Ascertaining the causes of mass death tribesmen care of our ancestors. First, the term "etiology» (aitiology) meets Democritus (born around 470 years, died about 380 years before the N. È), the founder of causal thinking. Ancient the scientists looked for a materialist explanation of the causes of epidemics. Hippocrates and other ancient doctors considered causes of epidemics inhalation of air containing pathogenic miasma.

Concepts such as an epidemic, epidemic origin and spread of the disease in the past were understood by ancient authors as clinically similar diseases people in a particular area, caused by air containing miasma brought home from contaminated sites or vapor rising from the ground. It formed miasmatic view of the nature of epidemics and lasted for nearly 1,700 years. However, during the «black death», when a plague often not flowed to the usual bubonic form, and in the lung, doctors have a suspicion « stickiness contamination», i.e. about the possibility of transmission of infectious origin between people. So was born the causal teaching of the nature of epidemics.

Miasmatic and causal saw the different manifestations of the epidemic process (see table 1)

### Table 1

<table>
<thead>
<tr>
<th>Epidemiology</th>
<th>Causal</th>
<th>Miasmatic</th>
</tr>
</thead>
<tbody>
<tr>
<td>The cause of disease</td>
<td>Plague poison</td>
<td>Plague poison</td>
</tr>
<tr>
<td>Place of origin and development</td>
<td>Human body</td>
<td>Soil</td>
</tr>
<tr>
<td>As perceived by the body</td>
<td>Through the skin</td>
<td>Through the lungs</td>
</tr>
<tr>
<td>As it is informed surrounding objects</td>
<td>Sticks</td>
<td>Is absorbed with air</td>
</tr>
<tr>
<td>Does infect healthy people</td>
<td>Infect</td>
<td>Infect</td>
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</tbody>
</table>
Thanks to the discovery of pathogens of many infectious diseases (currently there are about 1500 infections with known pathogens) managed to clarify the mechanisms of infectious processes, to understand the reasons contributing to the spread of epidemics and develop a strategy to combat them. Introduction in medical practice principles of asepsis and antisepsis, observation, dissociation of patients and quarantine measures and that followed this, the development of medical methods of treatment and prevention, including the use of antibacterial and antiviral medicines, anatoxins, therapeutic immune serums and gamma-globulins and vaccines were found to be very effective. It made it possible already in the late twentieth century to consider the problem of infectious diseases as resolved, not requiring further basic scientific research in Infectology.

However, already in the middle of the 19th century, scientists and doctors are faced not only with the emergence of new pathogens of infectious diseases, but with the fact of non-compliance with these pathogens rules prescribed in these most textbooks and manuals. For these infectious processes characteristic: the other speaker and regularity of development. Unfortunately, the number of such cases has increased and today some pathology embraced the whole world and reached the level of epidemics and pandemics (herpes and HIV, the incidence of viral hepatitis and other). Analysis of the biological characteristics of agents of infectious diseases identified a number of strategies (differences) in their ability to be realized in the body.

*The first strategy.* It can be attributed to the pathogens that cause disease with a short incubation period and short clinic, culminating in recovery, or death (diphtheria, shigellosis,
anthrax, Legionnaires’ disease, pseudotuberculosis and others). These diseases had limited by
the duration of the infection process the host immune system.

*The second strategy.* Microorganisms are confined to the duration of life of the owner,
have the second strategy of parasitism. Features of these microorganisms: the presence of
hematogenous and sexual modes of transmission, the ability to spread at a low population
density, the ability to "escape" from the immune response, etc. However, the main feature of
these agents: the inability of the immune system to fight infection, but gradually its destruction.

*The third strategy.* Causatives of new infectious diseases have sex and hereditary
mechanism of spread of the disease; the incubation period would be much higher than that of
HIV; somatic and hereditary pathology will not be accepted for infectious diseases. This could
result in depopulation and destruction of species.

The first who drew attention to the changed nature of the infectious process it, was a
Russian scientist M.V. Supotniskiy and marked them as a cyclical, asyclic and multicomponent
asyclic infectious processes. Cyclicality, in understanding of infection process, is nothing but
getting pathogen into the organism and then, regardless of time period, the exression of reaction,
similarity of events (relapses) and their amount, the key event comes which is the excretion of
the pathogen out of the organism.

Cyclicality is clearly expressed in such diseases as cholera, anthrax, salmonellosis,
shigellosis, pseudotuberculosis, diphteria, scarlet fever, measles, smallpox, typhus etc.

The fundamental difference between acyclic infectious process, which is caused by these
pathogens, and the cyclic one lies in the fact that in the first case, when the clinical recovery
occurs, causative agents don’t leave the organism and, inspite of the high antibody titers, the are
inaccessible to them both territorially and because of the change of antigenic structure. Among
better examied causative agents, viruses of herpes, rubella, HIV, infectious hepatitis; bacteria of syphilis, listeriosis, tuberculosis; protozoa, toxoplasmosis; chlamydia and fungi are singled out.

Multicomponent asyclic infectious processes. This is a manifestation of acyclic process in the human body, along with the passage of the main infectious process, parallel to it, but under the specific mechanisms, develop other infectious processes caused by other viruses, bacteria, protozoa, fungi. An example of such a process is HIV/AIDS.

Circumstances affecting the development of a course of infectious process.

1. Biological features of pathogenes and their evolutionary relationship with the cells of the human organism, first of all, the immune system, their genomes.

2. Polymorphism of genes. Division of cells of the immune system of the human body does not go perfectly. If during the replication of chromosomes will be affected nucleotides in the gene responsible for immune responses (for example, the function of phagocytosis is responsible NRAMP1 gene), this would lead to inadequate immune response to the infection that is manifested not only more severe course of the disease, but may end in death of the infected patient.

3. Absence of selective pressure of infection on the human population.


The phenomenon of immunological imprinting was first describes by Fransis, 1953. Its essens lies in the fact that each antigen represent several epitopes, so if it gets into the organism, chemical heterogenous antibodies, which differ in their specificity, are formed. But if clonality of antigen is limited, the antigens induce immune responses which have little difference. While the collision with another antigen which have structural similarity with the first one, the immune system responds by the synthesis of antibodies not to the second but to the first antigen. This
phenomenon is observed when it is flu, leptospirosis, malaria, HIV — infection, Dengue fever, enteroviral infection.

The essence of another phenomenon — antibody-dependent infection intensification — lies in the fact that virus-specific antibodies are bind to the virus and by means of interaction with the receptors, which are on the surface, intensify its penetration into the phagocytic cells and in some other cases — its replication. This phenomenon is the characteristic of the agents of HIV, Ebola and Marburg fevers, hepatitis, measles, yellow fever etc.

Consideration course of infectious processes, depending on the pathogens causing the cyclic and acyclic development of infectious processes, today dictate the number of postulates and practical recommendations.

1. Use of stimulants and modulators of the immune system in diseases caused by microorganisms, professing the second strategy of parasitism (ie acyclic causing infectious process) is unfounded. As the stimulation of T-and B-cell constituting of the immune system does not contribute to the blocking of infection and can lead to the development of lymphoma (for example EBV infection).

2. Prophylactic vaccinations should be made taking into account the existing in child may point mutations affecting the nucleotides responsible for immunity.

3. The treatment of infectious patients and conducting preventive vaccination in healthy children should take into account known immunological phenomena.