LOW ADHERENCE TO TREATMENT - A PROBLEM IN THE MANAGEMENT AND CONTROL OF BRONCHIAL ASTHMA

Keunimjay Mambetniyazov

Scientific reasearcher of the Republican Specialized Scientific and Practical Medical Center of Phthisiology and Pulmonology named after Sh.A. Alimov, Assistant of the Department of Allergology, Clinical immunology and Nursing, Tashkent Medical Academy, Tashkent, Uzbekistan, E-mail: keunimjaymambetniyazov@gmail.com

ABSTRACT

In order to study the adherence to treatment of patients with bronchial asthma (BA), a questionnairefor the quantitative assessment of adherence to treatment (COP 25) was used, which made it possible to evaluate the indicators of "importance" and "readiness" for the componentsof "drug therapy", "medical support" and "lifestyle modification", which in patients with BA turned out to below, ranging from 42% to 68% of the maximum possible level.

According to the results of our own study, the level of adherence to drug therapy in 100% of BA patients is low, amounting to only 20.9%, which means that patients will not or most likely will not follow medical recommendations and actions based on them. The level of adherence to medical support in 24% of patients with asthma had an average level (above 50%, but less than 75%), which determined that medical recommendations and actions based on them would be carried out by patients more likely than not, and 76% of patients had a low level commitment to medical support. The level of adherence to lifestyle modification in 4% of patients had an average level and in 96% - a low level. The indicator of integral adherence to treatment in 100% of patients had a low adherence level of less than 50%, amounting to only 29%, characterizing that medical recommendations and actions based on them will not be followed by patients or most likely will not be.

Comparative characteristics of the factors that determine the low level of adherence of asthma patients to medical treatmentprograms, medical support and lifestyle modification do not provide statistically significant differences in study cohort groups with non-modifiable barriers, including gender, age, education, social status, disease duration and severity obstructive disorders.

Increasing adherence to treatment provides a higher patient-oriented efficiency in the provision of medical care to patients, which will contribute to improving the quality and life expectancy of patients and to a large extent determine the outcome oftherapy and control of a chronic disease.

Key words: importance, readiness and adherence to drug therapy, importance, readiness and adherence to medical support, importance, readiness and adherence to lifestyle modification, indicator of integral adherence to treatment.

INTRODUCTION

Bronchial asthma (BA) is currently one of the most common chronic diseases, affecting about 300 million people worldwide [GINA, 2019], defining a significant medical and social burden for the health care system of nations [Liverko I.V., 2024].

Paracelsus' dictum defined that "three things form medicine: the disease, the patient and the physician. Any medical art will be in vain if the patient does not co-operate with his physician". The problem of compliance or conscientious adherence to the prescriptions and recommendations of the doctor during therapeutic, and especially preventive, measures today also remains relevant and requires serious consideration in any branch of medicine.

Adherence to treatment refers to the degree to which a patient's behaviour is consistent with the recommendations received from a physician regarding medication, diet, lifestyle changes and attendance [WHO, 2003]. Adherence is considered to be an important therapeutic component in many diseases because it is a factor influencing the effectiveness of therapy, treatment costs, risk of complications and prognosis. Each year, 125,000 patients with various diseases die due to the consequences of low compliance, according to US health professionals. About 10% of all cases of hospitalisation are associated with non-compliance with the prescriptions of the attending physician [Binhas E., 1999]. Lack of adherence to therapy in patients with chronic diseases reaches 50% and higher [Lukina Y.V. et al., 2017; Cowell W. et al., 2005; Chowdhury R. et al., 2013]. The issue of adherence is particularly acute in patients with BA, a leading chronic bronchobstructive pathology that requires lifelong use of inhaled medications constantly or as needed depending on the severity of the disease. According to the data of a cohort study of 69 thousand participants, up to 20% of BA patients had primary non-adherence [Wu A.C. et al., 2015], among patients with BA receiving inhaled glucocorticosteroids (IGCS), adherence to treatment was on the side of 47-57% [Wiesel A.A. et al., 2019; Normansell R., et al., 2017]. Low adherence in BA means insufficient use of baseline drugs and, on the contrary, excessive use of fast-acting drugs - short-acting beta-2-agonists (SABA) [Nenasheva N.M., 2014]. Along with drug therapy, BA patients are given recommendations related to their behaviour and lifestyle: smoking cessation, adequate physical activity, improving the environment of home and work, daily peak floumetry, monitoring their body weight, etc., non-compliance with which also serves as a manifestation of non-adherence to the doctor's recommendations [George M., 2018].

