Complex issues of accounting and reporting in the field of medical prevention of chronic non-communicable diseases

Problemas complejos de contabilidad y presentación de informes en el campo de la prevención médica de enfermedades crónicas no transmisibles

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Abstract

Statistical reporting is the basis for management decisions aimed at the optimization of medical activities. Therefore, new information must be timely ensured, especially in the field of medical prevention of chronic non-communicable diseases, which directly influences life expectancy and quality of life of the population of the Russian Federation. The purpose of the research is to formulate and substantiate the necessary recommendations for making changes in accounting and reporting documentation related to the prevention of chronic non-communicable diseases. Tahe regulatory documentation governing the prevention of chronic non-communicable diseases has been studied and the reporting forms No. 68 for 2010-2016 for the Irkutsk region have been analyzed (Order No. 597n of the Ministry of Health and the Social Development of the Russian Federation of August 19, 2009) and No. 131 / o for 2013- 2014 (Order of the Ministry of Health of the Russian Federation No. 87n dated March 6, 2015). There is a marked disparity between the real and the recommended staffing of health centers (Order of the Ministry of Health of the Russian Federation No. 683n of 09/30/2015). This is the case with doctors, whose shortage in 2016 was 71.5%. The number of visits to health centers decreased by 44% in 2016 compared to 2013, with a significant predominance in the structure of complete physical examinations. The proportion of people referred by medical organizations is still not significant. The contribution of equipment actively used in health centers to detect chronic non-communicable diseases and their risk factors is unclear. Simpler evidence-based methods are not used enough. The express analysis of the forms No.131o of the Irkutsk region for 2013-2014 demonstrated a low contingency of changes in the regulatory documents governing the medical examination and the preventive examination; the shift of emphasis from the prevention of high and very high risk conditions to secondary prevention; partial compliance of the volume and structure of preventive actions with international recommendations. A detailed study of form No. 68 and express analysis of form No. 131 revealed a number of shortcomings that may impede obtaining of objective information on the epidemiology of chronic non-communicable diseases and risk factors, as well as the effectiveness of preventive measures. This requires consideration of changes in the reporting on medical prevention of chronic non-communicable diseases.

Keywords: accounting and reporting forms; prevention, chronic non-communicable diseases, risk factors, health centers, medical examination, preventive examinations.

Resumen

Los informes estadísticos son la base de las decisiones de gestión dirigidas a la optimización de las actividades médicas. Por lo tanto, la nueva información debe garantizarse oportunamente, especialmente en el campo de la prevención médica de las enfermedades crónicas no transmisibles, que influye directamente en la esperanza de vida y la calidad de vida de la población de la Federación de Rusia. El propósito de la investigación es formular y fundamentar las recomendaciones necesarias para realizar cambios en la contabilidad y la documentación de informes relacionados con la prevención de enfermedades crónicas no transmisibles. Se ha estudiado la documentación reglamentaria que rige la prevención de las enfermedades crónicas no transmisibles y se han analizado los formularios de notificación No. 68 para 2010-2016 para la región de Irkutsk (Orden No. 597n del Ministerio de Salud y Desarrollo Social de Rusia). Federación de 19 de agosto de 2009) y No. 131 / o para 2013-2014 (Orden del Ministerio de Salud de la Federación de Rusia No. 87n con fecha 6 de marzo de 2015). Existe una marcada disparidad entre el personal real y el recomendado para los centros de salud (Orden del Ministerio de Salud de la Federación de Rusia No. 683n del 30/09/2015). Este es el caso de los médicos, cuya escasez en 2016 fue del 71,5%. El número de visitas a los centros de salud disminuyó en un 44% en 2016 en comparación con 2013, con un predominio significativo en la estructura de los exámenes físicos completos. La proporción de personas referidas por organizaciones médicas todavía no es significativa. La contribución del equipo utilizado activamente en los centros de salud para detectar enfermedades crónicas no transmisibles y sus factores de riesgo no está claro. Los métodos más simples basados en la evidencia no se usan lo suficiente. El análisis expreso de los formularios No.131® de la región de Irkutsk para 2013-2014 demostró una baja contingencia de cambios en los documentos reglamentarios que rigen el examen médico y el examen preventivo; el cambio de énfasis de la prevención de condiciones de alto y muy alto riesgo a la prevención secundaria; Cumplimiento parcial del volumen y estructura de las acciones preventivas con recomendaciones internacionales. Un estudio detallado del formulario Nº 68 y el análisis expreso del formulario Nº 131 reveló una serie de deficiencias que pueden impedir la obtención de información objetiva sobre la epidemiología de las enfermedades crónicas no transmisibles y los factores de riesgo, así como la eficacia de las medidas preventivas. Esto requiere considerar los cambios en los informes sobre la prevención médica de las enfermedades crónicas no transmisibles.

Palabras clave: formularios de contabilidad y presentación de informes; Prevención, enfermedades crónicas no transmisibles, factores de riesgo, centros de salud, reconocimiento médico, exámenes preventivos.

Introduction

The problem of general population medical care not only a purely medical problem. It is often an organizational problem, the problem of coordinating organizations, institutions and all available resources of medical equipment and qualified personnel for the fullest and optimal involvement into medical prevention and public health. The importance of this is justified in detail in the classic work of A. Gitterman and I. Miller (Gitterman & Miller, 1989). Almost all clinical decisions of health workers come not only from their professional competence, but are conditioned by regulatory documents and instructions of institutions and organizations that are part of the health care system. The medical institution forms the format of the provided medical service (Kenagy, Berwick & Shore, 1999). It defines categories, criteria for evaluation and intervention. That is, it ultimately affects medical history of each individual patient. However, it implies some compatibility between the interests of individual patients, health care workers and health system institutions as a whole.

The possible disparity between these interests is largely ignored and unreported. In such a situation, the state policy should protect individual and private interests and form norms and normative documents to balance all conflicting interests with a view to harmonization and universal gain. In our work, we will look at the current state of regulatory documents and their practical implementation. We will also analyze the actual impact of regulatory documents and possible ways of improvement of medical services and their provision to as many citizens as possible through reforming the document management process in the health care system. When we talk about improving the quality of medical care, we are not only talking about the technical side of the issue. We rely on technical results as a proof of high quality. But quality means service and service provision. By service, we mean numerous characteristics that form the experience of caring for patients and their families, besides the technical quality of diagnostic and therapeutic procedures. Proper medication and stitching are technical quality issues. A quick response to the needs of the patient in a clear, culturally relevant and understandable way is the quality of service. Disease prevention (US Department of Health and Human Services. 2006) is the best way to ensure the highest quality of health care services.

