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**ANALYSIS OF THE PREVALENCE AND APPROACHES TO THE
TREATMENT OF ENT DISEASES IN CERTAIN COUNTRIES OF THE
EUROPEAN AND ASIAN REGIONS**

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Abstract. An analysis of the incidence of ENT diseases in some countries of Europe and Asia. In particular, comparable approaches to conducting systematic research in Poland and Thailand on the analysis of requests for primary care, the order and validity of the appointment of antibiotics. The approaches of using the general ideas of the region to reduce the incidence and increase the effectiveness of treatment in comparison with our own long-term research and consistent achievement of the result of reducing the unjustified (excessive) use of antibiotics are analyzed.

Keywords: health care management, ENT pathology in children, antibiotic resistance, foreign experience, Poland, Thailand, health care providers.

Introductions. ENT disease is the main reason for seeking primary care in any country in the world and for patients of all ages. The great economic burden for countries with different income levels forces us to analyze health care systems, national programs to reduce the impact of these diseases on society and medical practice. In our field of vision are countries from different continents, and with

different approaches to solving the problem of respiratory diseases. In particular, Australia, Macedonia [1], Poland [2], Thailand [3], Malaysia [4], India [5], Laos [6]. Each of these countries faces the same problem of antibiotic resistance, which arises from the excessive use of antibiotics.

It is clear that humanity can not refuse to take antibiotics at all. Despite a significant reduction in mortality from infectious diseases in the era of antibiotics, 10.6% of deaths in the world in 2015 were caused by diarrhea, tuberculosis and lower respiratory tract infections [7]. In children under 5 years of age, 51.8% of deaths were associated with infections, including 14.8% (2013) of pneumonia [8]. However, their excessive use may make them ineffective in the coming decades, because the rate at which scientists are finding new antimicrobials is less than the growth of resistance. In addition, antibiotics sometimes cause unwanted side effects that may not be considered in cases of self-medication or insufficient qualification of physicians. Therefore, physicians in any country are faced with the task of prescribing antibiotics carefully, in accordance with medical guidelines, and not guided by the desire to insure themselves against possible deterioration of the patient, or under pressure from a patient who requires an antibiotic. Rational use of antibiotics, including in the presence of ENT pathology in children, reduces the risk of serious complications, disability and mortality.

In addition to the similar problems faced by health care providers when dealing with children with ENT diseases, there are also differences between countries depending on the level of income of citizens, climatic living conditions, the degree of urbanization, the chosen system of management and financing of health care. effectiveness of legislation, projects and initiatives of the authorities and international organizations to address the high level of ENT diseases, low efficiency of treatment, low satisfaction of parents (guardians) of children with ENT diseases.

The aim of the work follows from the need to analyze the experience of the countries concerned in streamlining the appointment of antibiotics in the presence of respiratory infections in children, reducing morbidity and improving treatment outcomes. The study solves the problem of comparing the causes of ENT diseases in

children and adults in some countries of Europe and Asia, methods of studying morbidity, risk factors, approaches to the organization of medical care. Determine the relationship between the persuasiveness of the results and the strength of the evidence depending on the design of the study (in particular, the sample size, the chosen methods of statistical evaluation).

Materials and methods. The materials of the study are scientific publications of Pubmed and the World Health Organization. The research method is bibliosemantic. The following abbreviations are used in the work:

- ENT diseases – diseases of the ear, nose and throat;
- ARVI – an acute respiratory viral infection.

For comparison, two countries with average incomes were selected: in the European region – Poland, in Southeast Asia – Thailand. In turn, according to some indicators, Thailand compared to Malaysia, India and Laos, Poland – to Macedonia, Norway and the Netherlands.