Low adherence to treatment is one of the reasons for poor control of BA and high risk of exacerbations, as well as the impact on the emotional state, ability to

perform physical activities, social adaptation of the patient [Nenasheva N.M., 2014; Urek M.C. et al., 2005; Tudorić N. et al., 2005; Mishra R. et al., 2017].

Predicting poor adherence is difficult because there is no typical non-adherent patient and poor adherence is usually due to multiple factors, particularly patient characteristics and external factors unrelated to the patient [McQuaid E.L., 2018]. It should be remembered that poor adherence to treatment is a norm of human behaviour rather than a personal characteristic. Patients may simply be unaware that they are poorly adhering to prescribed medication recommendations, especially when it comes to multiple intakes within a day [Lahdenpera T.S. et al., 2003]. Patient-related factors are low general or health literacy; lack of knowledge about the disease and its treatment; distrust of prescriptions; giving the child autonomy in treatment; cognitive impairment; beliefs about the treatment or disease that contradict the medical model; lack of motivation; forgetfulness [George M.,2018].

Improving adherence to treatment should be primarily based on the study of factors associated with adherence, allowing the identification of patients at risk of low adherence to treatment, to ensure greater patient-centred efficiency in the delivery of patient care, which will contribute to improving the quality and length of life of patients and largely determines the outcome of therapy and control of chronic disease.

Purpose of the study: to investigate the components of treatment adherence in patients with bronchial asthma within the framework of strengthening disease control management.

MATERIAL AND METHODS OF THE REASERCH

The study was carried out in the pulmonology department of RSNPMCFIP MH RUz by means of a comprehensive clinical and functional examination and adherence questionnaire of 50 patients with bronchial asthma (GINA, 2019). The mean age of the questionnaire subjects was 59.6 years, women - 27 (54%) and men - 23 (46%). Fifty bronchial asthma (BA) patients participated in the questionnaire, out of which 14(28.0%) had moderate and 35(70.0%) had severe course. The disease history was 12.6 years, with a frequency of exacerbations up to 4-5 times per year and exacerbations requiring hospitalization up to 2-3 times per year. The duration of use of inhalation therapy, on average, was 8 years, where 56% used metered aerosol inhalers and 24% powder inhalers.

Table 1 presents the medical and social parameters of the patients included in the questionnaire, where sex, age, social status, education, disease history, frequency of exacerbations and hospitalizations, history of inhaler use and its types were taken into account.

Table 1

Medical and social characteristics of patients, (n=50)

Parameters		N	±m
Age, years		50	59,6±1,7
Gender,%	Men	23	46,0±7,0
	Women	27	54,0±7,0
Social status,%	Pensioner	16	32,0±6,6
	Disabled person	32	64,0±6,8
	Clerk	1	2,0±2,0
	Temporarily unemployed	1	2,0±2,0
Education,%	Higher	8	16,0±5,2
	Secondary	32	64,0±6,8
	Secondary school	10	20,0±5,6
Marital status, %	Living in a family	50	100
Length of illness, years		50	12,6±1,2
Disease stage,%	II	1	2,0±2,0
	III	14	28,0±6,3
	IV	35	70,0±6,5
Frequency of exacerbations per year, times		50	4,3±0,3
Number of exacerbations requiring hospitalisation per year, times		50	2,7±0,2
Duration of inhalation therapy, years			8,0±1,0
Type of use inhalation products delivery,%	Dose aerosolized	28	56,0±7,0
	Powder	12	24,0±6,0
	Easy breathing devices	4	8,0±3,8
	Nebulizer	2	4,0±2,8
	Don't use inhalers	4	8,0±3,8

To assess adherence, we used the Quantitative Assessment of Adherence to Treatment Questionnaire (QAT 25), which includes 25 questions with answer options in points: from 1 ("absolutely not important", "very difficult" and "I will never do it") to 6 ("very important", "absolutely not difficult", "I will definitely do it") points (Nikolaev N.A. et al., 2018). The questionnaire allows calculating the indicators: "importance of drug therapy", "importance of medical support", "importance of lifestyle modification" and "readiness to drug therapy", "readiness to medical support", "readiness to modify the lifestyle modification". Each indicator is a simple sum of scores obtained by answering the corresponding questions, thus, the minimum possible value of each indicator is 5 points and the maximum possible value is 30 points.

