigation ditches, turbine houses, springs).

A significant role in the spreading of epidemic hepatitis is played by convalescents discharged from hospitals, together with the fact that the duration of virus carrying ability has not been determined up to this time. Based on I. K. Musabayev's data, under conditions in Uzbekistan, the greatest infection of people occurs by the oral route (71.6%) and considerably less seldom by the parenteral route (28.4%).

At the section meeting, the question concerning the droplet method of infection in epidemic hepatitis received active discussion in the report presented by G. P. Stepanov. An overwhelming majority taking part in the discussion (I. I. Yelkin, I. I. Rogozin, L. V. Gromashevskiy, Yu. Ye. Birkovskiy and others) rejected the assertion concerning the droplet method of distribution of Botkin's disease as being the leading factor. As regards the parenteral mechanism of transmission of epidemic hepatitis, in the opinion of the majority of participants, further study is necessary. In Ye. A. Paktoris' and L. I. Moteyunas' reports, materials were set forth concerning the high effectiveness of various methods of gamma-globulin application.

The section recognized as necessary the conducting of further scientific investigations directed toward a search for the epidemic hepatitis causative agent and its carriage, and also toward the develop-

ment of a popular method of early diagnosis of icteric and non-icteric forms. The elucidation of the role and specific weight of individual factors and the method of transmission of infection, the study of the epidemiological effectiveness of the complex of prophylactic and antiepidemic measures in combating this infection are of great importance.

Eight reports at the section were dedicated to the question of diphtheria prophylaxis. These reports were advanced by M. I. Khazanov (TsNIIE, Ministry of Public Health, USSR), A. B. Aleksanyan (Yerevanskiy IEM), Yu. E. Birkovskiy (Kievskiy IEM), L. A. Favorova (IEM imeni Gamaleya), L. I. Kartushina (Tashkent Medical Institute), T. G. Filosofova (Kievskiy IEM) and M. P. Yevdokimova (TsNIIE, Ministry of Public Health, USSR).

On the basis of materials presented in reports and discussions, the section recognized that the primary features of the epidemic process during diphtheria change under the influence of measures conducted, among which specific prophylaxis has decisive importance.

According to M. I. Hazanov's data, the problem of diphtheria liquidation may be solved in three stages: 1st stage -- the reduction of diphtheria incidence to the level of individual sporadic cases; 2nd stage -- the liquidation of morbidity under conditions of systematic support of the optimum level of collective immunity among the population of children; 3rd stage -- the liquidation of diphtheria as a nosological form on the territory of our country, which is connected with the eradication of the diphtheria causative agent as a biological form.

M. I. Hazanov reported that the stated mission in the first stage -- the attainment of the level of sporadic incidence -- has been successfully realized in that period which was stipulated by the plan of the Ministry of Public Health, USSR, in 1959. At the present time the level of sporadic incidence has been reached in 11 of the 15 Union Republics. An important result of the work conducted is the achievement of the optimum level of collective immunity of the children's population, during which a radical influence on the epidemiological process is realized and conditions created which impede its origin and development. Of course, immunization combines with other measures, constructing a system for combating diphtheria.

Reporters and participants in the discussions recognized that perspectives of a further reduction and liquidation of incidence in the country is connected with the further improvement of all practices for combating diphtheria, especially in the village. The presence of deficiencies in medical-prophylactic work in the countryside is reflected



in significantly higher indices of morbidity and lethality than in cities. However, according to data of a number of participants (Yu. Ye. Birkovskiy), in certain localities the diphtheria lethality rates shown were overestimated owing to a certain shortcoming in connection with difficulties of their full exposure among a prevailing number of pulmonary atypical forms of disease.

There was definite interest in reports by L. A. Favorova and T. G. Filosofova, which were dedicated to the problem of bacterial carriage in diphtheria. Investigations conducted showed that the distribution among the children's population of causative agents of diphtheria, Hofmann's bacillus, and atypical microbes, similar to them, is found in direct relation on the conditions of the epidemic situation, number of illnesses, and the closeness and duration of contact. In the opinion of T. G. Filosofova, the atypical forms of diphtheria bacilli are the result of the influence of the immune organism on the causative agent.