In 2006, within the framework of the demographic policy of the Russian Federation for the period up to 2025, it was emphasized that the main cause of low life expectancy in the Russian Federation was the mortality of people of working age from chronic non-communicable diseases (CNCDs), mainly cardiovascular, oncological disorders, and external causes. Therefore, the priority was to pre-

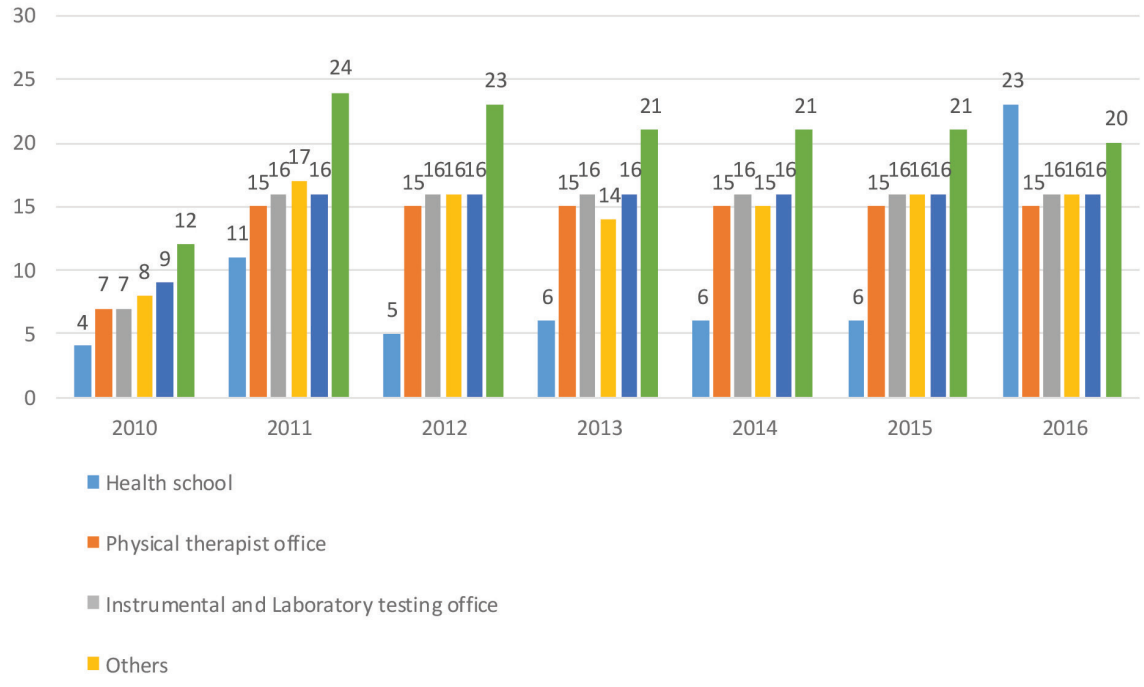
serve the health of the population through the provision of conditions for maintaining a healthy lifestyle (HLS) and reducing the level of socially important CNCDs and their risk factors (RFs) (Decree of the President of the Russian Federation of 09.10.2007 No. 1351). One of the main directions forming the measures aimed at the prevention of CNCDs and HLS is the identification and correction of CNCDs and their RFs in the framework of preventive examination, regular medical check-up in the health center (HC) (Order of the Ministry of Health of the Russian Federation of September 30, 2015 No. 683n). Conclusions on the performance of medical organizations (MO), including the preventive one, are formulated by analyzing common forms of statistical reporting and are the basis for making operational management decisions in the health sector. The basis of the reporting documentation is the principles of information completeness and accuracy; practical importance; the succession of accounting and reporting forms; consistency (Statistical accounting and reporting of health care institutions. 2006). Information of an epidemiological nature reflecting the structure and prevalence of chronic non-communicable diseases and their risk factors is extremely important in the field of prevention of chronic non-communicable diseases, along with the data related to the efficiency of health care resources. This approach to statistical reporting was substantiated in the minutes of the videoconferencing dated February 13, 2012 on the implementation of measures aimed at the formation of a healthy lifestyle among the population of the Russian Federation, including the reduction of alcohol and tobacco consumption.

According to the minutes, all health centers of the Russian Federation before July 1, 2012 were supposed to provide the Internet access and install the FCHC computer program (Functional component of the health center). They had also to connect to the Federal Information Resource (FIR). This, on the one hand, would significantly help practitioners through automation of examinations. On the other hand, it would ensure high quality of epidemiological data and the possibility of operative control over all health centers activities. However, this approach was not fully implemented, due to both technical reasons (incompatibility of a number of hardware and software complexes with FCHC due to decentralized equipment procurement) and insufficient quality of information included in accounting documentation[2,3,10,11,13] (Golikova, 2012; Maksikova, T. M., Gubin, 2010; Starodubov et al., 2015; Starodubov, Soboleva & Savchenko, 2016; Teplyakova & Shcherbakov, 2014).

We have analyzed the information on the activities of the Irkutsk Region health centre for 2010-2016, obtained from reporting forms No. 68, approved by the order of the Ministry of Health and Social Development of Russia dated August 19, 2009 No. 597n./. We have also made an express-analysis of the reporting forms No.131/o "Information on medical examination of certain groups of the adult population" for 2013-2014 (Order of the Ministry of Health of the Russian Federation from March 6, 2015 No. 87n; Order of the Ministry of Health of the Russian Federation of October 26, 2017 No. 869n, Statistical accounting and reporting of health care institutions. 2006).

The first section of the reporting form No.68 "General Information" presents data on the structure, staffing and equipment of the health centre. The dynamics of the number of HC departments in the Irkutsk region is shown in Figure 1.

Figure 1. Availability of offices in the health centre, 2010–2016.



The diagram in Figure 1 demonstrates that the number of medical structures almost doubled in 2011.