The indicators "adherence to drug therapy", "adherence to medical support", and "adherence to lifestyle modification" were calculated according to the formula: PP=1 ÷ (30÷iv)2×(60÷ig)x 100, where PP adherence indicator;

iv - indicator of importance;

ig - readiness indicator, expressed as a percentage of the theoretically possible and taken as 100%.

The indicator of integral adherence to treatment was calculated according to the formula:

PIP= (Pplt + 2Pms + 3Pmozh)÷6, where PIP is an indicator of integral adherence; Pplt - adherence to drug therapy; Pms - adherence to medical support; Pmozh - adherence to lifestyle modification. Statistical analysis of the results was performed with the help of Microsoft Office Excel-2003 and Statistica 6.0 statistical software package using standard methods of descriptive statistics.

RESULTS AND DISCUSSION

Analysis of the situational characteristics of the survey, presented in Table 2, showed that for the vast majority of BA patients it is difficult to fulfil recommendations such as: taking a medicine to be taken every day for many years (72%); taking a medication that should be taken several times a day for many years (98%); taking several medications that should be taken every day for many years (100%); every day for many years to note the existing manifestations of the disease (94%); because of the disease to change the usual way of life (88%); to tolerate unpleasant sensations because of taking medications (92%); to go to the restriction of the usual life, active recreation and entertainment (98%). Also the results of the survey noted that the majority of patients will not accurately fulfil the recommendations: to take a medicine that should be taken every day for many years (78%); to take a medicine that should be taken several times a day for many years (98.0); to take several medicines that should be taken every day for many

years (100%); to note the existing manifestations of the disease every day for many years (100%); to take prescribed medicines that cause unpleasant sensations (74.0%); to change the habitual way of life due to the disease (80%). The data of the survey of BA patients with chronic disease showed that it is important for them: to know what signs the disease manifests (90%); not to feel the manifestation of the disease (98%); to receive or confirm the disability group (96%); to know the results of all analyses (96%).

There is a marked dissonance in BA patients in realising the importance of doctor's recommendations with complexity and willingness to follow/ or implement these recommendations.

The indicators "importance of drug therapy", "importance of medical support", "importance of lifestyle modification" and "readiness for drug therapy", "readiness for medical support", "readiness for lifestyle modification", representing a simple sum of points obtained by answering the corresponding questions, thus had the minimum possible value of each indicator up to 5 points, and the maximum possible value up to 30 points.

Table 2

Situational characterisation of adherence assessments in patients with bronchial asthma

№	Situation	Frequency of grades (from 1 to 6 points),%	
1	Your doctor has diagnosed you with a chronic disease. Is it important for you to know the symptoms?	Not important (1-3 points)	Important (4-6 points)
		5 (10,0)	45 (90,0)
2	Your doctor has prescribed a medicine for you to take every day for many years. How difficult is it for you to comply with this recommendation?	Difficult (1-3 points)	Uncomplicated (4-6 points)
		36 (72,0)	14(28,0)
3	Your doctor has prescribed a medicine that you need to take several times a day for many years. How difficult is it for you to follow this recommendation?	Difficult (1-3 points)	Uncomplicated (4-6 points)
		49(98,0)	1(2,0)
4	Your doctor has prescribed several	Difficult	Uncomplicated

	medicines for you to take every day for many years. How difficult for you to comply with this recommendation?	(1-3 points)	(4-6 points)
		50 (100,0)	-
5	Your doctor has suggested that you note your symptoms every day for many years. How difficult is it for you to fulfil this recommendation?	Difficult (1-3 points)	Uncomplicated (4-6 points)
		47 (94,0)	3(6,0)
6	Chronic illness has its manifestations. How important is it for you not to feel these manifestations?	Not important (1-3 points)	Important (4-6 points)
		1(2,0)	49 (98,0)
7	A chronic illness forces you to change your lifestyle. How difficult is this change for you?	Difficult (1-3 points)	Uncomplicated (4-6 points)
		44 (88,0)	6 (12,0)
8	Chronic illness forces you to change your usual diet. How difficult is this change for you?	Difficult (1-3 points)	Uncomplicated (4-6 points)
		13 (26,0)	37(74,0)
9	Chronic illness can lead to disability. How important is it for you to receive or confirm a disability group disability group?	Not important (1-3 points)	Important (4-6 points)
		2 (4,0)	48 (96,0)
10	Chronic disease can change the way your internal organs and tests work. How important is it for you to know your test results?	Not important (1-3 points)	Important (4-6 points)
		2(4,0)	48(96,0)
11	Chronic illness leads to the need to see a doctor regularly. How difficult is this medical supervision for you?	Difficult (1-3 points)	Uncomplicated (4-6 points)
		13 (26,0)	37 (74,0)
12	Taking medicines can be uncomfortable.	Difficult	Uncomplicated

