

# Rationalization of the range of medicines for the treatment of patients with diabetes (on the example of the Tyumen region)

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**Abstract**—The significant importance for preventive measures of early disability of patients with diabetes belongs to drug treatment of underlying and concomitant disease, that must be provided by high –value medicines timely and in full volume. In this regard, it is important to find ways to improve the quality of medicinal care for citizens of this category. The results of development studies of researches of scientific-based recommendations concerning improvements of diabetics preferential provision of medicines (using the example of Tyumen region) are presented in the article. Rationalization directions were suggested together with a scientifically based medicines list for diabetics with concomitant diseases', who has the social benefits in Tyumen region. An optimal model of medicines reference pricing was developed for such category citizens. An economic effect and efficiency was calculated for a potential implementation of this model in Tyumen region. A realization of presented range of measures will promote a rise of availability in our days and effective medicines, improvement of life quality and decrease of chronization of diabetics' underlying and concomitant diseases.

**Keywords**—*diabetes, concomitant disease, optimization of provision of medicines, rationalization of medicines range, reference pricing*

## I. INTRODUCTION

One of the most acute medical, social and economic health problems is the increase of diabetes which fastly progresses and leads to early disability and high mortality [1-3].

There are approximately 4 million people with this diagnosis are registered in Russia and this number increases annually [4]. Every year about 110-120 thousand people are recognized as disabled due to diabetes [5]. In the Tyumen region according to The Department of health, the number of patients with diabetes reaches 47 thousand people, about a third of them have disabilities. Recent update of the regulatory framework about the issues of drug therapy of this category of citizens, and expansion of the range of new medicines with proven therapeutic efficacy requires the development of management decisions to reduce the progression of late complications of the disease, which can be achieved by improvements in drug care for patients with diabetes. The leading role is given to providing patients with diabetes with highly effective medicines in a small amount of time, in the proper volume and range [6].

The aim of the study is to develop science-based recommendations on rationalization of the range of medicines for the treatment of patients with diabetes, which are provided in the system of preferential drug provision (for example, in Tyumen region).

## II. EXPERIMENTAL

The methodological basis of the study were the theory of marketing, a systematic approach, the works of scientists in the field of medicine and pharmacy, the analysis of legislative and regulatory documents. The medico-social profile of the patient was defined by a content analysis of 400 outpatient charts (Fig. 1), analyzed the background and related morbidity and studied the actual range of medicines.

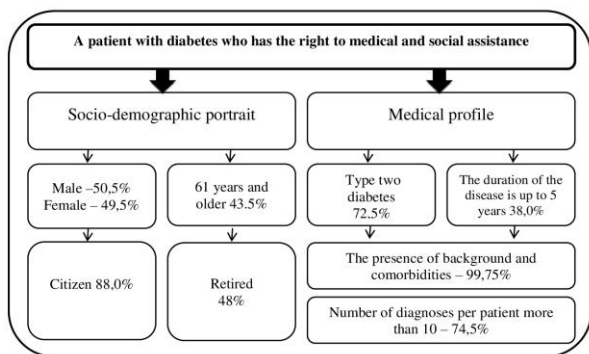


Fig. 1. Category of citizens with diabetes, entitled to medical and social assistance.

In sociological questionnaire study of 260 patients satisfaction with the quality of pharmaceutical care was assessed. Registers containing information on more than 1 million prescriptions issued and dispensed medicines to diabetes patients for 4 years were analyzed by the continuous sampling method. Assessment of the rationality of pharmacotherapy of patients was carried out using the tools of pharmacoeconomical analysis (ABC and VN). The comparative method used for analysis of 95 standards of medical care used in the treatment of background and concomitant diseases of diabetes patients, for the presence in these standards of medicines ones from the list of vital and essential medicines approved by the Government of the Russian Federation and the regional list of medicines for preferential drug provision. The expert method was used to assess medicines for the treatment of the main, background and concomitant diseases of patients with diabetes [7]. The competence of experts (65 doctors) is determined using the method of score assessment; statistical processing of the results (consistency of expert judgments, weighted average and total weighted average estimates) was carried out.

### III. RESULTS AND DISCUSSION

Based on the study of outpatient charts of patients with diabetes were determined features of the item, rate of prescription pharmaceuticals to prevent the development of background and associated diseases in people of this category. It was found that both men and women, mainly aged over 61 years (43.5%), suffer from diabetes equally, and are unemployed pensioners by occupation and social status (48%). According to statistics, patients are more likely to suffer from type 2 diabetes (72.5%) with a disease duration of up to 5 years (38.0%); about 100% of patients with diabetes have a history of 1 to 26 diagnoses that affect the nature of the course of the underlying disease. The highest number of background and concomitant diseases per 1 patient with type 1 diabetes does not exceed 17, and in patients with type 2 diabetes reaches 26; more than 10 diagnoses per 1 patient are registered in 74.5% of patients. 189 background and comorbidities diseases that affect patients with diabetes were identified and systematized by 16 classes of ICD-10. Mainly recorded diseases are hypertension (70.3% of cases), chronic heart failure (61.8% of cases), diabetic polyneuropathy (54.3% of cases). Analysis of the actual range of prescribed medicines for outpatient treatment of patients with diabetes showed that doctors are 36% beyond the established preferential list of medicines.

