

## **Clinical, anamnestic and diagnostic aspects of COVID-19 in children**

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Annotation. We examined 95 hospitalized children diagnosed with COVID-19. It was found, that asthenic syndrome and fever prevailed in clinical symptoms. Moderate ARVI prevailed among the clinical forms of the disease.

Keywords: children, COVID-19, viral pneumonia, clinical variants.

The new coronavirus infection in children is accompanied by a milder clinical course than in adults [1, 4, 8, 10]. Pneumonia and acute respiratory distress syndrome develop in children less often than in adults [2, 5, 9]. However, against the background of comorbid pathology, children may develop severe forms of the disease and death [3, 6, 7].

For 4 months, the Emergency Hospital functioned as an infectious diseases hospital, which included 7 adults and 1 children's infectious diseases departments. In total, 95 children with COVID-19 were treated during this period. Children were referred for treatment in connection with a suspicion of a new coronavirus infection. The hospitalization of children was carried out according to the approved indications.

According to the age structure, children of school age prevailed 36 (37.9%), a third were children of early age 26 (27.4%), children of preschool age - 16 (16.8%) and adolescents - 17 (17.9%) were less likely to fall ill (Fig. 1).

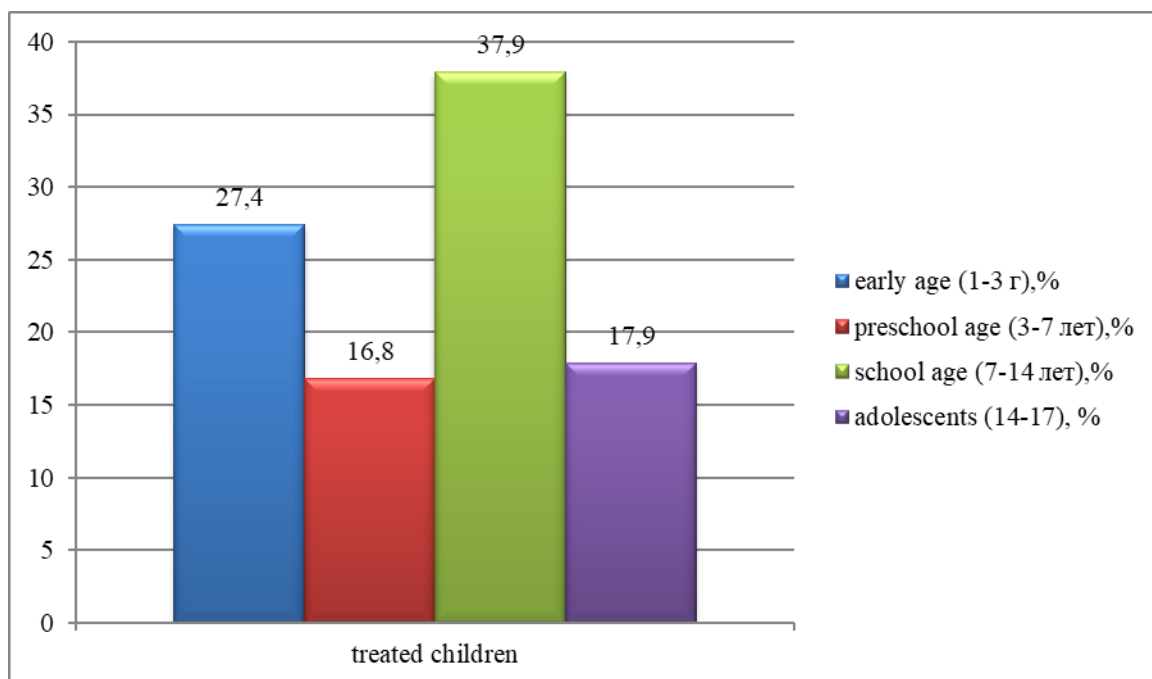


Fig. 1. Age structure of patients of the children's infectious diseases department.

By gender, boys slightly prevailed - 53 (55.8%), girls accounted for 42 (44.2%) (Fig. 2).

