Methodological approaches to the estimation of the regional public health services efficiency

The publication is devoted to the problem of estimation of the regional public health services' efficiency. In the article the nowadays existing approaches to estimation of the expenses' efficiency for public health services are discussed, their brief comparative analysis is given. The conclusion about inexpediency of use of the techniques based on the analysis of the resource component of the public health services, without taking into account social effect, is drawn. As an alternative the technique based on the parallel estimation of the financial (the expense for rendering medical aid) and the demographic (losses of the population in the region from premature death rate) parameters is offered.

Public health services, efficiency, technique, expenses, years of potential life lost.

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Introduction

Efficiency is the key concept of the economy and managing, and the persons responsible for making administrative decisions, in their practical activities are compelled first of all to take into account the criteria of productivity by virtue of limitation of the resources available at their order. Recently with a wide circulation in the branches of the social sphere the principles of the budgeting focused on the result, and new state management (New Public Management, NPM) the new approach of public sector's management on the basis of tools, traditionally characteristic for private sector (decentralization, differentiation of powers between the center and the periphery, the essential role of monitoring and reporting, motivation of state employees, orientation to intermediate term planning, estimation of result, etc.), demand of the techniques of the economic analysis in public health services grows.

Both the world and national experience offers the set of approaches to the economic analysis and estimation of the investments'

efficiency in the social sphere and public health services, however for managing the branch at the regional level many of them appear hardly applicable: they are either too superficial (as the analysis of the parameters of fixed capital's use, medical personnel, beds' fund), or technically complex for the use in the conditions of operative work (method of the data convolution). Yet the technique of the efficiency estimation of the public health services should be functional, transparent, and its formula should be the clear to the wide public.

The concept of the public health services efficiency

The concept "efficiency" carries various connotations depending on the context in which it is used, and the breadth of the spectrum of economic, political and so forth situations when the term "efficiency" sounds, does not allow to reach the characteristic of the efficiency as extremely individual result from outputs to the expenses (inputs) though in such mathematical interpretation the efficiency is to the greatest degree allocated by useful contents. In spite of the fact that the term "efficiency" is used by various experts: engineers, economists, physicians and etc. If an engineer deals with technological efficiency, an economist considers the economic efficiency expressing in the comparative estimation of alternatives and the choice of the most comprehensible variant, as a rule, connected with the least level of the charges, the most important. As the American economist Paul Heine wrote, efficiency means "to receive as much as possible from the accessible limited resources" [7]. Thus in Economics efficiency and profitability, in Heine's opinion, are synonyms as they characterize "productivity" (effectiveness) of the means' use for the purposes' achievement. But referring efficiency to the social sphere is insufficient: the wide public role of medical aid does not allow being limited by the utilitarian reasons in the branch's management. Two essentially important points can be noted here.

First, in the public health services it is necessary to consider not only the especially economic (economic analysis with a choice of the cheapest variants of the means' investment), but medical (due to regulation and standardization of the medical aid), and also social (orientation to the diseases' and death rate's reduction, increase of life's duration and standard, growth of labor productivity) aspects of efficiency[1].

Second, in the public health services the complexity of estimation of the result at macro- and middle-levels which should be expressed in the death rate's decrease, diseases, invalidity and so forth takes place. The inertial character of the medical-demographic parameters and poly-determinacy of health cause the practical complexity of the establishment of connection among the assignments (inputs) on protection and strengthening of the population's health and their practical results (outputs) that is carrying out incremental analysis of growth. So, the additional expenses for medical programs' realization can lead to positive results only in some years, but also can cause the paradoxical effect when the increase in financing of the public health services due to the increase of availability and quality of services opens the earlier latent morbidity.

Thus, the definition of efficiency concerning the public sector is more complex as the expenses for public health services are focused on the population requirements and on the social effect, not on profit, as in private sector. And the consumers (patients) see obligations of the state as the unlimited granting of medical services (the term "efficiency" can be consi-

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[1] The specificity of the public health services is in the organization of services of medical aid's rendering, the understanding of the efficiency in especially economic sense (for example, the choice of the cheapest alternative takes place at state purchases), and at the same time in the public health services there are the spheres and the kinds of activity where the question on the efficiency cannot be raised (sanitary aircraft, rendering of medical aid to children with the congenital pathologies, prematurely born and so forth). It is a characteristic example of the prevalence of humanistic principles above economic feasibility in the social sphere.

dered as unacceptable), and the function of the doctors working in the state and municipal establishments, looks essentially differently as they carry out much wider role, than their colleagues working in the private sector.