	How difficult would it be for you to tolerate these feelings?	(1-3 points)	(4-6 points)
		46 (92,0)	4(8,0)
13	A chronic illness can limit your usual life, leisure activities and entertainment. How difficult is it for you to make such restrictions?	Difficult (1-3 points)	Uncomplicated (4-6 points)
		49 (98,0)	1(2,0)
14	A doctor has prescribed a medicine to be taken every day for many years. Will you follow this recommendation exactly?	I won't (1-3 points)	Boudou (4-6 points)
		39(78,0)	11(22,0)
15	A doctor has prescribed a medicine to be taken several times a day for many years. Will you follow this recommendation exactly?	I won't (1-3 points)	Boudou (4-6 points)
		49(98,0)	1(2,0)
16	A doctor has prescribed several medicines to be taken every day for many years. Will you follow this recommendation exactly?	I won't (1-3 points)	Boudou (4-6 points)
		50 (100,0)	-
17	The doctor has suggested that you note your symptoms every day for many years. Will you follow this recommendation exactly?	I won't (1-3 points)	Boudou (4-6 points)
		50 (100,0)	-
18	The doctor has told you that prescribed medicines may cause discomfort, including the discomfort you are already experiencing. Will you take these medicines?	I won't (1-3 points)	Boudou (4-6 points)
		37(74,0)	13(26,0)
19	The doctor has told you that you need to change your lifestyle because of your illness. Will you follow this recommendation exactly?	I won't (1-3 points)	Boudou (4-6 points)
		40(80,0)	10(20,0)
20	Your doctor has told you that you need to change your diet because of your illness.	I won't (1-3 points)	Boudou (4-6 points)

	Will you follow this recommendation exactly?	19(38,0)	31(62,0)
21	The doctor has told you that due to your illness you need to come to regular appointments. Will you follow this recommendation exactly?	I won't (1-3 points)	Boudou (4-6 points)
		1(2,0)	49(98,0)
22	The doctor has told you that you need to have regular tests because of your illness. Will you follow this recommendation exactly?	I won't (1-3 points)	Boudou (4-6 points)
		2(4,0)	48(96,0)

The results of the study showed that these indicators, in general, in the cohort of BA patients, had low scores, where the importance of "drug therapy" -14.2 points, "to medical support" - 20.3 points, "lifestyle modification" - 18 points, the readiness of "drug therapy" -12.6 points, "to medical support" - 17.0 points, "lifestyle modification" - 18.1 points, which was from 42% to 68% of the maximum possible value (Table 3).

Analysing the indicators of importance of drug therapy and readiness to follow it, which averaged 14.2 and 12.6 points respectively in AD patients, it was noted that in cohort groups - among patients aged 40-60 years and people with secondary education - they were below the average value by 0.9 times. The importance of medical support and readiness for it (20.3 and 17.0 points, respectively) in BA patients below the average value were noted in cohort groups: pensioners (19.4 and 16.2 points) and persons with the number of hospitalisations once a year (19.0 and 16.2 points, respectively). Indicators of importance of lifestyle modification and willingness to modify (18.0 and 18.1 points) below the mean value were noted among BA patients under 40 years of age (16.0 and 17.3 points, respectively), women - (17.4 and 17.2 points), pensioners (17.2 and 17.2 points) and persons with the number of hospitalisations once a year (17.0 and 16.8 points).