The objectives of this research did not include a detailed study of the medical examination document flow. However, to justify the need to optimize reporting, a brief analysis of Form No. 131 was made with a few examples of the problems demonstrated by the medical examination in the Irkutsk region for the period of 2013-2014 (Order of the Ministry of Health of the Russian Federation from March 6, 2015 No. 87n).

Table 1. Dynamics of the medical staff structure, 2010-2016

No.	Medical Staff Categories	Year						
		2010	2011	2012	2013	2014	2015	2016
1	Recommended number of doctors (order No.683n)	92	92	92	92	92	92	92
2	Number of staff doctors in the Irkutsk health centre(Form No. 68); % of (1)	59; 64,1%	68; 73,9%	60,5; 65,8%	60,5; 65,8%	62,0; 67,4%	56,75; 61,7%	49,25; 53,5%
3	Number of occupied posts of doctors in the Irkutsk health centre; % of (1); % of (2)	28,75; 48,7%; 31,3%	42,75; 62,9%; 46,5%	35,25; 58,3%; 38,3%	40,75; 67,4%; 44,3%	37,75; 60,9%; 41%	36,25; 63,9%; 39,4%	26,25; 53,3%; 28,5%
4	Recommended number of heads (order No.683n)	34	34	34	34	34	34	34
5	Number of staff heads in the Irkutsk health centre(Form No. 68); % of (4)	6,5; 19,1%	9,75; 28,7%	9,75; 28,7%	8,25; 24,3%	8,25; 24,3%	7; 20,6%	6; 17,6%
6	Number of occupied posts of heads in the Irkutsk health centre; % of (4); % of (5)	5,5; 84,6%; 16,2%	8,75; 89,7%; 25,7%	6,75; 69,2%; 19,9%	8; 97%; 23,5%	7; 84,8%; 20,6%	5,5; 78,6%; 16,2%	4,5; 75%; 13,2%
7	Recommended number of nursing staff (order No.683n)	126	126	126	126	126	126	126
8	Number of staff nurses in the Irkutsk health centre(Form No. 68); % of (7)	33; 26,2%	46; 36,5%	45; 35,7%	50,25; 39,9%	46,75; 37,1%	60,75; 48,2%	63,75; 50,6%
9	Number of occupied posts of nurses in the Irkutsk health centre; % of (7); % of (8)	24,25; 73,5%; 19,2%	35,25; 76,6%; 28%	31,5; 70%; 25%	31; 61,7%; 24,6%	31,5; 67,4%; 25%	38,75; 63,8%; 30,8%	45,75; 71,8%; 36,3%
10	The ratio of key staff members and part-timers, doctors	14/32	20/39,25	23/23	28/16	24/16,5	20/14,5	16/8,5
11	The ratio of key staff members and part-timers, heads	6/1	7/6	6/4	9/2	7/2	4/3	5/1
12	The ratio of key staff members and part-timers, nursing staff	18/9	23/18,25	26/11	27/6	25/4,5	25/5,75	30/3,75

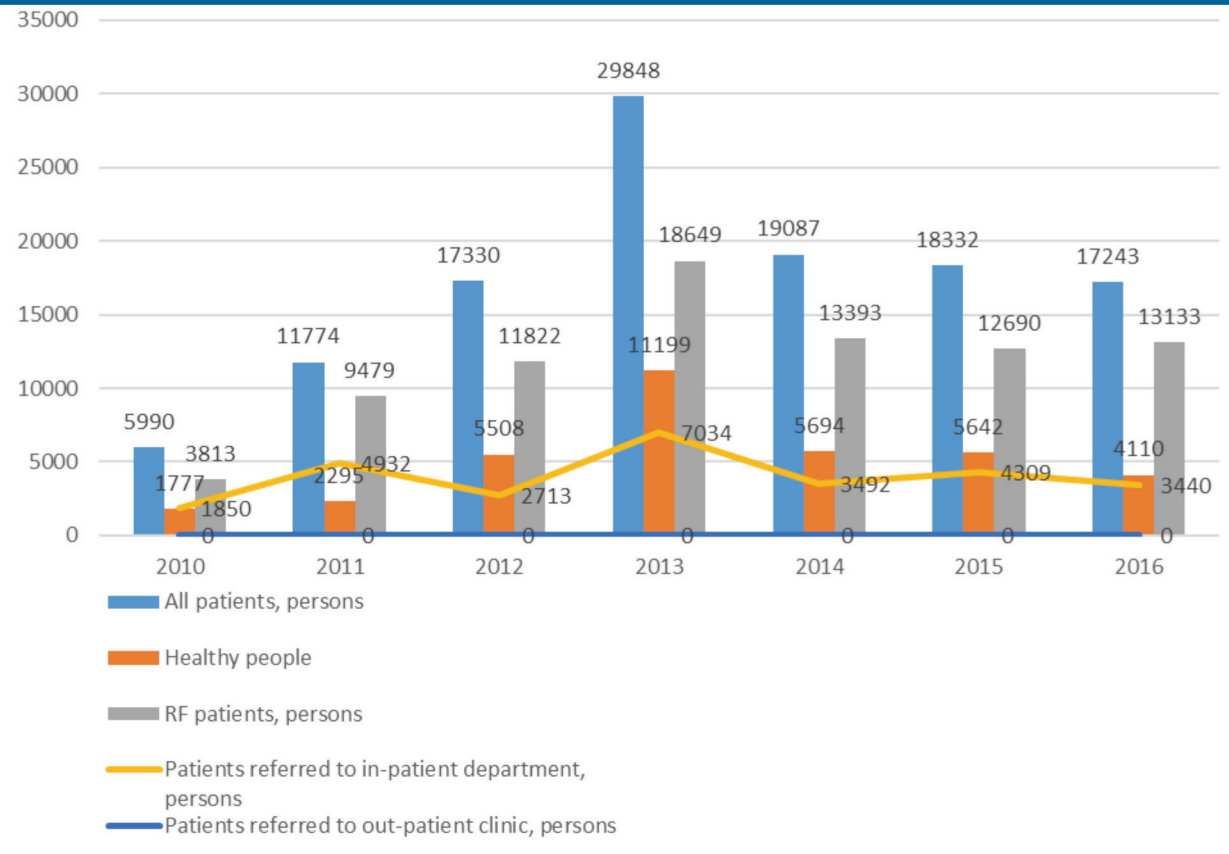
In accordance with the recommendations of SSRCMP, preventive counseling must take at least 50% of the complete physical examination time. The task of the counseling is to educate citizens on the basics of healthy lifestyles and correction of the risk factors of chronic non-communicable diseases. In order to optimize preventive measures in relation to CNCDs, various forms of counseling have been proposed, including group ones - within the framework of the healthy lifestyle schools and individual schools for the correction of identified risk factors for CNCDs. The effectiveness and efficiency of counseling can be traced only partially based on the information provided in the 2008-2009 subsection of the second section of the reporting form No. 68. In order to teach adult population the basics of physical training a physical therapist office was included in the structure of the health centre. Quantitative indicators reflecting the activity of physical therapist offices and schools of health in the health centre for the seven-year period are presented in table 3.