What approaches to the efficiency estimation exist in the public health services?

The question on the public health services' efficiency rose in the conditions of the socialist economy when the branch "public health services" was considered in the context of the non-productive sphere[2]. So, Soviet authors M.V. Solodkov, R.I. Samar, L.I. Yakobson allocated the economic and the internal efficiency of economic processes and actions in the public health services. Economic efficiency, in their opinion, should be expressed by the ratio among the gain of the standard of well-being of the population caused by expenses in the public health services, to these expenses:

$$ Э = \frac{\Delta \Phi}{\Delta З}, $$

where $\Delta \Phi$ — the gain of the fund of personal consumption in the society;

$\Delta З$ — the gain of expenses in the public health services, caused by $\Delta \Phi$ [4, p. 118].

The authors suggest to express the level of the people's well-being in the size of the fund of personal consumption in the society, which gain as the productive part of the efficiency's estimation develops from two components — direct (the gain of producing the non-material

goods, that is medical services) and indirect (the result of public health services' influence on the efficiency of other branches' functioning in the economy) effects of expenses in the public health services.

To put it differently, the direct effect of investments into the public health services will consist in the increase of the improvements' quantity and in the services' quality, indirect — in the output increase in other branches of the national economy due to the increase in the health potential and in the labor productivity growth. This methodical principle was represented not only in theoretical calculations, but also in practical recommendations, first of all within the frameworks "Techniques of definition of the expenses' efficiency in non-productive sphere (substantive provisions)", authorized in 1979 by the Scientific Council of the Academy of Science of the USSR [4, p. 125].

The given approach to estimation of the public health services' efficiency, undoubtedly, is the most expedient for the scientific researches and estimation of the public health services' efficiency at the macro-level, and in the conditions of the market economy as it takes into account theoretically true connection among the branch with the development of regional economy as a whole, however its practical use is complicated first of all by virtue of the complexity of the quantitative expression of the result. If the assignments' size and the medical services' volumes can be estimated quantitatively, the positive result as the diseases' and death rate's decrease is difficult "to digit". This circumstance makes the mentioned methodical approach inapplicable in the context of operative management of the public health services. **The tools of estimation of the public health services' efficiency should satisfy to the requirement of availability of the statistical information and be characterized by the comparative simplicity of calculation.**

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[2] Let's note, that a number of authors refuse the socialist systems in public health services' efficiency and the basic opportunity of its measurement. Financing medical institutions in the conditions of the command economic system was carried out under the estimate, that is establishments were simply financed (Duganov M.D. Estimation of the charges' efficiency in the public health services at the regional and municipal levels; Sheiman I.M. Economy of the public health services). Actually, even in the most simple understanding of the result in general it is possible to speak about the efficiency only in the conditions of obligatory medical insurance where money are focused on concrete services, instead of the establishments' financing.

Only in the second half of the 2000s the formalized technique quite satisfying the given criteria appeared. In 2007 the commission at the President of the Russian Federation on the problems of development of government and justice in the performance of the Decree of the President of the Russian Federation from June, 28, 2007, №825 "About estimation of the efficiency of the executive authorities' activity of the subjects of the Russian Federation" authorized the official practical technique of estimation of the efficiency of the executive authorities' activity in the subjects of the Russian Federation [3].

The recommended circuit of economic estimation is directed towards the solution of the following problems:

1. Revealing the zones demanding the prior attention of both the regional and municipal authorities;

2. Development of the actions on the increase of productivity of the regional executive authorities' activity, including the optimization of inefficient charges;

3. Revealing the internal resources (financial, material, personnel, etc.) for the increase in workers' wages in the budgetary sphere, improvement of the quality and the volume of services for the population.

In a practical part of the technique the threshold values of the basic resource parameters of the public health services are determined, deviation from which is regarded as the proof of the irrational approach to the organization of the branch functioning and the component of inefficiency of the regional public health services as a whole. Moreover, the degree of a deviation from the specification is calculated arithmetically, being reflected in the concrete value of the sum of the so-called "inefficient" charges.

