

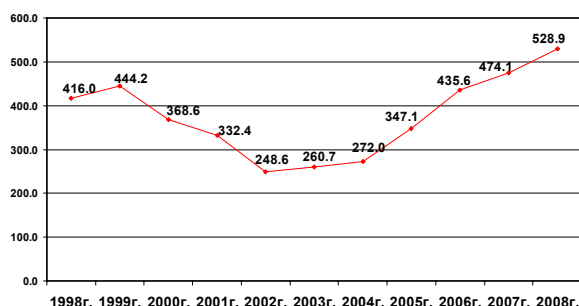
Policy Brief #25

Investigation of Enteric Infection Causes of Unknown Etiology

This policy brief describes results of the research that investigated causes and impact of growing enteric infections of unknown etiology.

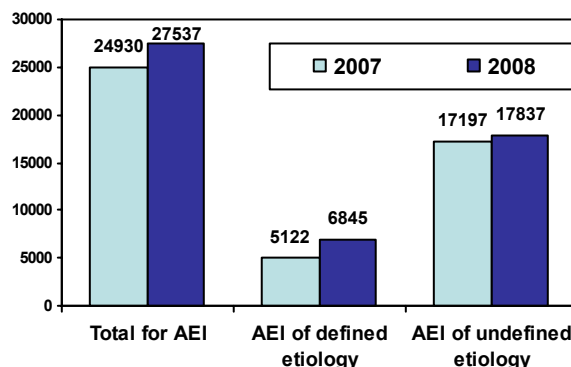
Acute enteric infections (AEI) has a share of 34,6% in the structure of communicable diseases of Kyrgyzstan in 2008, and have the highest proportion among all communicable diseases. Analysis of AEI prevalence data for the recent 10 years (1998 – 2008) shows that average enteric infection prevalence remains permanently high reaching the level of 260,7 (2003) to 528,9 (2008) per 100 thousand people at some years (Figure 1). And the growth of AEI of unknown etiology was increased in 2,2 times from 152,2 in 2004 up to 347,1 in 2008 per 100.000 people.

AEI Prevalence Trend and Dynamics
(The Kyrgyz Republic, 1998-2008 per 100 thousands people)



The highest share in enteric infections falls on enteronitis of unknown etiology. Apart of improvement in etiologic interpretation, the prevalence of AEI of unknown etiology remains high. Since 2008, the type of etiological agent was established only in 24,8% of all AEI cases, and in remaining - 64, 7 % cases the type of etiological agent was not identified and they were diagnosed as AEI of unknown etiology (see fig).

AEI Proportion, the Kyrgyz Republic, 2007 – 2008



Research Findings

Results of Doctors' Survey

Interview with family doctors of FMC have shown that physicians very often prescribe antimicrobial drugs since they are not quite sure that the patients or parents of sick children shall comply to prescriptions (drinking water, keeping a diet), and they prescribe antimicrobial drugs without indications just in order to avoid complications. If one of indications for hospital admission is detected, a patient shall be urgently hospitalized.

In those cases, when parents of sick children are not willing to have their children hospitalized, a family physician submits an urgent report to local SSES, and this patient does not have bacteriologic lab tests, no interpretation of etiological structure is done and physicians make a diagnosis 'enteritis of unknown etiology'.

Fragments of Interviews with Physicians:

«...I always prescribe cephalosporins, even in mild cases in children, however I don't point this out in medical records....»

(Osh city, Family Doctor, FGP)

'If I prescribe ampicillin to one child, a mother usually gives the same antibiotic to a second child, in case he/she gets sick, and they usually come to see a doctor in a complicated condition'

(Uzgen district, FGP Family Physician)

Results of Outpatient Medical Files Review with AEI Diagnosis at the Primary Care Level

- very often patients with diarrhea were taking antimicrobial drugs without physician's prescription (20%);
- more than a half of the reviewed cases (52%) went through ORP (oral rehydration point), where they received recommendations on how to prepare rehydration powders;
- only in 5% of all reviewed cases bacteriological tests were performed before prescribing antibiotics;
- family physicians prescribed antimicrobial drugs to patients with AEI without prior lab tests in 43% of all cases;
- 15% of patients that received treatment at the outpatient level had complications and recrudescence and were hospitalized;
- in 12,5% of cases parents of sick children refused from hospitalization and have their children treated at home, and expedited report was submitted without lab tests and without interpretation of etiological structure, and they have a diagnosis 'AEI of unknown etiology';
- in 45% of cases patients with AEI received antibiotics (ampicillin, cefazolin, ceftriaxone, etc) without prior bacteriologic tests;
- patients have been more often referred to a hospital, even if they don't have indications for hospital admission;
- doctors often do not follow clinical protocols, in many cases they prescribe cephalosporins to patients in outpatient setting.