Table 2. Evaluation of activities of physical therapist offices and health schools, 2010-2016

No.	Indicator	Year						
		2010	2011	2012	2013	2014	2015	2016
1	Number of complete physical examinations, units	8652	16554	22189	39813	23142	18202	18252
2	Number of people referred to the physical therapist office, people	1497	1798	715	2063	735	915	976
3	Number of carried manipulations, units	15368	15151	7143	15334	6151	7762	8188
4	Proportion of people referred to the physical therapist office, people (2/4), %	17,3	10,9	3,2	5,2	3,2	5,0	5,3
5	Number of manipulations per one person (3/2), unit/person	10,3	8,4	10,0	7,4	8,4	8,5	8,4
6	Healthy lifestyle schools, units	24969	15950	55107	–	10452	19942	26788
7	Number of healthy lifestyle schools per person (6/1), unit/person	2,9	1,0	2,5	–	0,5	1,1	1,5
8	Schools of preventing CNCDs, units, of which:	2926	5211	5457	31621	6477	7207	8809
9	Arterial hypertension*	–	–	771	244	548	1746	876
10	musculoskeletal and osteoarticular system disorders*	506	2108	567	6768	2984	721	3993
11	asthma*	208	758	409	374	1029	332	1255
12	diabetes*	376	329	833	1585	888	1435	1027
13	others*	1836	2016	2877	2289	1028	2973	1658

Changes in survey totals are presented in Figure 3.

Figure 2. Dynamics of visits and referrals in the health centre, 2010-2016.



Results: Figure 1 demonstrates that the number of medical structures almost doubled in 2011. This was fully explained by the opening of the health centre for children. Then according to the legislation system, there were supposed to be significant changes. However, there weren't any changes. In accordance with the order No. 683n of 30/09/2015, it was recommended to open 2 more separate divisions: a healthy food office and a dental hygienist office. The purpose of health schools and other structural units of the health centre, marked with an asterisk, should have been explained in the explanatory notes.

Considering the fact that there are 17 health centers in the Irkutsk region, each of which is designed for 200 thousand people, in accordance with the latest recommended staff standards, health centers should be provided with heads; medical prevention doctors; psychotherapists or medical psychologists; dental hygienists; physical therapy instructors; senior nurses; nurses and opticians in the number of 17; 75; 17; 17; 17; 17; 75 and 17 specialists, respectively. This does not correspond to the real situation presented in table 1, which reflects the staff structure changes in the Irkutsk region health centre from 2010 to 2016 (Order of the Ministry of Health of the Russian Federation of September 30, 2015 No. 683n).

The biggest number of referrals to the physical therapist office was recorded in 2010, when the health centers began to work. Over time, there was a negative trend, despite the fact that the Irkutsk region belonged to one of the few regions where a separate tariff for this service payment was approved together with the territorial compulsory medical insurance fund. Probably, this situation is connected with insufficient organizational support of the health centers, as well as with a high workload and a low number of specialists in sports medicine and physiotherapy exercises. The average number of manipulations received by individuals for prevention purposes was about 9, which is comparable with the indicators for chronic diseases. Since the separation of schools of healthy lifestyle and prevention of chronic low risk diseases does not have clear criteria, the conclusions regarding the results of their activities are quite hypothetical. The average number of visits per year per person of HLS schools was 1.6. The interpretation of this indicator is difficult, since there is no information about how many and what kind of HLS schools should be organized in the health centre. Opaque reporting, the redistribution of time in favor of diagnostic procedures, most of which have no evidence, and a formal attitude to preventive counseling in health centers are also noted in other scientific sources (Tyulyandin & Zhukov, 2018).

The analysis of the indicators shown in Figure 3 largely duplicates the information obtained from the previous sections of form No. 68. It should be noted that the highest percentage of referrals to specialists was found among sports medicine doctors and physical therapist, with a maximum of 81.9% in 2012 and 78.9% in 2011, respectively. This shows a significant contribution of these specialists to the additional workload carried out by local doctors and subspecialists.