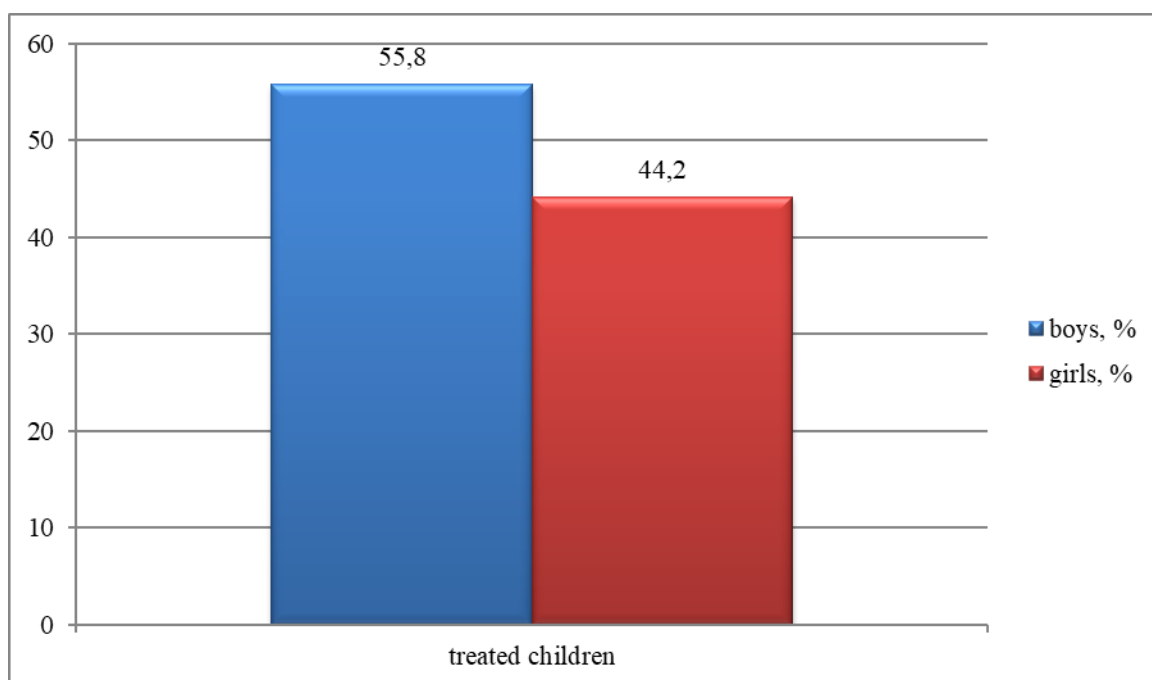


Fig. 2. Gender structure of patients of the children's infectious diseases department.

According to the epidemiological history, in 86 (90.5%) children, close family contact was established as a source of infection, and in 9 (9.5%) children, the source of infection was not identified.

The predominant clinical symptoms in children were asthenic syndrome - in 91 (95.8%) children, fever - in 88 (92.6%) children, cough - in 74 (77.9%) children, dyspnea was less common - in 34 (35.8%), headache - 22 (23.1%), diarrhea - 13 (13.7%), sore throat - 12 (12.6%), nausea, vomiting - 10 (10.5%) %, abdominal pain - 4 (4.2%) (Fig. 3).