As the example we shall consider the level of hospitalization. With a view of the more effective utilization of the bed fund in the Vologda Oblast it was planned to lower the level of hospitalization to 22.3 cases for 100 person of the population by 2009.

The volume of inefficient charges on the patients' hospitalization is calculated as follows:

$$P4 = \frac{P^1 4 \times Vн}{100},$$
$$P^1 4 = (Уф - Уц) \times C,$$

where $P4$ is the volume of inefficient charges on the stationary medical aid owing to the high level of hospitalization (thousand rubles);

$P^1 4$ is the parameter of inefficient charges on the stationary medical aid owing to the high level of hospitalization at the rate for 100 person of the population (thousand rubles);

$Уф$ is an actual level of hospitalization in the state (municipal) establishments of the public health services at the rate for 100 person of the population (cases);

$Уц$ is an average value of the parameter of the level of hospitalization in the state (municipal) establishments of the public health services at the rate for 100 person of the population (cases);

$Vн$ is a mid-annual population in the subject of the Russian Federation (thousand person);

C is the cost of treatment of an in-patient in the state (municipal) establishments of the public health services (rubles)

(Technique of estimation of the activity efficiency of the executive powers in the subjects of the Russian Federation. Report № 1 from July 18, 2007).

According to the carried out calculations, the additional (economically inexpedient) charges of the branch owing to the increased level of hospitalization (in comparison with the accepted specification) were not observed in the region by 2008 *(tab. 1)*.

The similar approach to estimation of inefficient charges' scales, but at the level of the municipal formations of subjects of the Russian Federation, was developed by the experts of the Health Ministry, and in 2008 the President of the Russian Federation signed the decree about their statement (the Decree of the President

Table 1. Estimation of the efficiency of the public health services charges
for the patients' hospitalization at the period from 2006 to 2009

Parameters	2006	2007	2008	2009
Level of hospitalization, for 100 people (actual)	25.3	25.5	24.0	22.2
Level of hospitalization for 100 people (normative)	22.3	22.3	22.3	22.3
Cost of treatment of an in-patient day, rubles	669.59	809.30	1031.20	1079.03
Oblast's population, people	1231600	1225300	1222890	1205300
Inefficient charges, thousand rubles	24740.0	421288.7	162686.2	–

of the Russian Federation from 28.04.2008 № 607 "About estimation of the activity efficiency of the local government institutions in the city districts and municipal areas").

However the comparison of the results of both approaches methodologically incorrect as at estimation of inefficient charges by the technique of the Decree № 825 the parameters of all medical institutions in the area are taken into account, including the official bodies whereas under the Decree № 607 — only the municipal establishments of the public health services, without taking into account the state ones, that results in incomparability of the received results. Moreover, in the areas, adjoining to large cities, in Cherepovets and Vologda, the level of hospitalization is much lower (5.4 and 9.6 accordingly), as the part of the patients from these areas is treated in the official bodies of the public health services and city health facilities in Vologda and Cherepovets.

At last, the incorrectness of the mentioned approach will consist in the fact that inefficient charges are estimated in absolute parameters, therefore in the larger municipal formations the scales of inefficient charges appear to be higher, than in municipalities with a smaller population.

Actually the essence of the offered system of estimation corresponds to the methodology of economic analysis of the expenses' minimization when economic benefit is calculated in terms of charges which managed to be avoided as a result of the replacement of the base variant of the program by the new, economically more rational one [10].

It is represented, that the methical development fixed by the Decrees of the President of the Russian Federation № 825 and № 607 should be applied, but as the additional, specifying reference points of the development of the public health services' resource base that is necessary within the framework of the nation-wide policy of optimization of medical aid and the increase of branch functioning efficiency. At the same time their use in operative work and strategic planning of the public health services' activity is connected to a number of basic problems.

Firstly, at inefficient expenses' calculation at the federal level within the framework of the technique fixed by the Decree № 825, the first positions of "efficiency" are occupied with the subjects of federation having the low position on the federal background in the development of the network of establishments of the public health services.

Secondly, at inefficient expenses' calculation at the regional level within the framework of the technique fixed by the Decree № 607, the first positions of "efficiency" are occupied by the municipal formations having the low position on the regional background in the development of the network of establishments of the public health services.