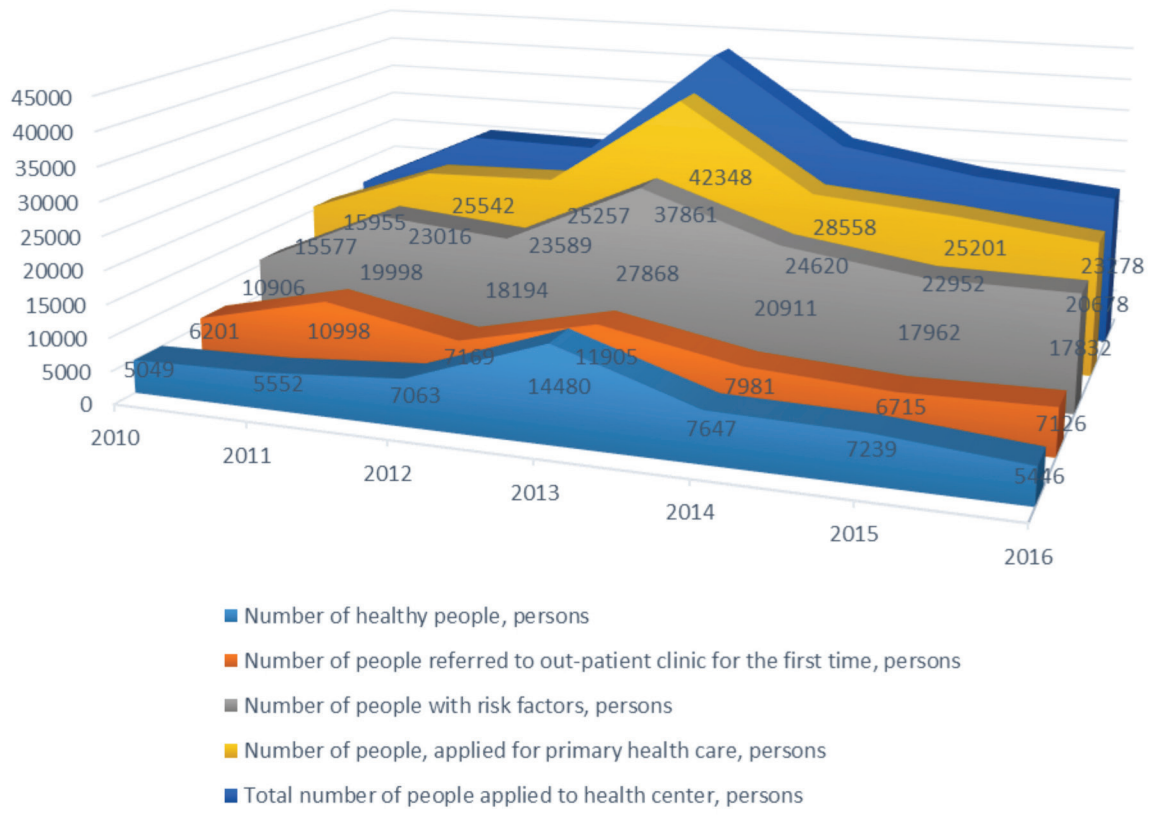
The analysis of table 1 shows that the number of positions approved by the Irkutsk Region Ministry of Health (MH) and the actually held positions is significantly lower in comparison with the recommended standards of the Ministry of Health of the Russian Federation of September 30, 2015 No. 683n. It is important to note that the number of doctors and heads of health centers has been steadily declining over the past three years, and the increase in nursing staff is insignificant. The staff situation in the health center can also be assessed as unfavorable, as there is a high proportion of part-time workers in relation to the main staff (Starodubov et al., 2014; Starodubov, Soboleva & Savchenko, 2016). Information on the categories of medical staff, the availability of thematic improvement and other staff is not presented in Table 1, as it contains formal information on the basis of which it is difficult to draw any conclusions.

The list and amount of the health center equipment for persons aged 18 years and older did not change significantly. But in 2011, dental units were purchased, and in 2012, optician instruments were commissioned (a set of trial eyeglasses and spectacles, sign projectors, automatic refractometer, automatic pneumotonometer). The reporting forms do not reflect the movement of equipment (body composition analyzers, test systems for determining cotinine and toxic substances in the body) after excluding it from the standard equipment of the health center, which was approved by order of the Ministry of Health of the Russian Federation of September 30, 2015 No. 683n. Also, Smokerlyzer and the CO monitor have not been combined, although in fact it is one and the same device.

Thus, the analysis of the first section of the form No. 68 showed that the information is excessive. It does not give a clear idea about the efficiency of material and human resources. The absence of interconnected changes in the regulatory documents that govern the prevention of chronic non-communicable diseases and reporting forms creates a situation in which the received information inevitably loses its completeness, reliability and practical value, fulfilling only a formal role.

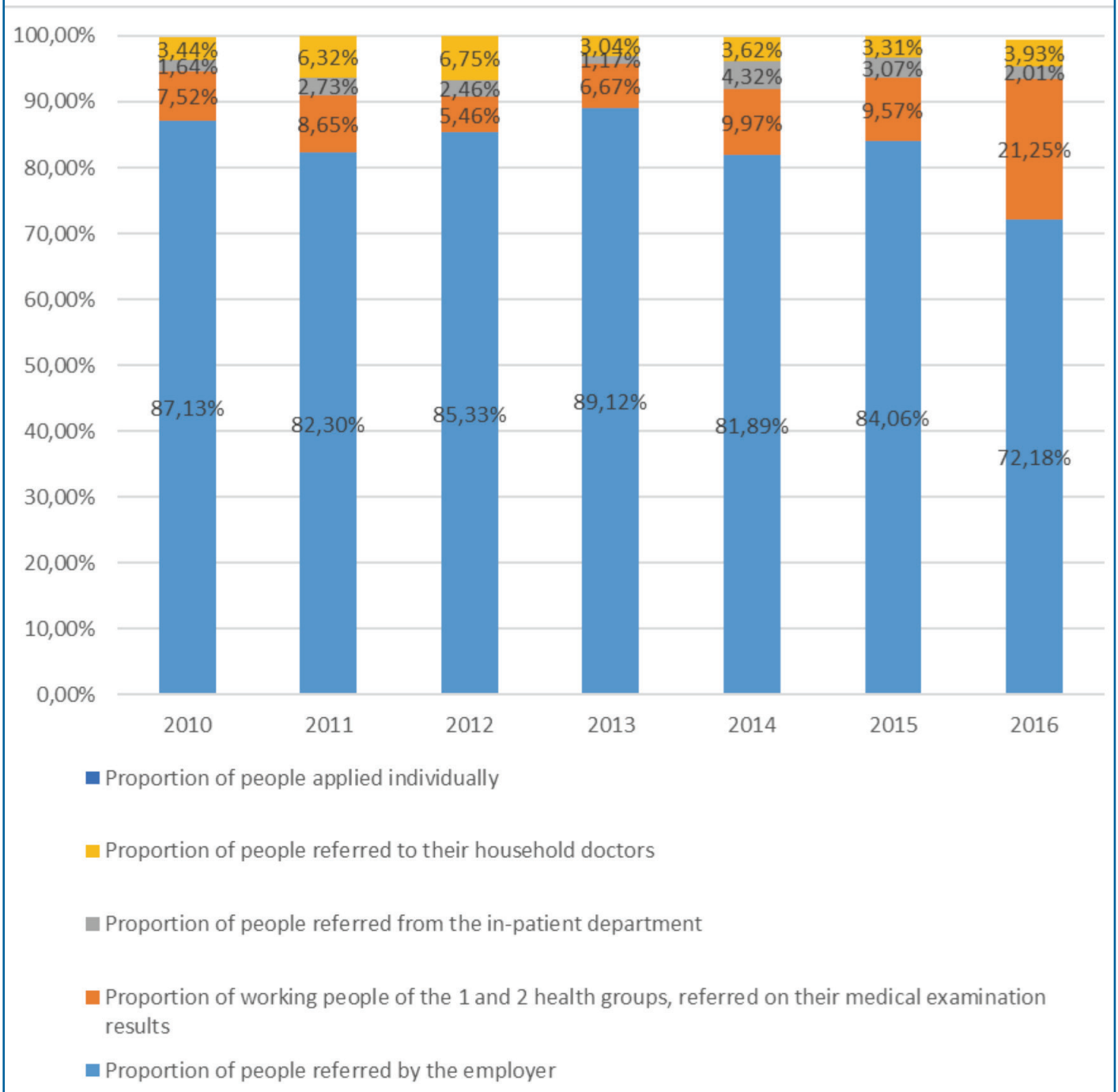
The second section of the reporting form No. 68 is the most important. It reflects the main characteristics of the citizens who applied to the health centre and the tactics of their case management. The structure of patient flows for 2010-2016 is shown in Figure 2.