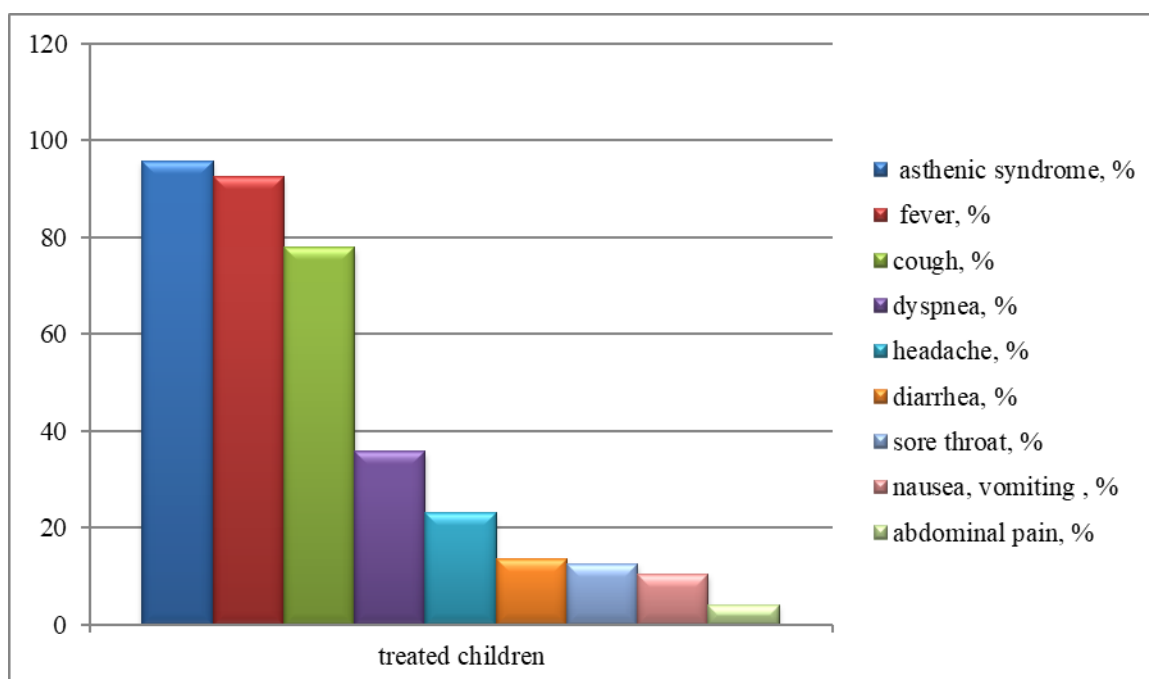


Fig. 3. Clinical symptoms in patients of the children's infectious diseases department.

Among the comorbidities in 12 (12.6%) children had evidence of iron deficiency anemia, in 7 (7.4%) children with vegetative dystonia, 6 (6.3%), hematologic disorders (acute lymphoblastic leukemia), 3 (3.2%) children - obesity, 3 (3.2%) - diabetes mellitus, 2 (2.1%) - cancer (sarcoma), 2 (2.1%) - mental illness (autism).

Out of 95 children, the new coronavirus infection was confirmed by PCR test in 60 (63.2%) children, in 35 (36.8%) children, the diagnosis was established by ELISA results (PCR test was not confirmed) (Fig. 4).

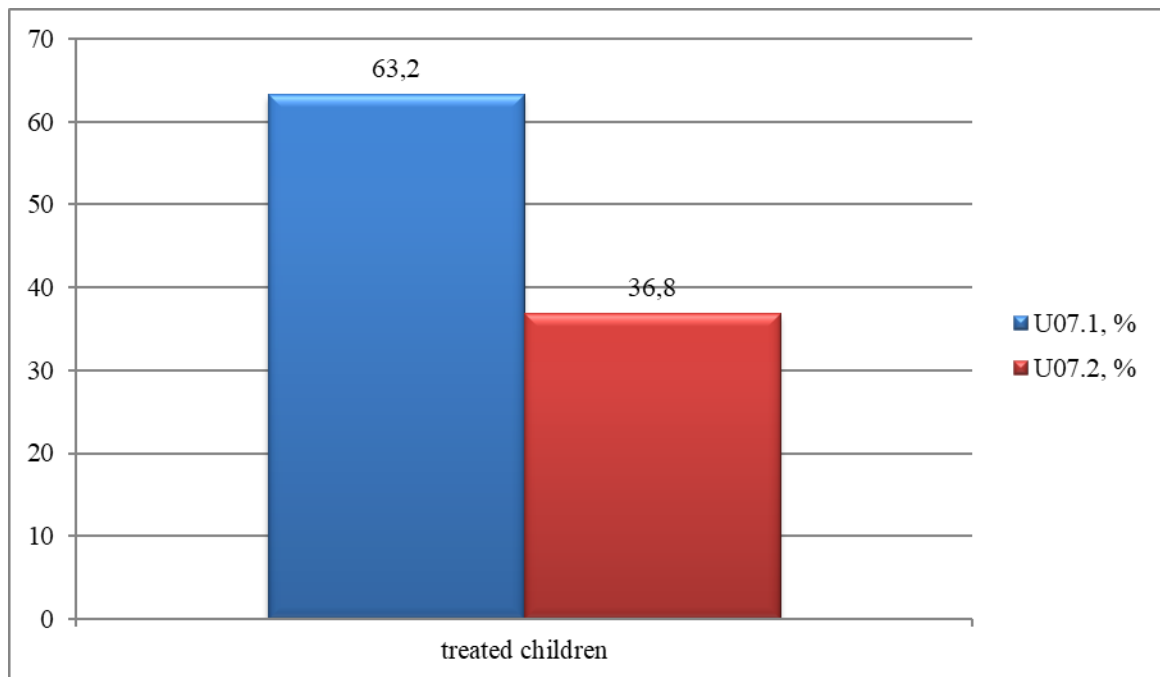


Fig. 4. The structure of the main diagnosis in patients of the pediatric infectious diseases department.

