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Healthcare of the ChukotkaAautonomous Area: past, present and future

The article is devoted to the analysis and prognosis of the state of healthcare of the Chukotka Autonomous Area and is conceptual in nature. The essence of the concept of this article is reduced to the necessity of construction a system of medical support and maintenance of the Northern sea route.

Здравоохранение Чукотского автономного округа: прошлое, настоящее, грядущее[1]

Статья посвящена анализу и прогнозу состояния здравоохранения Чукотского автономного округа и носит концептуальный характер. Суть концепции данной статьи сводится к необходимости выстраивания системы медицинского обеспечения и сопровождения Северного морского пути. В статье определяются главная цель и приоритеты развития региональной медицины: сохранение стабильного финансирования медицинских программ, наращивание сил и средств окружного здравоохранения, ликвидация дефицита медицинских кадров и повышение его профессионализма, обеспечение бесплатной медицинской помощи на всей территории округа, сохранение бесперебойного лекарственного обеспечения, повышение продолжительности и качества жизни населения Чукотки. В статье осуществлён анализ текущего периода в медицине, выявлены приоритетные медицинские показатели, определяющие потенциал положительного развития всей системы здравоохранения округа, а также показаны законодательные и научные перспективы.

Key words: *Arctic, Northern sea route, arctic medicine, Chukotka Autonomous Area, healthcare, medical support, medical maintenance.*

Ключевые слова: *Арктика, Северный морской путь, арктическая медицина, Чукотский автономный округ, здравоохранение, медицинское обеспечение, медицинское сопровождение.*

Medicine of the Chukotka Autonomous Area is a major branch of life support of people living in the Arctic!

[1] Статья опубликована на сайте http://www.federalexpo.ru/company/company_2662.html?show=about

The main objective of the Health Department of the Chukotka Autonomous Area is to maintain the stability of the achieved position of regional medical and saving effective progressive reform of local health.

Movement towards this goal lies in the preservation of stable funding for health programs, build-up of healthcare forces and funds, the elimination of the deficit of medical staff and increasing its professionalism, providing free medical care available throughout the territory of the region, preserving smooth wide-range drug supply, increasing the length and quality of life of people of the Chukotka region.

Achieving these priorities seems to be specific because of the difficult management challenge related to its proper implementation in a very aggressive northern climate, dangerous to the lives of doctors themselves, low population and therefore patient density with limited capacity of ambulances in Chukotka weather conditions. Therefore, patient care or maternity care in the tundra in its moral significance is often based on human heroism of doctors, paramedics, nurses, paramedics, pilots, drivers and… ordinary people!

Moreover, a great responsibility lies on the Chukotka healthcare system when it comes to the medical support of the strategic initiative of the Russian Federation in the field of development of the Arctic and the Northern Sea Route! The basis for the healthcare system functioning in the Chukotka Autonomous Area are the provisions of federal law №323 (November 23, 2011) "On the basis of public health protection in the Russian Federation" which is implemented in the framework of the "Territorial program of state guarantees of free medical care provision to citizens for 2016 in the Chukotka Autonomous Area " (Resolution of the Government of the Chukotka Autonomous Okrug №369, December 24, 2015) and the State program "Healthcare Development", approved by Decree of the Government of the Chukotka Autonomous Area №412, October 21, 2013.

Bright look at the vastness of the future is impossible without the past filled with good! Successful conversion of the Chukotka healthcare in 2000s is the first of all due to unprecedented personal efforts of ex-governor of the Chukotka Autonomous Area Roman Abramovich who stopped the post-Soviet Union degradation of the medicine in the region, carried out the incredible modernization of healthcare facilities in the field of intensive capital construction with the purchase of the latest medical equipment. But most importantly, the foundations for the successful implementation of the regional healthcare projects of the present and future were laid. The unique historical example of personal asceticism of Roman Abramovich came in standards of Generosity and Humanity, created infinite perspective in applied medical science of the Arctic. In the shortest period of time advanced medical system working flawlessly in conditions of the Far North tundra has been developed to the best world samples. The construction of a modern medical superstructure in the best traditions of Soviet Union fundamental medicine is a jewel of the Chukotka Autonomous Area. The birth of the modern Chukotka healthcare model in a ruthless Arctic, will long serve as a magnet for high medical discussions, be the subject of in-depth research of advanced scientific medical schools and amaze the followers! These foundations of the success of the healthcare system laid previously, served as a good means for the acting governor of the Chukotka Autonomous Area Roman Valentinovich Kopin in the successful continuation of the implementation of regional health programs. First of all, the governor's efforts are aimed at maintaining a decent set up and intensive construction of new hospitals, the capital restructuring of medical areas with their further modernization using the latest

medical equipment, and responsible preparation of Chukotka healthcare to the era of the near future of the Russian State – return to the Arctic!