Results of Inpatient Medical Cards

- patients with AEI before admission to a hospital often receive antimicrobial therapy at home without a physician's prescription, or in FMC, which influence bacteriological isolation rate. These patients receive a negative test result in relation to pathogen presence and therefore these patients have a diagnosis of AEI of unknown etiology: 25% of patients admitted to the hospital used to receive antimicrobial treatment in FMC and 20% of patients admitted to a hospital used to receive antimicrobial drugs at home without physicians prescription;
- in all reviewed cases, hospital patients with AEI had bacteriological tests for presence of a pathogenic microbe;
- only in two oblasts physicians on communicable diseases referred their patients to have their tests done to determine susceptibility to antibiotics in order to prescribe the treatment: in Bishkek in 100% of all cases doctors were testing susceptibility to antibiotics, in Uzgen district antibiotics susceptibility was tested only in 10% of all reviewed cases, and in remaining areas these tests were not done.

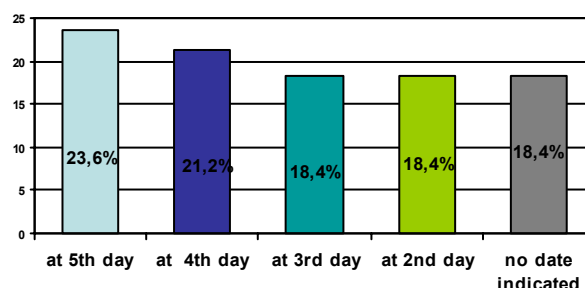
Analysis of Bacteriological Laboratories Performance

All surveyed laboratories have to get a permission of the Republican Regimen Commission for functioning and handling pathogenic biological agents. Labs perform bacteriological tests, related to screening and diagnostics of communicable diseases, interpretation of etiology of communicable diseases, conduct sanitary-bacteriologic tests in order to identify the ways and factors for transmission of infections.

Hospital nurses deliver AEI patients' samples to the laboratory using a special transport medium. Evidence-based indications to conduct bacteriological tests and correctly taken samples from patients are very important factors for receiving the most accurate test results.

According to methodology for performing bacteriological tests, tests' results for the presence of pathogenic agent can be plated only after 5 days, and in exceptional cases at the third day. However, the analysis shows that only in 23,6% of the reviewed cases, the test results were ready and given to patients on the 5th day, and in 36,8% of cases the results of bacteriological test were given on the second or the third day (see fig). These facts indicate that the required sequences of the test methodology have not been followed, and as a result, isolation of etiological landscape is simply not possible. Besides that, it was identified during the survey that some facilities use physiological saline solution at sampling and bacteriological tests as a basis for transportation medium, instead of enrichment medium, which also influence the validity of bacteriological tests results.

Timeframe for Issuing Results of Etiological Interpretation of Tests of AEI Patients (n=40)



Examination of laboratory practice of performing bacteriological tests and examination of reporting forms has identified that:

- often work of bacteriologists aimed at identification of opportunistic pathogenic microflora, laboratories don't spend time for detecting other pathogenic agents, and do not always identify cultures of microorganisms;
- incorrect choice of the preservatives at sampling patients for tests and transportation provides a significant impact on test results;

- it was identified during this research that some laboratories use expired diagnosticums and mediums;
- labs don't use a differentiated approach to testing practice, since some cases were reported on non-justified tests for enteric infections for patients with different diagnosis.

Key Findings

Research findings prove that acute enteric infections of unspecified etiology is the main problem of the health sector in the Kyrgyz Republic, and the system of effective monitoring of these diseases is required:

- The fact that AEI have not been frequently biologically proved is related to use of antibiotics without prior bacteriological tests;
- MOH regulations do not have a clear definition of cases that need antimicrobial therapy, bacteriological tests, and registration of patients refused to be hospitalized, when the system of epidemiological surveillance, treatment and examination of patients with acute enteric infection is introduced;
- Patients have not been tested on susceptibility to a certain antibiotic prior to prescribing antimicrobial therapy;
- Incorrect choice of the preservatives provides a significant impact on test results when taking samples from AEI patients and transporting them to laboratory;
- Identification of microorganism culture has not been carried out, and in 22,5% of cases the test results have been provided already on the second day;
- Appropriate sequences of testing methodology have not been followed and working life of reagents and medium in laboratories has not been taken into account;
- Viral tests for decoding the true etiological origin of AEI have not been carried out.

Recommendations

- Comprehensive introduction of viral tests of AEI of unspecified etiology is needed;
- To revise and improve the system of AEI registration and AEI reporting forms for outpatient settings;
- To enhance public education activities related to AEI risks, first signs of these diseases, and on importance of timely reference to health care;
- To build capacity of lab service in diagnostics and output of their diagnostic tests. Training coverage has to be expanded for specialists and regular monitoring of lab tests quality and compliance of bacteriologists to regulatory documents has to be conducted;

- To build capacity of health care organizations in AEI diagnostics (training of lab professionals, introduction of rapid testing of water contamination, etc.);
- To revise regulatory documents related to AEI patients treatment (MOH orders, clinical protocols).

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