According to modern requirements, physical examination of patients included:

- Evaluation of the visible mucous membranes of the upper respiratory tract;
- Auscultation and percussion of the lungs;
- Palpation of lymph nodes;
- Examination of the abdominal organs with the determination of the size of the liver and spleen;
- Thermometry;
- Assessment of the level of consciousness;
- Measurement of heart rate, blood pressure, respiratory rate;
- Pulse oximetry with SpO<sub>2</sub> measurement to detect respiratory failure and assess the severity of hypoxemia.

All children underwent computed tomography of the chest organs. According to the examination results, in most children, the infection proceeded without damage to the lung tissue - CT-0 (in 36 (37.9%). In children with pneumonia, the area of lung tissue damage in the majority of children was CT-1 (in 33 (34, 7%)), less often there were more extensive lung lesions: CT-2 in 14 (14.7%), CT-3 in 7 (7.4%) children and CT-4 in 5 (5.3%) children (Fig. 5).

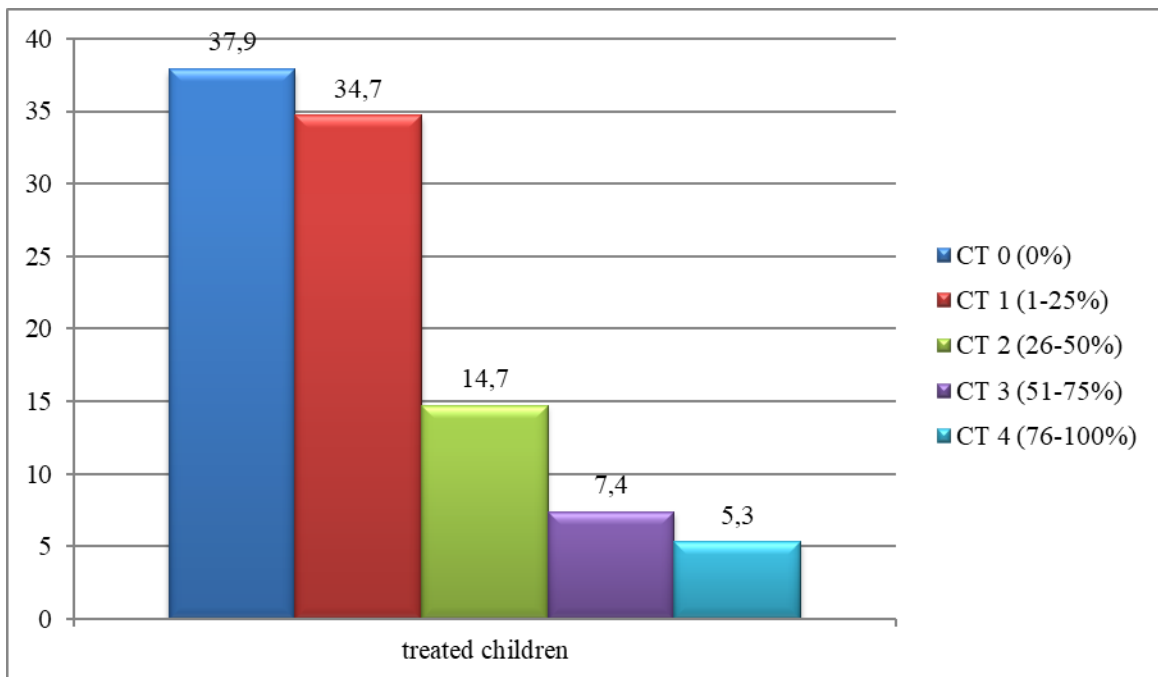


Fig. 5. The structure of the area of lesion of the lung tissue in patients of the pediatric infectious diseases department.

According to clinical forms, the largest proportion was children with ARVI-36 (37.9%), pneumonia without respiratory failure was noted in 25 (26.3%), pneumonia with signs of respiratory failure was in 32 (33.7%) children, the most severe the course of infection was observed in 2 (2.1%) children with signs of ARDS (Fig. 6).