Thirdly, the inefficient expenses' calculation under the Decree № 607 does not take into account the use by the municipal formations of the hospital base of the public health services' official bodies that deforms the efficiency estimation of.

Fourthly, there is no "binding" of expenses to the social and economic result of the public health services' activity. Therefore the significant scales of inefficient charges designed in the public health services' system in some territory (or in municipal formation), do not mean the inefficiency of the public health services' system as a whole.

At last, fifthly, the technique reflects the relative efficiency, that is success of the set parameters' achievement, however as far as it promotes the achievement of the socio-economic result, it is not clear. **Estimation of the public health services' efficiency at the regional and at the national levels should mention not only economic, but also social aspect[3].**

Throughout years (since 2003) in the Vologda Oblast estimation of the public health services' efficiency at the regional and municipal levels which, on the one hand, is based on accessible and statistically authentic data, and, on the other hand, is focused on measurement of the social result, is carried out.

Technique

The essence of the suggested technique is in comparison of cumulative expenses of the budget and off-budget state funds on financing the public health services' system with the scales of social losses of the society from illnesses[4]. The algorithm of estimation will consist of three consecutive stages:

1. The analysis of expenses by the municipal formations and ICD-10 classes[5].

2. The analysis of the social losses by the municipal formations and ICD-10 classes.

3. Actual economic analysis through the comparison of the expenses and social losses.

Let's consider the contents of the mentioned stages in detail.

1. For estimation of the expenses parameters of the public health services' charges, the uniting budgetary and insurance sources of financing concretized and differentiated in the territories, according to classes of illnesses and to diagnostic units with the help of special package of computer programs "Finzdrav" [1] are used.

2. Losses' level of premature death rate of the population from illnesses is accepted as estimated criterion[6]. It is calculated due to the following formula:

$$\text{ПГПЖ} = \sum_{x=0}^{x=L} d_x(L-x),$$

where d_x is a number of cases of death in the age of x within the framework of the given class of diseases or the municipal formation;

L is base value of life expectancy, the age, all death before which achievement are considered premature.

3. Comparison of charges and demographic losses is reduced to the construction of the system of the coordinates consisting of two axes — "losses" and "expenses". The point of crossing of the given axes is determined

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[3] It is necessary to note, that at the system of parameters of the discussed technique are also present such ones as satisfaction of the population with medical aid and the population death rate, however they are considered separately from the parameters of the public health services' activity therefore accounting documents by the results of calculations actually represent the help information and, strictly speaking, do not contain actual estimations of efficiency.

[4] The paradoxical approach in general is traditional for the public health services to estimation of the result at the level of losses. Similarly the estimation of the population's health is carried out at the level of disease and death rate.

[5] ICD-10 — International Statistical Classification of Diseases and problems health-related, the last, tenth, revision of which was implemented in 1989.

[6] Use of parameter "ПГПЖ" (lost years of potential life) in practice of the government is perspective by virtue of the lines of its strategic advantages. First, it precisely reflects the degree of the development of the public health care system as one of its prior prevention of death rate of the population acts in those age in which it is unnatural. Second, the statistical information on death rate of the population satisfies to two key criteria - objectivity (the population given on death rate are least subject to influence of such subjective factors as discrepancy of the account, lacks of the mechanism of data gathering) and availability (practically in all the subjects of the federation there are extensive databases on death rates of the population, the contents of the the information on demographic losses — medical, sex, age, territorial and so forth).

Table 2. The Scheme of the typological matrix of the municipal
formations or classes of disease entities and ICD-10

Expenses			
		High	*Low*
Social losses (lost years of potential life)	*High*	**1. Expenses are inefficient?** What are the reasons of inefficiency?	**2. Shortage of resources?** If yes, – additional financing: - public health services - social sphere - industrial sphere
	Low	**3. Surplus of resources?** **If yes, – redistribution:** - other kinds of diseases - measures of preventive maintenance - hospitalization technologies	**4. Real efficiency?** If yes, what are the further actions? If is not present, there is underfinancing.

as arithmetic-mean value for homogeneous parameters (expenses and losses). The system of coordinates forms four quadrant, corresponding to four variants of ratio of the expenses' and social losses' parameters: "high expenses – high losses", "high expenses – low losses", "low expenses – high losses", "low expenses – low losses" *(tab. 2)*.