Figure 3. The dynamics of population applied to the health center from 2010 to 2016



The number of patients who applied to the IR health center for adults aged 18 and older over 4 years was constantly increasing (Figure 2), reaching its peak in 2013 with an increase of 165.4% compared to 2010. Later there was a downward trend, which was probably a result of a low level of interest in the health center, both on the part of the population and on the part of the health authorities. The share of medical check-ups of the all visits was 97.6%; 90.1%; 93.4%; 89.4%; 86.2%; 91.1% and 88.8%. And the number of visits per 1 health centre was 1772.8; 2838; 2806.3; 4705.3; 3173.1; 2800.1 and 2586.4 in 2010; 2011; 2012; 2013; 2014; 2015 and 2016, respectively. Problems of low attendance were observed in 2011 in all health centers of the Russian Federation. Thus, there were 5586 visits out of the planned 6 thousand visits per one health centre. As a result, only 2.7% of the population of the Russian Federation received medical consultations. This was considered insufficient by the Ministry of Health and the Social Development of Russia. The recall frequency (dynamic observations) was very low, making up only 1.3%. Although in practice, dynamic observations can be carried out with a frequency of up to 2 times a year. That is, they must exceed the number of complete physical examinations. According to the results of physical examinations in the Russian Federation in 2011, 25.6% of the population were recognized as healthy, and 72.2% had risk factors of chronic non-communicable diseases chronic non-communicable diseases (Golikova, 2012). A similar situation was observed in the health center of the Irkutsk Region, where the proportion of healthy individuals was 31,6%; 21,7%; 28%; 34,2%; 26,8%; 28,7% и 23,4% in 2010; 2011; 2012; 2013; 2014; 2015 and 2016, respectively. Although this information can hardly be considered absolutely reliable. In contrast to medical examination, the existing approach to assessing the health status in the health center is not correct. It is not based on the traditional definition of a health group, but on the presence or absence of the risk factors of chronic non-communicable diseases chronic non-communicable diseases. This fact makes the health assessment extremely subjective, since the risk factors include gender and behavioral risk factors (smoking, poor nutrition, sedentary lifestyle). They are the conditions that are not the markers of the disease (Boytsov et al., 2017). One of the main prevention tasks of CNCDs was to ensure continuity between different structures that provide preventive activities. That is, in practice the main flow of patients of the health center must be formed according to the place of living, household doctors and specialists based on the results of medical and preventive examinations. The main groups of people applied to the health center in the seven-year period are shown in Figure 3.

Figure 4. The structure of visits to the Irkutsk region health center according to the source of referral



Based on the data presented in Figure 3, it can be concluded that more than 3/4 people apply to the health center independently. In 2016, the proportion of people referred according to their place of living slightly increased. This is difficult to associate with any objective reasons, since over the previous 6 years, this indicator was not stable and it was changed in accordance with management tasks.

The number of patients referred on medical examination results, by the employer and from in-patient departments remained extremely low, with no visible positive dynamics.

Another task of the second section of form No. 68 is to determine the effectiveness of medical equipment (table 2).

Table 3. The assessment of the health center equipment use for the period of 2010-2016

No.	Examination method	The number of implemented methods by year, indicating the% of the number of medical examinations						
		2010	2011	2012	2013	2014	2015	2016
1	Hardware and software complex	15532; 179,5%	23741; 143,4%	22771; 102,6%	35483; 89,1%	23904; 103,3%	22223; 122,1%	19569; 107,2%
2	Cardiovisor	15319; 177,1%	23332; 140,9%	24320; 109,6%	37520; 94,2%	25102; 108,5%	23500; 129,1%	21602; 118,4%
3	Angiology screening	10247; 118,4%	19016; 114,9%	13895; 62,9%	17672; 44,4%	15461; 66,8%	15707; 86,3%	12396; 67,9%
4	Spirometry	11505; 133%	22909; 138,4%	22474; 101,3%	39061; 98,1%	25149; 108,7%	23175; 127,3%	21194; 116,1%
5	Bioimpedansometry	13144; 151,9%	22213; 134,2%	22916; 103,3%	29427; 73,9%	23205; 100,3%	23423; 128,7%	21449; 117,5%
6	Glucose and cholesterol express blood tests	8652; 100%	16284; 98,4%	18519; 83,5%	30219; 75,9%	22097; 95,5%	20179; 110,9%	17923; 98,2%
7	Determination of toxic agents in biological fluids	569; 6,6%	2459; 14,9%	304; 1,4%	97; 0,2%	479; 2,1%	222; 1,2%	0; 0%
8	Evaluation of exhaled air carbon monoxide with the definition of carboxyhemoglobin	6809; 78,4%	10916; 65,9%	13388; 60,3%	18313; 46%	16343; 70,6%	14473; 79,5%	11401; 62,5%
9	Cotinine definition	857; 9,9%	2757; 16,7%	1147; 5,2%	26; 0,1%	38; 0,2%	16; 0,1%	0; 0%
10	Smokerlyzer	2569; 29,7%	1146; 6,9%	3997; 18%	7768; 19,5%	4360; 18,8%	3882; 21,3%	4650; 25,5%
11	Cardio-machine	2260; 26,1%	2975; 18%	876; 3,9%	2328; 5,8%	1122; 4,8%	784; 4,3%	754; 4,1%
12	Pulse oximetry	10401; 120,2%	19814; 119,7%	21754; 98%	30234; 75,9%	24409; 105,5%	23126; 127,1%	21988; 120,5%
13	Dental hygienist equipment	–	4057; 24,5%	9197; 41,4%	16009; 40,2%	11509; 49,7%	12785; 70,2%	13576; 74,4%
14	Optician equipment	–	–	11525; 51,9%	33678; 84,6%	22139; 95,7%	21947; 120,6%	21055; 115,4%
	Total number of complete medical examinations	8652	16554	22189	39813	23142	18202	18252