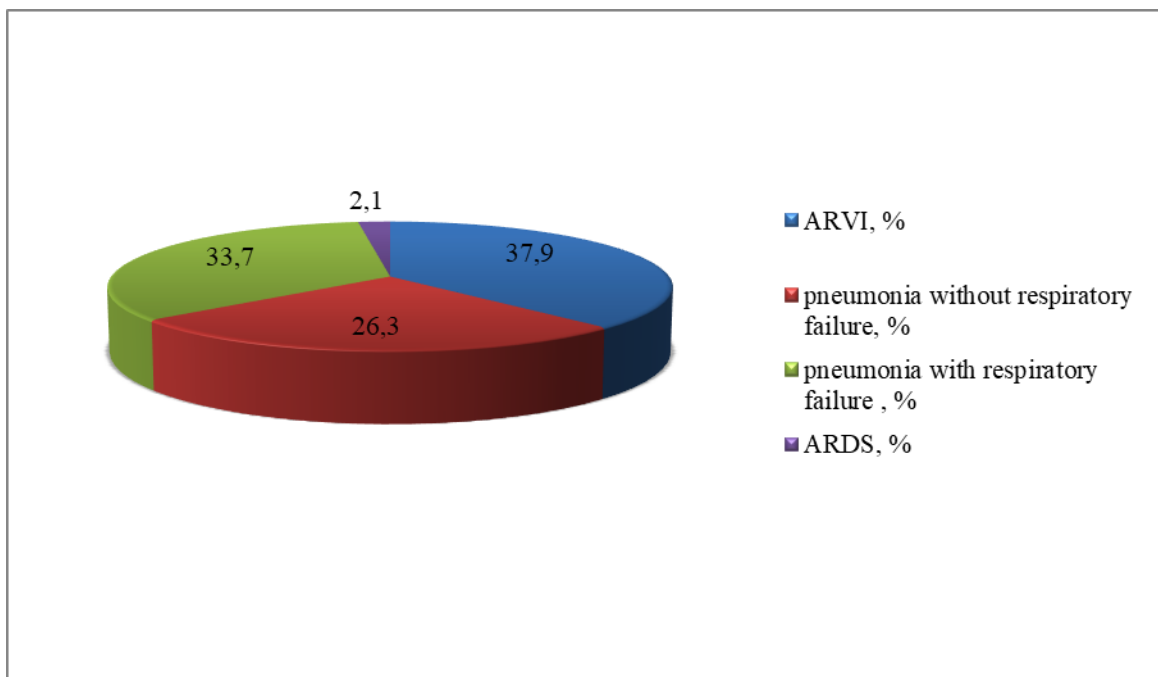


Fig. 6. Structure by clinical forms of COVID-19 in patients of the children's infectious diseases department.

In terms of severity, 78 (82.1%) children with a moderate course of infection prevailed, a severe course was noted in 17 (17.9%) children. Unfortunately, 2 (2.1%) children died. Both children had severe comorbidities (Acute Lymphoblastic Leukemia) (Fig. 7).