Results and discussion. The number of doctor visits for ENT diseases in children is directly related to the number of antibiotics that children take. Kuchar E. et al. (2015) report [2] that in Poland, the most common human diseases, including infants and children, are respiratory infections (colds, acute tonsillitis, acute rhinosinusitis, acute otitis media, influenza-like diseases, acute bronchitis and pneumonia) with a typical list of symptoms (sneezing, coughing, nasal congestion and discharge, sore throat, fever, headache and malaise). 30-50% of all cases are caused by rhinovirus, for which there are more than 100 serotypes. 10-15% of cases are caused by coronavirus, 5-15% – by influenza virus. Adults have a cold 2-5 times a year, infants and schoolchildren – 7-10 cases a year. Chronic diseases (asthma, cystic fibrosis, chronic bronchitis) usually go away on their own for up to 10 days.

In a minority of cases, exacerbations of chronic diseases and complications such as sinusitis, otitis media, nosebleeds, etc. are possible. However, the common cold is often accompanied by acute rhinosinusitis. Most respiratory infections are seasonal with the main peak incidence from January to March. Medical care for children with such diseases is provided by a pediatrician or general practitioners (GP

or family physicians). The vast majority of diagnoses are established on the basis of complaints and clinical manifestations, without additional laboratory and instrumental examination. Many parents are aware of these issues and treat their children on their own, but the number of calls for primary care still remains high. The number of antibiotics prescribed by Polish doctors is excessive (about 60%). The largest number of antibiotics (90.7% of 100 cases of medical treatment) in the group of children in Wroclaw, which was analyzed by researchers, was prescribed for acute tonsillitis [Kruskal-Wallis $\chi^2=170.3527$; $df=6$; $p < 0.0001$], for bronchitis – 67.5%, otitis media – 65.9%, pneumonia – 60.9%, laryngitis – 22.2%, sinusitis – 12.5%. The number of antibiotics in the presence of ARVI correlated with the number of visits to the primary care physician [$r=0.52$; $p < 0.0001$].

There is also a direct strong reliable correlation between the age of patients and the number of visits to the physicians for ARVI: the older the children, the less often they visited the physicians with their parents. Researchers attribute this fact to older children's non-attendance at kindergarten, as well as to the level of parental anxiety about a child's illness, which is highest for young children. Polish recommendations for the treatment of respiratory infections are based mainly on international data. The obtained own data are similar to the data of similar studies in Norway and the Netherlands. The number of visits to primary care physicians for respiratory infections in Poland is 25-40% of all requests for medical care. Researchers believe that reducing the unjustified prescriptions of antibiotics for ARVI may reduce the rate of doctor visits to a shorter interval (25%). Researchers also link the possibility of improving the situation with additional education of physicians and parents (guardians) of sick children.

In Thailand, respiratory infections are the leading cause of hospitalization and death in children under 5 years of age. Therefore, the immediate appointment of antibiotics is vital. But it should be borne in mind that the increase in antibiotic use in the world by 39% for the period 2000-2015 is mainly due to low- and middle-income countries. In 2010, 19,122 deaths from antibiotic-resistant infections were recorded in Thailand [9].

Thailand's efforts to address this problem include the Antibiotic Smart Use program, which began in 2007 and limited the main reasons for prescribing antibiotics for upper respiratory tract infections, acute diarrhea, and simple wounds. The program was to reduce antibiotic consumption to 20% in 2021. Antibiotics in Thailand can be purchased both with a doctor's prescription and without a prescription. Prescribing antibiotics for respiratory infections is recommended according to the criteria of Centor, according to which, for example, first-line drugs for the treatment of acute tonsillitis are amoxicillin and clavulanic acid. A feature is the tradition of prescribing antibiotics by nurses, who often examine patients on their own, without the participation of a doctor. There is also an emphasis on clinical guidelines that is lacking in many other countries: patients with a body temperature above $+37.5^{\circ}\text{C}$ are prescribed a C-reactive protein assay.

It should be noted that the Thai health care system employs public (state) and private providers. Primary care is mainly provided by state providers. There are many more private clinics in big cities. State family medicine institutions provide traditional medical services, preventive services (vaccinations, cervical screening, sanitation) and dental services [10].

The program is aimed simultaneously at all existing health care providers in the country. At the first stage of its implementation of the reasonable use of antibiotics in Thailand managed to reduce the use of antibiotics in the presence of acute diarrhea, simple wounds and ARVI to 39-46%, at the second (2012) – to 25.4% [11].