Table 3

Characterisation of indicators of importance and readiness for action of commitment in different cohort groups bronchial asthma patients

Factors		n	Importance, score						Readiness for, score					
			Drug Therapy		Medical medical support		Modifications lifestyle		Drug Therapy		Medical medical support		Modifications lifestyle	
			M±m	and/isr	M±m	and/isr	M±m	and/isr	M±m	and/isr	M±m	and/isr	M±m	and/isr
Age	Up to 40 years old	3	14,3±2,1	1,0	20,3±1,4	1,0	16,0±1,3	0,9	13,0±1,6	1,0	17,3±1,5	1,0	17,3±1,1	0,9
	40 to 60	15	13,3±0,8	0,9	20,2±0,6	1,0	18,1±0,4	1,0	11,9±0,5	0,9	16,4±0,5	0,9	18,0±0,4	1,0
	60 years and over	32	14,5±0,5	1,0	20,4±0,6	1,0	18,1±0,3	1,0	13,1±0,4	1,0	.17,2±0,4	1,0	18,2±0,3	1,0
Paul	Men	23	14,6±0,6	1,0	20,5±0,5	1,0	18,7±0,4	1,0	12,6±0,4	1,0	17,4±0,4	1,0	18,4±0,3	1,0
	Women	27	13,7±0,6	0,9	20,1±0,4	1,0	17,4±0,3	0,9	12,8±0,4	1,0	16,6±0,4	0,9	17,2±0,3	0,9
Education	average	10	13,7±1,0	0,9	20,3±0,7	1,0	18,2±0,6	1,0	11,8±0,7	0,9	16,3±0,7	0,9	17,6±0,5	1,0
	specialised	32	13,9±0,5	0,9	20,1±0,4	1,0	17,8±0,3	0,9	12,8±0,4	1,0	16,8±0,4	1,0	18,1±0,3	1,0
	Higher	8	15,6±1,1	1,0	21,1±0,8	1,0	18,5±0,7	1,0	13,9±0,8	1,0	18,2±0,8	1,0	18,7±0,6	1,0
Social Status	pensioner	16	13,4±0,9	0,9	19,4±0,7	0,9	17,2±0,5	0,9	12,3±0,7	1,0	16,2±0,7	0,9	17,2±0,5	0,9
	invalid	32	14,6±0,6	1,0	20,9±0,5	Invalid	invalid	invalid	invalid	invalid	invalid	1,0	18,6±0,4	1,0
Length of illness	Up to 10 years	20	13,7±0,7	0,9	19,8±0,5	0,9	17,5±0,4	0,9	12,9±0,5	1,0	17,3±0,5	1,0	17,9±0,4	1,0
	10 years or more	30	14,5±0,5	1,0	20,7±0,4	1,0	18,3±0,3	1,0	12,6±0,4	1,0	16,7±0,4	0,9	18,2±0,3	1,0
Frequency exacerbations per year	Up to 2 times a year	11	14,9±0,9	1,0	20,4±0,8	1,0	17,7±0,6	0,9	13,7±0,7	1,0	17,9±0,7	1,0	18,4±0,5	1,0
	More than 2 times a year	39	13,9±0,5	0,9	20,3±0,4	1,0	18,1±0,3	1,0	12,5±0,3	1,0	16,7±0,3	0,9	18,0±0,3	1,0
Number hospitalisations hospitalisations per year	1 time	6	13,5±1,4	0,9	19,0±1,0	0,9	17,0±0,8	0,9	13,2±0,9	1,0	16,2±1,0	0,9	16,8±0,5	0,9
	2 and more often	44	14,2±0,4	1,0	20,5±0,3	1,0	18,1±0,2	1,0	12,7±0,3	1,0	17,1±0,3	1,0	18,3±0,2	1,0
PEF1	less than 50 per cent	30	13,9±0,5	0,9	20,2±0,4	1,0	17,9±0,3	0,9	12,4±0,4	1,0	16,8±0,4	0,9	18,2±0,3	1,0
	More than 50 per cent	20	14,5±0,7	1,0	20,5±0,5	1,0	18,2±0,4	1,0	13,3±0,5	1,0	17,2±0,5	1,0	17,9±0,4	1,0