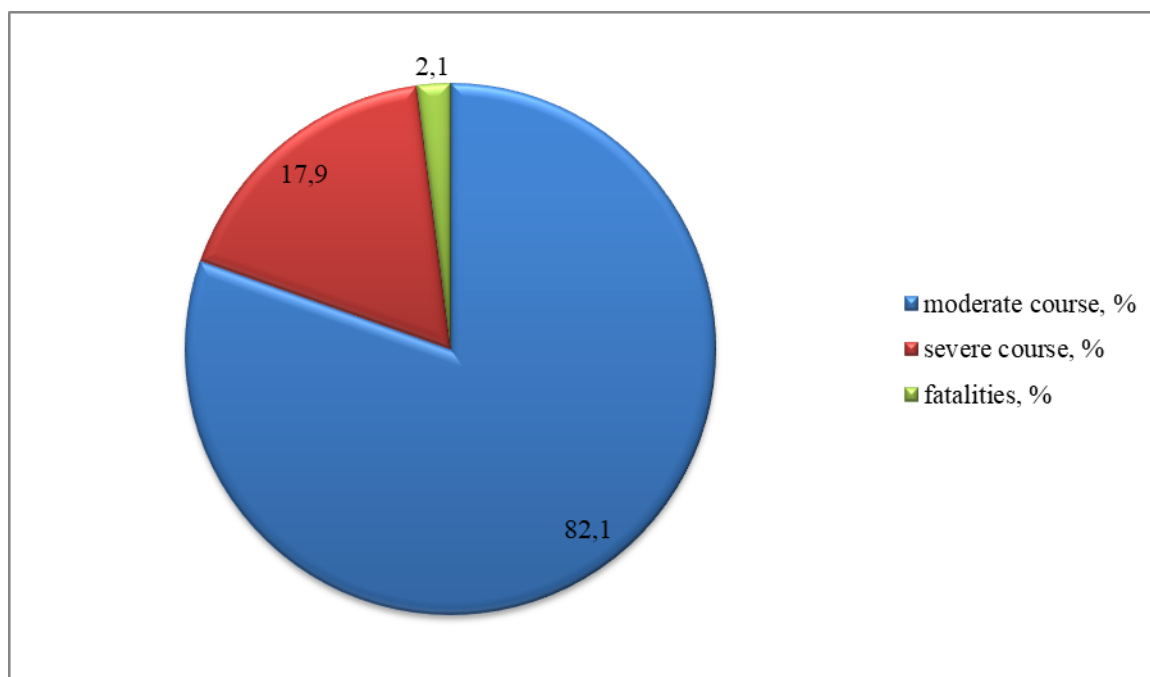


Fig. 7. Distribution by severity in patients of the pediatric infectious diseases department.

The treatment of children was carried out according to the Methodological Recommendations [1, 5]. All children were prescribed antiviral therapy: drugs of recombinant interferon alfa-2b intranasal/ rectal or oral umifenovir 95 (100%), symptomatic therapy - antipyretic drugs 95 (100%). According to indications, children were prescribed antibiotic therapy (increased markers of inflammation - leukocytosis, increased ESR, increased CRP, increased procalcitonin) - in 88 (93%) cases. Also, according to indications, anticoagulant therapy was prescribed (under the control of a coagulogram, the level of D-dimers) - in 79 (83%) cases (Fig. 8).

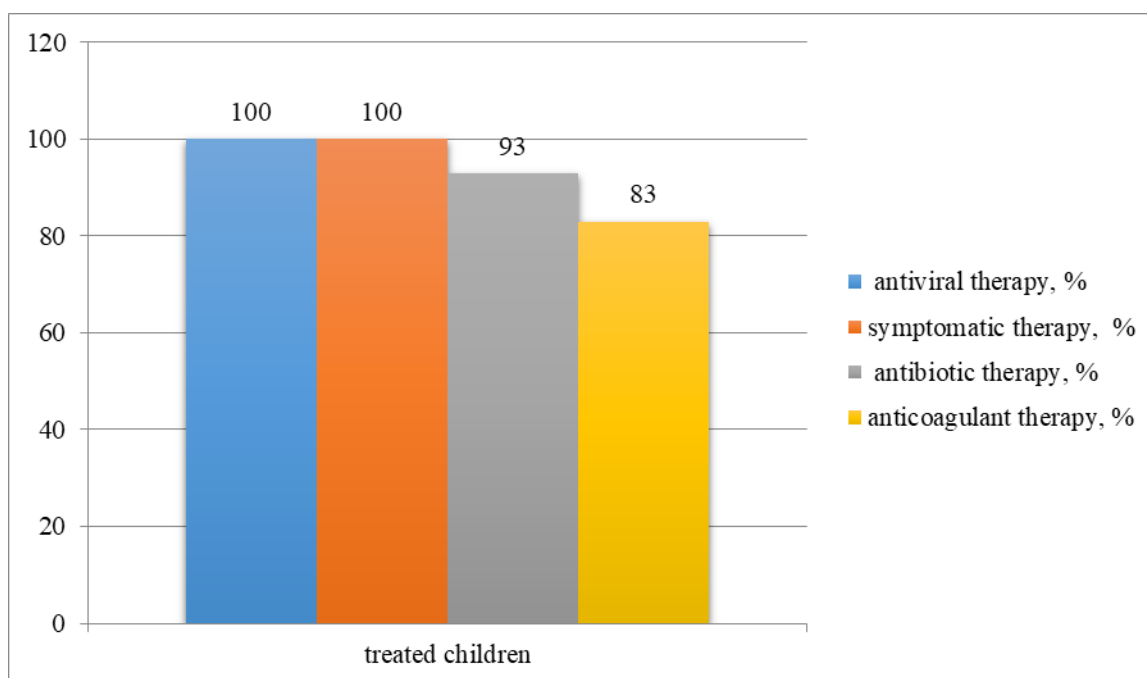


Fig. 8 The structure of drugs used in patients of the pediatric infectious diseases department.