At the meeting of the section, the question concerning "healthy" carriage in diphtheria was subjected to active discussion. The mass inspections conducted of various children's institutions showed that for the carriage process, the condition of the organism is not indifferent, since "healthy" carriage is considerably more often detected in children during the reduction of the general tone of the organism. It is characteristic that the ability of the carriers to transfer infection in the collective does not depend on the degree of toxigenicity of the bacteria which is discharged by these people. From carriers, giving off weak toxigenic and nontoxigenic cultures, no less a number of infections was observed than from carriers of highly toxigenic cultures (L. A. Favorova).

Most widely discussed at the section was the question concerning the carriage of diphtheria bacilli by patients with angina. The section recognized that the presence in patients of angina symptoms and the simultaneous isolation of diphtheria bacilli obliges them to give a diagnosis of diphtheria.

M. P. Yevdokimova reported materials concerning antidiphtheria immunization of old people and substantiated the rational schemes of immunization depending on the preparations applied.

For ensuring further success in the liquidation of diphtheria, the section recommended further investigations concerning the study of bacterial carriage, and also a continuation of studies on the mutability of diphtheria microbes under conditions of circulation in an immune collective.

Problems of epidemiology of pertussis prophylaxis were dealt with in reports of M. S. Zakharova (IEM imeni Gamaleya), N. N. Sklyarova (IEM imeni Pastera) and B. L. Palant (Kharkovskiy Medical Institute).

M. S. Zakharova reported that at the present time the wide scope of vaccination with pertussoid and associated vaccines with a pertussoid component has considerably changed the basic epidemiological regularities in pertussis distribution. In the USSR, for 5 years (1959-1963), more than 18 million children were vaccinated against pertussis. Owing to this, pertussis incidence in the country was sharply reduced. The greatest reduction of incidence, from 3-5<sup>1</sup>/<sub>2</sub> times, took place in the Estonian, Moldavian and Latvian SSRs and the Russian Federation. Vaccination furthered the reduction of morbidity in children's installations (day nurseries and kindergartens). It is characteristic that until the vaccine administration in children's pre-school age institutions, as a rule, the incidence was 2--2<sup>1</sup>/<sub>2</sub> times higher than among children found in domestic conditions; after the same administration of vaccine, the incidence in children's institutions became considerably lower.

M. S. Zakharova mentioned also that in connection with vaccination, in a considerable number of cases pertussis in those inoculated had a light course. Lethal results for this infection for the last 2 years were recorded only among nonvaccinated children, and in a number of republics and cities there were generally no lethal cases.

The section agreed with the reporter's opinion that the mission of a sharp reduction of pertussis incidence in the country at the present has been realized and may be realized in the entire country in the next 3--4 years. The solution of the given mission is considerably facilitated by the output of a new preparation which was proposed by IEM imeni Gamaleya, ----adsorbed KDS vaccine, which is less reactogenic and based on effectiveness, equivalent to earlier preparations.

During the last few years, much attention has been attracted to the question concerning the role of the para-pertussoid microbe. In connection with this, the timely diagnosis of pertussis with the required differentiation of causative agents (pertussoid and para-pertussoid microbes) is an important mission. Simultaneously with this, it is important to study the epidemiology of para-pertussoid infection and to develop corresponding prophylactic measures. B. L. Palant's report concerning para-pertussis among children who had the disease before and who had been immunized against pertussis attracted the attention of the section. The section decided for the further strengthening of scientific investigations in the field of diagnostics, epidemiology, and immunoprophylaxis of pertussis and para-pertussis.

At the plenary meeting of the congress a report by Prof. V. I. Vashkov on the subject "Disinfection and its role in the system of measures for the liquidation and reduction of infectious diseases" was heard and discussed.

Further effort by the disinfection service, in the reporter's opinion, should be directed in the first place to the attainment of maximum epidemiological effectiveness of disinfection measures. With this aim, the wide application in practical disinfection of laboratory and other forms of quality control and effectiveness of disinfection measures is very important.

In recent years significant successes have been attained in the area of finding new means of disinfection and rodent control, and also in the construction of new models of mechanized apparatuses, improving and facilitating work on disinfection and disinfestation.

Considering the great importance of disinfection, disinfestation, and rodent control in the general complex of prophylactic and antiepidemiological measures, the congress recognized the necessity to continue to strengthen and develop disinfection affairs in the country and also to expand, in every possible way, scientific-investigative work in this field.