Depending on the values accepted by the parameters of expenses and social losses (high – low) for different objects of the analysis (municipal area, class of diseases, nosological unit), the level of the expenses efficiency will be estimated according to four specified variants of interpretation of the data.

High relative expenses at high losses characterize the situation as inefficient use of resources from the point of view of the prevention of premature death rate. Low expenses at high losses are treated as deficiency of resources. Additional resources thus should be not necessarily directed to the system of the public health services: it can be both social and industrial sphere, depending on what actions will give the maximal effect under the prevention or reduction of premature death rate. High expenses at a rather low loss should be estimated as "surplus" of resources. Thus redistribution of means inside the system of the public health services on treatment of other classes of illnesses or with expenses kinds of the help, such as stationary, in cheaper forms (for example, day time hospitals) and preventive activity is possible.

At last, low expenses at low losses can be estimated ambiguously: either they characterize the situation as really effective from the point of view of the prevention of premature death rate, or as sharply negative. By virtue of it at the specified investigation phase the given conclusions have mainly hypothetical character, for specification of the received facts it is necessary to carry out the profound detailed analysis on each of groups, and also on separate categories and objects of estimation.

For the comparative analysis of the objects incorporated within the framework of uniform typological group the index "cost – efficiency", considered through the ratio of the relative parameters of expenses and losses is used:

$$T = \frac{C}{L},$$

where C is expenses for the public health services (ruble per head);

L is losses from the premature death rate of the population (person-years for 1000 people).

The value of the index is in the direct ratio to the level of charges and in inverse proportion to the level of the social losses. The greater value T testifies to the greater level of expenses and, hence, smaller efficiency, that, however, is lawful only within the framework of separate quadrants and is insolvent in comparison of units located in different categories of the typological matrix.

The use of the described approach to estimation of the expenses' efficiency for public health services in the Vologda Oblast allowed to formulate a number of conclusions, important for the acceptance of administrative decisions in the regional public health services.

Results and discussion

Let's consider the examples of use of the analysis algorithm with reference to the municipal formations of the Vologda Oblast on the basis of the data of 2009. The typological matrix of the municipal areas and cities of the region on the parameters of public health services' expenses and social losses has the following kind (territories here are distributed in four areas "expenses – losses"; *tab. 3*).

For each city and district the values of the index "cost – efficiency" are resulted, allowing comparing estimated objects within the framework of separate quadrant matrixes.

Let's consider the basic results of estimation. Basing on the received results for the five years' period, we shall note, that the greatest in the region demographic losses from premature death rate of the population and per head

expenses for the public health services take place in the Mezhdurechensk district. As the statistical data testify, in 2007 the scales of the budgetary charges within the framework of a stationary link of medical aid (in relative expression) in the Mezhdurechensk district exceeded the similar parameter for the city of Cherepovets, the largest in the region, almost twice. Thus, in one of the smallest areas there lives hardly more than 7000 people. But where central regional and local hospitals are located, they contain all basic medical services, charges per capita appear very high on the regional background. At the same time the similar situation is estimated as adverse as the Mezhdurechensk district shows high parameters of premature death rate of the population, that is high expenses for public health services are not a pledge of its demographic well-being as are realized with the prevalence of the expenses forms of rendering of medical aid.

The districts of Veliky Ustyug and Cherepovets were included in a category "high expenses – low losses". More detailed analysis of the expenses in the mentioned municipal

Table 3. Typological matrix of the municipal formations of the Vologda Oblast
on the parameters of expenses and social losses (according to 2009)

		Expenses	
		High	**Low**
Social losses	High	Mezhdurechensky district – 56,23* Kichmengsko-Gorodetsky district – 49,71 Vashkinsky district – 51,52 Ust-Kubinsky district – 49,28	Ustyuzhensky district –48,33 Chagodoshensky district – 46,81 Kirillovsky district – 44,86 Kaduysky district – 36,13 Chereovets district – 41,29 Gryazovetsky district – 35,14 Babaevsky district – 46,08 Harovsky district – 42,2 Nikolsky district – 38,04 Vytegorsky district – 37,67 Vozhegodsky district – 36,03 Babushkinsky district – 33,84
	Low	Syamzhensky district – 63 Belozersky district – 58 Tarnogsky district – 62 Vologda – 120 Verhovazhsky district – 67 Cherepovets – 68 Velikoustyugsky district – 108	Sokolsky district – 71 Sheksninsky district – 54 Nuksensky district – 52 Totemsky district – 49 Vologda district – 51

*Index "cost – efficiency", T.

formations showed, that a rather high expenses observable here for public health services reflect a developed level of the expensive medical equipment, and also rather massive bed fund that also demands carrying out of re-structuring of the medical network, introduction in medical practice hospitalization technologies.