Table 4

Adherence rates in different cagora groups of bronchial asthma patients

Factors		N	Adherence rate, %			Indicator integral adherence treatment adherence, %
			drug therapies	medical medical support	lifestyle modifications lifestyle	
Age	Up to 40 years old	3	21,3±5,2	39,6±6,1	31,0±4,4	27,7±5,0
	40 to 60	15	18,5±2,0	37,3±2,4	36,3±1,7	27,5±1,9
	60 years and over	32	21,9±1,3	39,6±1,6	37,0±1,1	29,8±1,3
Paul	Men	23	40,3±1,8	40,3±1,8	38,5±1,2	30,1±1,4
	Women	23	20,5±1,4	37,7±1,7	34,7±1,2	28,0±1,4
education	Average	10	18,4±2,5	37,0±2,9	35,7±2,1	27,1±2,3
	specialised	32	20,6±1,3	38,4±1,6	36,1±1,2	28,7±1,3
	Higher	8	24,9±3,0	43,4±3,8	38,6±2,8	32,5±3,0
Social status	pensioner	16	19,2±2,2	35,4±2,7	34,2±2,0	26,9±2,1
	Invalid	32	21,9±1,5	40,9±1,8	38,1±1,4	30,4±1,4
Length of illness	Up to 10 years	20	20,5±1,7	39,0±2,1	35,3±1,5	28,5±1,6
	10 years or more	30	21,1±1,3	38,8±1,5	37,2±1,1	29,3±1,2
Frequency exacerbations per year	Up to 2 times a year	11	23,2±2,3	41,5±2,8	36,6±2,0	30,7±2,2
	More than 2 times a year	39	20,2±1,2	38,1±1,5	36,4±1,0	28,5±1,1
Number Hospitalisations per year	1 time	6	20,0±3,4	35,0±4,1	32,2±2,9	26,7±3,3
	2 and more often	44	20,9±1,1	39,4±1,4	37,0±0,9	29,3±1,1
PEF1	less than 50 per cent	30	20,0±1,3	38,3±1,6	36,5±1,2	28,5±1,3
	More than 50 per cent	20	22,1±1,7	39,8±1,9	36,4±1,5	30,0±1,6

These indicators in BA patients allowed us to calculate adherence levels (Table 4). The level of adherence to drug therapy in 100% of patients was low, being only 20.9%, which means - medical recommendations and actions based on them will not be fulfilled or rather not fulfilled by patients. The level of adherence to medical support in 24% of BA patients was medium (above 50% but less than 75%), which determined that medical recommendations and actions based on them will be followed by patients rather than not, and 76% of patients had a low level of adherence to medical support. The level of adherence to lifestyle modification in 4% of patients had a medium level and 96% had a low level.

The indicator of integral adherence to treatment in 100% of patients had a level of low adherence less than 50%, being only 29%, characterising that medical recommendations and actions based on them would not be or rather not be followed by patients.

The comparative characterisation of factors contributing to low adherence of BA patients to medical treatment programmes, medical support and lifestyle modification, presented in Table 4, does not yield statistically significant differences in the study cohort groups with non-modifiable barriers, including gender, age, education, social status, disease stage and severity of obstructive disorders.

Low adherence to treatment in BA patients and its factor analysis showed that in order to really reduce the rate of disease progression and achieve control of AD, it is necessary to significantly improve the attitude to treatment adherence not only of patients, but also of physicians. In order to ensure proper adherence of the patient to treatment, the physician needs to correctly assess the goals of the therapy and be persistent in achieving them, to take into account in their practice the role of adherence in the success of therapy and to be able to carry out the appropriate frequency of visits and discussions with patients to improve adherence. It is the doctor-patient partnership that is at the heart of achieving high patient adherence to therapy. Active participation of the patient in the discussion of therapeutic measures, involvement of relatives, negotiation and sometimes the ability to compromise increase the possibility of choosing the best treatment option, in which the patient takes responsibility for compliance with the doctor's recommendations.

CONCLUSION

1. Bronchial asthma patients in 100% of cases have low levels of adherence to drug therapy and integral adherence indicators, which means that medical recommendations and actions based on them will not be implemented by patients or rather will not be implemented.

2. Average levels of adherence to medical follow-up and adherence to lifestyle modification had 24% and 4% of bronchial asthma patients, respectively, which determined that medical recommendations and based actions by patients are more likely to be followed than not.

3. The levels of adherence to drug therapy, medical support and lifestyle modification in patients with bronchial asthma did not differ significantly with regard to non-modifiable barriers.

4. Reducing the rate of progression of bronchial asthma and achieving control of the disease determines the need to form a strategy of essential and motivational attitude to adherence to treatment not only for patients, but also for doctors.

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