Table 2 shows the frequency of the examination methods use by the health centre for 7 years. The rapid assessment shows that within one complete medical examination, from 2010 to 2016, the average frequency of the use of the computerized heart screening system Cardiovizor; hardware and software complex; spirometry; bioimpedancemetry; pulse oximetry was 1.3; 1.2; 1.2; 1.2; 1.1, respectively. Such a high frequency of provision of the first three positions can be somehow explained by the presence of several techniques combined into one examination method with separate accounting. But the need to perform bioimpedancemetry and pulse oximetry tests twice in one procedure is difficult to justify. It is important to note that the determination of toxic agents in biological fluids of the body, cotinine and other biological markers in blood and urine was rarely done and practically "disappeared" by 2013. Although the order No. 683n of the Ministry of Health of the Russian Federation, according to which the equipment for these tests was excluded, was issued only in 2015. Also, the frequency of angiology screening has naturally decreased. This is associated with frequent technical malfunctions, difficulties in determining indicators, performance, interpretation with respect to this examination method. According to the reporting data, the workload of equipment increases, which ensures the activity of the dental hygienist and ophthalmology office. But it is difficult to speak of a positive trend as a whole, since these interventions do not directly affect the management of risk factors of CNCDs. It has already been mentioned that Smokerlyzer and the CO monitor are the same device. Therefore the total frequency of providing this medical service is 0.9. From the point of view of evidence-based medicine, this method does not have a diagnostic significance for CNCDs screening. When it is used for a motivational purpose, its frequency should not exceed the prevalence of smoking in the RF population. General reporting is provided for the determination of blood hemoglobin and cholesterol by the express method, but actually the number of hemoglobin and cholesterol tests differ. And finally, cardio-machine does not refer to diagnostic equipment, although this service is still taken into account in subsection 2006-2007 "Examined in the testing room". Table 2 does not provide any data on the equipment operation during repeated examinations, since their share in the structure of visits is very low. The analysis of the examination results obtained in the testing room was not analyzed, as the clinical guidelines for cardiovascular disease prevention used in the health centre do not meet the European clinical guidelines for cardiovascular disease prevention of 2016; this is also true for other chronic non-communicable diseases (Piepoli et al., 2016).

Discussion

It should be noted that the reporting form No.131 in comparison with the reporting form No.68 is more cautious, both in terms of quality and the amount of information provided in it. This document consists of 7 sections. The first section reflects the gender and age structure and completeness of the medical examination of the population. The number of age groups is limited to three, while in the previous canceled form No. 131/o, 27 groups were subject to medical examination: people aged 21-99 years every 3-year period. This approach did take into account the results of preventive examinations, as they were conducted in other years. Thus, there was no data on the health status of 57 age groups excluded from reporting. Therefore the age of determining relative and absolute cardiovascular risk from 21 to 39 years and from 42 to 63 years was reduced. This is preserved in the current procedure for conducting medical examinations of certain population groups and it distorts the information on risk groups of CVD. The second and third sections include information on stages I and II of medical examination and the number of cases when different methods were used, as well as the number of diseases or suspected cases identified as a result of their use. This raises questions about the scope of the examination by the medical assistant (nurse-midwife) of the department (office) of medical prevention, which is prescribed only in relation to taking a smear test from the cervix and cervical canal. Therefore, it is not surprising that the detection of diseases or suspected cases during the examination in 2013 and 2014 in the Irkutsk region varies from 215421 to 94407 cases. That is, from 61.9% to 28.6% of the number of persons who went through the first stage of medical examination. The differences in the results of the survey aimed at identifying chronic non-communicable diseases and their risk factors, as well as the consumption of drugs and psychotropic substances without a doctor's prescription are even more surprising. According to them, the detection of pathological changes or suspicions of them in 2014 decreased by 9.4 times compared to 2013, with a decrease of only 5.3%.

The same applies to other types of preventive examinations carried out at the first stage of medical examination, which was completed by 4849239 and 4414926 people in 2013 and 2014. The disease was suspected or detected in 2881988 and 281641 people, respectively. On the basis of the order of the Ministry of Health of the Russian Federation No. 869n of 26.10.2017, full blood count (FBC), including the complete one; as well as biochemical blood test, urine test, abdominal ultrasound, preventive visit to a neurologist were excluded from the first stage of the examination but not from the reporting documentation. The second stage of the medical examination also decreased: esophagogastroduodenoscopy (EGDS), lipid blood test

and glycated hemoglobin test or glucose tolerance test were removed from the examination list. This was natural, considering the high cost and unproven effectiveness of these examination methods for screening CNCDs and their risk factors (Order of the Ministry of Health of the Russian Federation of October 26, 2017 No. 869n). As for the Irkutsk region, at stage II of the medical examination in 2014, for unexplained reasons, there was a decline in the detection of suspected and identified diseases with a minimum and maximum decrease of 36.3% (urologist examination) and 91.8% (duplex scanning of brachycephalic arteries). Section IV provides information on the prevalence of risk factors and chronic non-communicable diseases. Despite the fact that the 4th edition of the methodical recommendations "Organization of the medical examination of certain groups of the adult population" has already been published, there are still some difficulties in assessing a number of RFs. Thus, besides the increased level of stress, psychosocial risk factors are almost not taken into account; there are no clear criteria for poor nutrition; the level of physical activity is interpreted differently; fasting plasma glucose is taken as hyperglycemia at the level of 6.1 mmol /L, although a quick test for the assessment of capillary blood glucose can be used (Boytsov et al., 2017).