Among those municipal formations where low charges for the public health services on the background of the adverse situation with premature death rate are marked, it is necessary to allocate Nikolsky and Vytegorsky districts. They demand special attention during making administrative decisions because the problems with under-financing here are supplemented with the adverse demographic tendencies.

The municipal formations showing approached to average-regional parameter of the level of charges on for the public health services, but insignificant (is lower than the average-regional value) parameters of premature death rate of the population, can be referred to "rather safe".

According to the resulted algorithm estimation of the expenses and social losses is carried out. The detailed analysis of the specified parameters allowed to find out, that the rea-

sons of high demographic and financial losses in the region in all the considered years were traumas and poisonings, diseases of cardiovascular system, in particular chronic ischemic illness of heart, disease of bodies of digestion. The similar picture is typical for the area as a whole and for the majority of the municipalities separately, however the degree of influence of different factors can change essentially in different territories. It testifies to the necessity of the expansion of the preventive actions on the designated directions of activity and perfection of the mechanisms of rendering urgent medical aid, is especial in those municipal formations where such need is estimated as sharply necessary *(tab. 4)*.

For more detailed estimation of the efficiency of the profound analysis of expenses and social losses from the diseases or the diagnosis is carried out in separate municipal formations of the region, and then, on the basis of the comparison with average-regional and the maximal parameters in the area and calculation of the factors of deviation, the concrete reasons causing the high level of charges and premature death rate in the given municipality come to light.

Table 4. Typological matrix of the reasons of death (ICD-10) in the Vologda Oblast
on the parameters of expenses and social losses (2009)

		Expenses	
		High	**Low**
Social losses	**High**	Illnesses of bodies of breath – 163.07* Illnesses of bodies of digestion – 49.40 Illnesses of system of blood circulation – 32.15 Traumas, poisonings and some other consequences of influence of the external reasons – 10.83	Neoplasms– 24.77
	Low	Some infectious and parasitic illnesses – 316.00 Mental frustration and frustration of behavior – 2175.74 Illnesses of bones-muscular system and connecting fabric – 1618.22 Pregnancy, natal and the postnatal period – 13848.57	Congenital anomalies, deformations and chromosomal infringements – 18.67 The separate conditions arising in prenatal period – 118.58 Illnesses of nervous system – 119.55 Illnesses endocrine systems, meal frustration, infringement of a metabolism – 299.63 Illnesses of urinogenital system – 561.13 Illnesses of blood, hematopoietic bodies, infringement. The immune mechanism – 657.91 Illnesses of skin and hypodermic – 972.96 Illnesses of ears – 1624.17
*Index "cost – efficiency".			

Thus, the opportunities of estimation with application of the suggested mechanism are extremely wide, as it allows to reveal the concrete risk factors – those reasons of death rate which cause the greatest contribution to the sum of charges on public health services and social losses of the society from premature death rate both as a whole in the region, and in separate municipal formations.

Administrative decisions

The regular practice of monitoring giving the information on expenses, losses in separate territories, the reasons of death and separate diagnoses, allows with a sufficient share of reliability and scientific validity to trace and estimate the situation with the efficiency of expenses for the public health services in the municipal formations of the region. The special attention thus is given to those areas which show negative tendencies in the parameters of expenses for the public health services and social losses owing to premature death rate among the population in a long-term time context.

Introduction of the results of the analysis of expenses and social losses, carried out according to the submitted algorithm, in practical activities of the public health services for today allowed:

1. To raise a level of purpose and validity of administrative decisions in the public health services.

The conclusions received during the research, are used at the discussion of the projects of the budget and financing of the target programs with the regional department of the finance therefore achieve the annual steady growth of financing of public health services, for the period from 2003 to 2008 which made 2.7 times. If before the recommendation on the increase in financing had no formal substantiation, today the objective information becomes powerful argument "pro" in discussion of the questions of the additional attraction of budgetary funds to needs of the public health

services. It allowed proving the necessity of the acceptance of some target programs on key directions of activity, in particular the preventive providing and treatment of tuberculosis, arterial hypertension, diabetes, AIDS.