A study of prescription registries over four years showed that for the treatment of underlying disease and cardiovascular disease (CVD), doctors prefer to prescribe medicines related to 22 INN. There was a low proportion of medicines used for the treatment of background and concomitant diseases not associated with the defeat of the cardiovascular system was revealed (about 9%) in prescriptions for patients with diabetes. There was a low level of using of the assortment of medicines included in the State register of medicines (annually up to 70% of medicines items showed a coefficient of efficiency less than 0.5). In the course of pharmacoeconomical analysis, the facts of irrational spending of budget funds on preferential list of medicines to patients with diabetes were revealed. Annually, the cost of selling medicines of the most expensive and secondary medicines amounted to about 10% and 3-4%, respectively, mainly due to the medicines used for the treatment of the main disease and CVD diseases. There is a tendency of insufficient funding of preferential list of medicines (annually up to 5-6% of the calculated needs) of background and concomitant diseases, the chronization of which is one of the main causes of disability of citizens of this category.

The revealed imperfections of the system of preferential drug provision were reflected in the results of a sociological survey of patients with diabetes, according to which a third (32.3%) of respondents consider the range of free medicines insufficient. About 78% of respondents noted that they purchase medicines at their own expense, with medicines prescribed by a doctor for the treatment of complications of diabetes (45.4%) and colds (46.2%); in 23% of cases, patients purchased medicines also for the treatment of the underlying disease (Fig.2). According to respondents, the main reason for buying medicines at their own expense is the absence of such medicines in the regulated lists (30.8%). Dissatisfaction with drug care due to the forced purchase of medicines for their own money expressed 20.8% of respondents. In this regard, respondents expressed the need to give them the right to choose a specific drug (63.5%) and consent to share in the payment of preferential drug (56.2%).

The results showed that it is advisable to revise the assortment list of medicines, released on preferential terms to patients with diabetes, that would increase the level of complex therapy of the main, background and concomitant diseases, while more efficient use of budgetary resources.

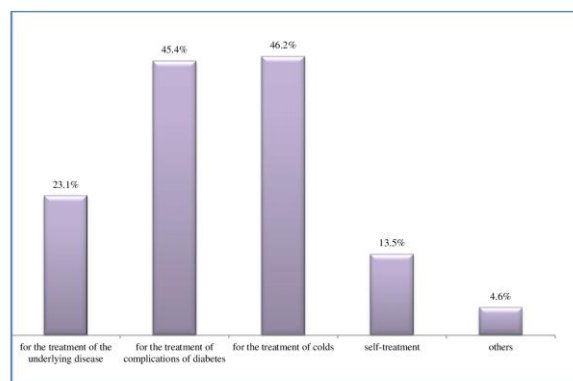


Fig. 2. The purpose of using medicines prescribed by a doctor.

Thus, we have developed proposals to rationalize the regional range of free medicines for the treatment of patients with diabetes and optimize the system of reimbursement for the payment of medicines which sold to citizens of this category.

New list of pharmaceuticals for medicinal care to patients with diabetes that based on 21 INN became a result of the proposed research. The algorithm and defined criteria for the inclusion of additional medicines in the list: among which: medicine must be included in the list of vital and essential medicines; total weighted average expert rating of one at least 2.5 (or at least 2.0 in medical appointments for health care to patients with diabetes - the analysis of outpatient charts).

Medicines are recommended for additional inclusion in the List of medicines released on preferential terms, within the framework of the annually approved territorial program of state guarantees of free medical care to Tyumen region citizens.

In addition, on the basis of mathematical calculations of the four types of pricing models often used in the world practice, the optimal model of reference pricing for medicines for citizens of this category was selected, according to which the reference price is determined as the price of the cheapest drug in the reference group plus 10% of its cost. The estimated economic effect of the introduction of this model, which amounted to 8.8 million rubles, was calculated.

The effectiveness of the reference pricing for medicines using this model is to reduce the amount of budget costs for reimbursement to pharmacy organizations for free medicines vacation, as well as the possibility of choosing and purchasing medicines by patients with diabetes in a larger range, including ones for the treatment of background and concomitant diseases.

#### IV. CONCLUSION

The main lines and science-based recommendations on rationalization of the range of medicines for the treatment of patients with diabetes, which are provided in the system of preferential drug provision (on the example of Tyumen region), have been developed. Systematic rationalization of

lists of medicines, dispensed on preferential terms to patients with diabetes, will improve the pharmacotherapy of background and concomitant morbidity in citizens of this category within the framework of free primary health care in outpatient settings, as well as solve the problems of dissatisfaction with patients with trade names of medicines, dispensed to them free of charge, and insufficient funding for background and concomitant disease. In addition, the implementation of the proposed measures in practice will allow to increase the availability of modern and effective medicines, improving the quality of life and reducing disability among citizens of this category.

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