Also, Section IV does not indicate the number of persons of each age and gender group examined for the presence of one or another risk factor. This allows only indirectly to judge the prevalence of CNCDs and their risk factors on the basis of sections I and II. In this section, there are mistakes in assessing the total cardiovascular risk (SCORE); in 2013 and 2014, in the age group from 21 to 36 years, 12112 and 6814 cases with moderate, high and very high absolute risk of SCORE were identified. Although the scale is intended for the age range from 40 to 65 years old. It is rather difficult to assess Section V. In accordance with the methodical recommendations on medical examination and order No. 869n of 26.10.2017, full blood count (FBC), urine test, abdominal ultrasound, EGDS, lipid blood test and glycated hemoglobin test or glucose tolerance test were removed from the examination list. The reporting form No. 131 still identifies tumors of the esophagus and stomach, pancreas, kidneys with the definition of the stage; blood and hematopoietic disorders; aortic aneurysm. In the international guidelines, it is recommended to use low-dose computed tomography, rather than fluorography, which is mainly used for medical examination in the Russian Federation (Tyulyandin & Zhukov, 2018), as a screening for oncological diseases (OD) of the trachea, bronchi and lungs. Since medical examination is aimed at identifying epidemiologically significant in relation to mortality chronic non-communicable disease and their risk factors, it is not reasonable to include into the reporting form such diseases as tuberculosis; pneumonia, bronchitis; gastritis and duodenity and a list of other acute and chronic pathologies. Following that line of reasoning, musculoskeletal and osteoarticular system disorders should also be indicated, being the third cause in the structure of disability of the population, after CVD and OD. On the contrary, in the form No.131 there are no oncological diseases of skin and mucous membranes, taking the second place in terms of OD prevalence. Although they can be detected visually without additional costs. Section VI "Information on the preliminary diagnoses during the medical examination" completely duplicates section V. It does not explain on the basis of what medical examination a preliminary or a clinical diagnosis was made. In accordance with it, most of the diagnoses of chronic non-communicable diseases were established in the course of medical examination should be preliminary, and already confirmed and specified by general practitioners with the involvement of narrow specialists and additional research methods. In practice, in 2013 and 2014, the ratio of diagnosed and suspected chronic non-communicable diseases in the Irkutsk region was 43103/808 and 74180/24189. This indicates the problems of accounting and reporting, not of the individual specialists performing medical examination. Another innovation of the methodological recommendations of 2017 on the organization of medical examination of certain groups of the adult population was the mandatory use of standardized questionnaires for citizens under and over the age of 75 for the detection of chronic non-communicable diseases and their risk factors.The attempts to personalize questioning were made more than once. However, the diversity of groups, the lack of automation only complicate the examination process and narrow the questionnaire's possibilities. For example, mass testing for senile is necessary for people over 60. Section VII defines the health group and reflects the further structure of the case management of patients outside the medical examination, as well as the general results of the medical examination. According to the order No. 869n of the Ministry of Health of the Russian Federation of 26.10. 2017 and the previous regulations, health group III, including subgroups IIIa and IIIb, requires dispensary observation. However, in practice, in the Irkutsk region in 2013 and 2014 only 13.6 % and 21.9% of health group III cases were notified.

Sheet 2005 in form No. 68, which reflects the distribution of the workload, the prevalence of risk factors and the structure of referrals to doctors, is complex and ambiguous for understanding. Mistakes are inevitable when it is filled in and interpreted, since the table can include data on both specialists of the health center and other doctors who patients are referred to by the results of the examination. Thus, it is not clear whether cardiologists, endocrinologists, obstetrician-gynecologists, sports medicine doctors, physical therapy specialists, hygienic education doctors and other specialists are the staff members of the health center, or they advise by the referral of the health center doctors.

The analysis also noted that on the basis of medical examinations 38.87%; 43.06%; 28.38%; 28.11%; 27.95%; 26.65% and 30.6% of patients in 2010; 2011; 2012; 2013; 2014; 2015 and 2016 were referred to specialists of

outpatient departments. Unfortunately, this fact indicates that the health center contributes to an increase in visits.

Despite the large number of problems, the main drawback of Section II of the report was the lack of information about the structure and prevalence of CNCDs and their risk factors. This was noted by the chairman and co-chairmen of the videoconference meeting on the health center of February 13, 2012. On this occasion the authorities and the main specialists in medical prevention of the subjects of the Russian Federation received an order to analyze the existing structure of the risk factors of CNCDs. However, it was impossible to determine the structure and prevalence of risk factors of CNCDs without a systematic change in the accounting and reporting documentation, so the order was not implemented (Golikova, 2012).

Conclusions

As a result of the research, a marked disparity between the actual staffing and the recommended staffing of health centers (order of the Ministry of Health of the Russian Federation No. 683n of 30.09.2015) was revealed. It was true especially for doctors, whose shortage in 2016 was 71.5%. The number of visits to health centers decreased by 44% in 2016 compared to 2013, with a significant predominance in the structure of complete medical examinations. The proportion of persons referred by medical organizations is still not significant. The contribution of equipment actively used in health centers to the identification of chronic non-communicable diseases and their risk factors is unclear, while more simple methods with high evidentiary value are not used enough.

Thus, the lack of interconnected changes in medical and preventive examinations, guidelines, regulating the medical examination process, standardized forms of medical documentation and statistical reporting; the shift of emphasis from the prevention of high and very high risk conditions to secondary and even tertiary prevention; the redundancy of information that is not directly related to epidemiologically significant chronic non-communicable diseases and their risk factors; incomplete compliance of the examination volume and structure with international recommendations lead to a poor quality of medical examination and poor reliability of the obtained information.

The analysis of the forms No.131o of the Irkutsk region for 2013-2014 demonstrated a low contingence of the regulatory documents changes governing medical and preventive examinations; the shift of emphasis from the prevention of high and very high risk conditions to secondary prevention; incomplete compliance of the volume and structure of preventive examinations with the international recommendations.

A detailed study of the form No. 68 and the analysis of the form No. 131 revealed a number of shortcomings that may impede the obtaining of objective information on the epidemiology of chronic non-communicable diseases and their risk factors, as well as on the effectiveness of preventive measures. This requires changes in accounting and reporting forms related to medical prevention of chronic non-communicable diseases.

The current situation cannot be considered satisfactory and requires immediate intervention: correction of health care regulatory documents. The problem of high quality reporting is possible by generating a reporting form not in individual regions, but at the level of the Federal Information Resource, whose potential has not been fully implemented locally.

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