2. To reveal the classes of illnesses and separate diseases, death rate which brings the greatest social and economic damage?

It is found out, that the reasons of high demographic and financial losses in the region are traumas, poisonings and other consequences of influence of the external reasons (within the framework of this class – the following nosological units: asphyxia, toxic action of alcohol, fractures, etc.), diseases of cardiovascular system (in particular, chronic ischemic illness of heart, cardiomyopathy, intracerebral hemorrhage, heart attacks of myocardium), diseases of the digestion organs (fibrosis and cirrhosis of liver, alcoholic illness of liver, toxic liver damage).

And though the structure of the death rate from diseases is typical for the majority of municipalities of the region, the contribution of different reasons of death to the total amount of demographic losses can change essentially in the territories that enables "to differentiate" administrative decisions on separate municipalities, revealing the conditions and risk factors specific to them.

3. To carry out the work on re-structuring of the bed networks and on developing of day time hospitals in the state and municipal orders for granting medical services

The received results are used by the department of the public health services at cooperating with institutions of the local government at substantiation of re-structuring the bed fund and creation of the inter-district centers - units of rendering medical aid: in 2008 concentration of beds in the infectious and obstetric profiles in Sokolsky district for Harovsk, Vozhega and Ust-Kubensky districts, in 2009 – the concentration of beds in surgical and pediatric structure in Totma district for the service of inhabitants

of the neighbor Babushkino district is carried out. It can seem that among the conclusions and practical measures there is contradiction: during the analysis the expenses' units come to light and at the same time the inter-district centers, areas of localization and concentration of the resources are created, that automatically results in the "rise in price" of the medical aid in them. But massive bed capacities have much smaller productivity, than smaller scales of the beds' funds, but equipped with modern technical equipment and qualified personnel.

As it was shown earlier, Mezhdurechye and Veliky Ustyug districts, and also Cherepovets show the highest parameters of the charges on the public health services in the region. As it was found out during the research, it is caused by the expenses of the created in them beds' funds (so-called Ryomer's Law operates here: the expansion of the beds' fund results in the growth of scales of hospitalization as there will be the necessity to fill the beds). On the basis of the received conclusions the measures on restructuring the stationary help therefore for the period from 2008 to 2010 the beds' capacities of the municipal establishments of the public health services have decreased: in Veliky Ustyug district for 23%, in Mezhdurechensk for 18%, in Cherepovets for 22%. With the reduction of the beds' number the emergency diagnostic branches and the day time hospitals actively developed, allowing to render medical services of the appropriate quality in out-patient conditions therefore significant economic benefit is achieved

4. To prove the necessity of investments on the public health services' development on those services which are responsible for the preventive maintenance and treatment of the most "problem" diseases.

For 5 years (from 2003 to 2008) in the region the staff of the regional center of medical aid was expanded, its branches in all the municipal areas were developed. The staffs are increased and the functional duties of the AIDS-center are expanded, the organizational methodical cabinet is organized on the basis of the regional infectious hospital. Significant investments (596 million rubles) were enclosed into the construction and equipment of the radiological case of the regional oncology center which started to work since June, 2009; therefore the availability of the mentioned kind of help raised, the charges on which, as researches allowed to conclude, were insufficient.

Due to the organization of the three-level system of rendering medical services to pregnant and to lying-in women it was possible to lower the infantile death rate practically twice. On the basis of the data on high death rate of people from the road and transport incidents on the line "Vologda — Sokol" it was decided to found two trauma centers on the basis of the Vologda regional and Sokol city hospitals that will allow to render effective help to those people who was injured and to deliver them to hospital within "gold hour".

The results of the economic analysis according to the mentioned technique are used for substantiation of the priorities of financing within the framework of the branch and for definition of the most comprehensible variants of investment providing protection and strengthening of the public health. Realization and duplicating of the given project in the area's scales will allow providing the increase of the charges' efficiency for the public health care and transparency of the managerial process and planning in the regional public health services.

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