At the same time, the use of antibiotics in the presence of diseases of these three categories was included in state insurance plans. However, researchers still state excessive use of antibiotics at the following levels: 10.5% for common colds (3,643 prescriptions), 88.7% – for acute pharyngitis, 87.1% – for acute tonsillitis, 66.9% – for gastroenteritis and colitis. Despite the availability of antibacterial eye drops, a systemic antibiotic was prescribed in 15.7% of cases of conjunctivitis. Along with the unwarranted use of too broad-spectrum antibiotics, less than 1% of prescribed antibiotics were found to be effective against typhus, which is the leading cause of hospitalization with acute undifferentiated fever in the study area.

Analysis Greer R.C. et al. (2018) more than 80,000 cases of primary care in 32 departments of public hospitals in Northern Thailand for 2 years [3] determined the frequency of antibiotics – 46.9% (97,230 visits, which corresponded to 83,661 episodes of the disease and 39,242 cases of antibiotics; whites recorded 13,569 repeat visits in 1 month). 77.9% of requests for medical care were related to respiratory problems. Of these, 98.6% were upper respiratory tract infections. According to the diagnoses, these cases were distributed as follows: common cold (50%) with antibiotics in 10.5% of all cases, acute pharyngitis (18.9% and 88.7%, respectively) and acute tonsillitis (5% and 87.1%, respectively). Among the antibiotics most often prescribed Amoxicillin (56.7%). The frequency of administration of other white antibiotics is distributed as follows: Dicloxacillin (25.1%), Norfloxacin (8.9%), Co-trimoxazole (4.2%), Penicillin V (1.2%), Roxithromycin (1.2%), Metronidazole (1.2%), Erythromycin (0.7%), Cephalexin (0.4%), Tetracycline (0.2%).

It should be noted that in addition to the most common ENT pathology, the reasons for prescribing antibiotics were also diseases of the genitourinary system (cystitis) and digestive system (gastroenteritis). Children aged 0–4 years were prescribed antibiotics in one third of cases (33.8%). Children from 12 years and adults up to 39 years - twice as often (55.9%). Adults aged 40 years and older and the elderly (up to 65 years) were prescribed antibiotics for the same reasons in 41% of cases. In the adjusted multifactor logistic regression analysis such indications for the appointment of antibiotics as male [R=1.21; 95% CI 1.16÷1.28; p<0.001], patients aged 12 years and older [R=1.77; 95% CI 1.57÷2; p<0.001] and have a temperature above +37.5 C (R=1.24; 95% CI 1.03÷1.48; p=0.02) [3].

This level of antibiotic administration was similar to that in a similar study in Malaysia [4], but more than twice as high as in similar studies in India [5] and Laos [6]. The use of antibiotics in Thailand for pharyngitis and tonsillitis is excessive, given the level of confirmed beta-hemolytic streptococcus in patients with ARVI in the range of 3.8–7.9%.

Conclusions. Comparison of the countries of the European and Asian regions with the average income level revealed a similar epidemiological picture: the main

reasons for the treatment of the population, including children, are ENT diseases, and among them – respiratory tract infections (cold, acute tonsillitis, acute rhinosinusitis, acute otitis media, influenza-like diseases, acute bronchitis and pneumonia).

The analysis of ENT diseases in children in Poland is carried out infrequently, in small groups of patients, and clinical guidelines are based on a pan-European understanding of the problem. Analysis of the Pubmed database did not reveal much research. At the same time, a two-year study was completed in Thailand in 2018, which covered more than 80,000 cases of primary care. The obtained statistics have a high level of reliability and are similar to similar large studies in other countries in the Asian region.

Of particular note is the Antibiotic Smart Use program, which began in Thailand in 2007 and aims to address antibiotic resistance by streamlining antibiotic prescribing, monitoring, and educating both physicians and population. By 2021, the share program has achieved its goals of reducing antibiotic use.

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