### Conclusions:

1. School-age boys predominated in the structure of patients in the children's infectious diseases department.
2. The predominant clinical symptoms in children were asthenic syndrome (95.8%) and fever (92.6%).
3. Among the concomitant diseases in children prevailed iron deficiency anemia and vegetative dystonia.
4. According to the examination results, the majority of children had infection without damage to the lung tissue (37.9%) and with minimal damage to the lung parenchyma (34.7%).
5. In terms of clinical forms, the largest proportion of patients with COVID-19 were children with ARVI (37.9%) with a moderate course of the disease (82.1%).

### Bibliography:

1. Guidelines: Prevention, diagnosis and treatment of new coronavirus infection (COVID-19). Version 10 (02/08/2021). Access point: [https://static-0.minzdrav.gov.ru/system/attachments/attaches/000/054/662/original/%D0%92%D1%80%D0%B5%D0%BC%D0%B5%D0%BD%D0%BD%D1%8B%D0%B5\\_%D0%9C%D0%A0\\_COVID-19\\_%28v.10%29.pdf](https://static-0.minzdrav.gov.ru/system/attachments/attaches/000/054/662/original/%D0%92%D1%80%D0%B5%D0%BC%D0%B5%D0%BD%D0%BD%D1%8B%D0%B5_%D0%9C%D0%A0_COVID-19_%28v.10%29.pdf) (date of access 04.05.2021).

2. Gorelov A.V. Coronavirus infection COVID-19 in children in the Russian Federation / A.V. Gorelov, S.V. Nikolaeva, V.G. Akimkin // Infectious diseases .- 2020.- T. 18.- No. 3.- P.15-20.
3. Differential diagnosis of pneumonia in children with oncohematological diseases in the setting of a new coronavirus infection COVID-19 / T.T. Valiev, E.V. Zakharova, O.A. Ignatenko [et al.] // Russian Journal of Pediatric Hematology and Oncology.- 2020.- T.7.- No. 3.- P. 104-111.
4. Coronavirus infection in children / N.A. Geppe, O.I. Afanasyeva, A.L. Zaplatnikov, E.G. Kondyurin // Questions of practical pediatrics.- 2020.- T.15.- №5.- P. 73-86.
5. Guidelines: Features of the clinical manifestations and treatment of the disease caused by a new coronavirus infection (COVID-19) in children. Version 2 (07/03/2020). Access point: [https://static-0.minzdrav.gov.ru/system/attachments/attaches/000/050/914/original/03062020\\_%D0%B4%D0%B5%D1%82%D0%B8\\_COVID-19\\_v2 .pdf](https://static-0.minzdrav.gov.ru/system/attachments/attaches/000/050/914/original/03062020_%D0%B4%D0%B5%D1%82%D0%B8_COVID-19_v2.pdf) (date of access 05.04.2021).
6. Namazova-Baranova L.S. Coronavirus infection in children (as of February 2020) / L.S. Namazova-Baranova, A.A. Baranov// Pediatric Pharmacology.- 2020.- T.17.- No. 1.- P.7-11.
7. New coronavirus infection (COVID-19) in children with acute lymphoblastic leukemia / D.I. Sadykova, V.A. Anokhin, A.I. Ziatdinov [et al.]// Russian Bulletin of Perinatology and Pediatrics.- 2020.- T.65.- No. 5.- P.198-203.
8. Clinical characteristics of COVID-19 in children. A systematic review/ J.Yasuhara, T. Kuno, H.Takagi, N.Sumitomo// Pediatr Pulmonol.- 2020.- Vol. 55(10).- P. 2565-2575.
9. Coronavirus disease 2019 (COVID-19) in children and/or adolescents: a meta-analysis/ A. Mantovani, E. Rinaldi, C. Zusi [et al.]// Pediatr Res.- 2021.- Vol. 89(4).- P. 733-737.
10. COVID-19 in children: analysis of the first pandemic peak in England/ S.N. Ladhani, Z. Amin-Chowdhury, H.G. Davies [et al.]// Arch Dis Child.- 2020.- Vol. 105(12). P. 1180-1185.