The healthcare system of the Chukotka Autonomous Area is based on the federal standards and practices of health care, with the vertical administrative dominant being the Health Department of Social Policy Department which manages six hospitals:

- State Budget Institution of Healthcare "Chukotka Regional Hospital" in Anadyr (the main medical facility of the region with the third level of health care delivery);
- State Budget Institution of Healthcare "Inter-district medical center" in Bilibino (second level of health care delivery);
- State Budget Institution of Healthcare "Inter-district medical center" in the village Egvekinot (second level of health care delivery);
- State Budget Institution of Healthcare "Providence District Hospital" in the village Provideniya (first level of health care delivery);
- State Budget Institution of Healthcare "Chaun district hospital" in Pevek (first level of health care delivery);
- State Budget Institution of Healthcare "Chukotka district hospital" in the village Lavrentiya (first level of health care delivery).

Regardless of such a small number of hospitals, their area of medical liability covers the whole territory of the Chukotka Autonomous Area – one of the great regions of the Russian Federation! This fact is exclusive to the statement by scientists, who create their own pieces of research in the science of "Public Health and Healthcare". Also if you consider that until 2014 all of the medical institutions were the branches of the single Chukotka district hospital, you can tell that that fact is even more relevant. District hospital bed capacity at the beginning of 2016 amounted to 697 beds, of which 638 were round-the-clock and 59 were day care beds.

318 doctors, including doctors and candidates of medical sciences and deserved doctors of the Russian Federation, and more than 700 people of the nursing staff work in the healthcare institutions of the Chukotka Autonomous Area. Most of these specialists are experienced and dedicated people who stick to the Hippocratic Oath with honor and dignity under any circumstances northern concourse. Many great names of the Chukotka medicine are well known far beyond the borders of the region.

The average salary of doctors in the in 2015 was 106120.0 rubles, nurses – 61391.0 rubles. Indicator of doctors per 10,000 people was 62.9, and the average medical personnel – 140.1 people, which is one of the best indicators around the country.

Analysis of the latest five-year plan in the sphere of healthcare revealed the effectiveness of a number of health measures taken earlier such as stop the natural population decline and secure the permanent population of the Chukotka Autonomous Area on the same statistical level. The resident population of the Chukotka Autonomous Area by 01.01.2016 is 50150, of which 13172 are children aged 0 to 18 years, 1967 are adolescents (by 01.01.2011 it was 50.668 people, including 13.071 children aged 0 to 18 years, and 2116 adolescents). This was facilitated by the preservation of fertility pace: in 2015 the birth rate was 13.5 per 1,000 population (in 2011–13.5, in 2012 – 14.1, in 2013 – 13.2, in 2014 – 13.3) and the rate of annual natural population growth in 2015 was +3.9 (in 2011 – +2.5, in 2012 – + 2.5, in 2013 – +2.7, in 2014 – +2.6).

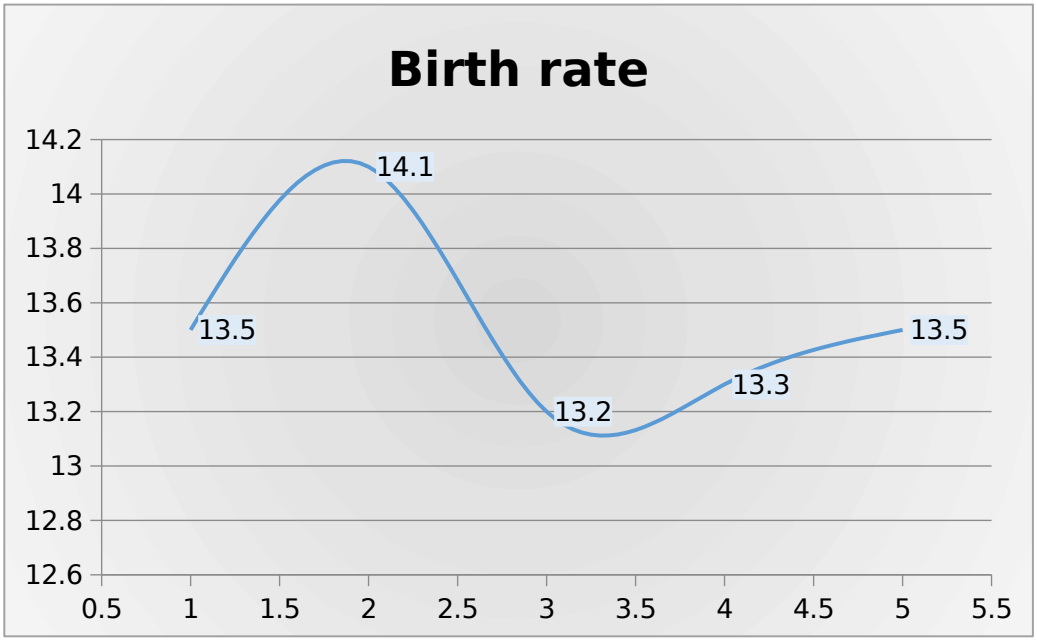


Fig. 1. Birth rates in the Chukotka Autonomous Okrug in 2011–2015 (with p<0.05)

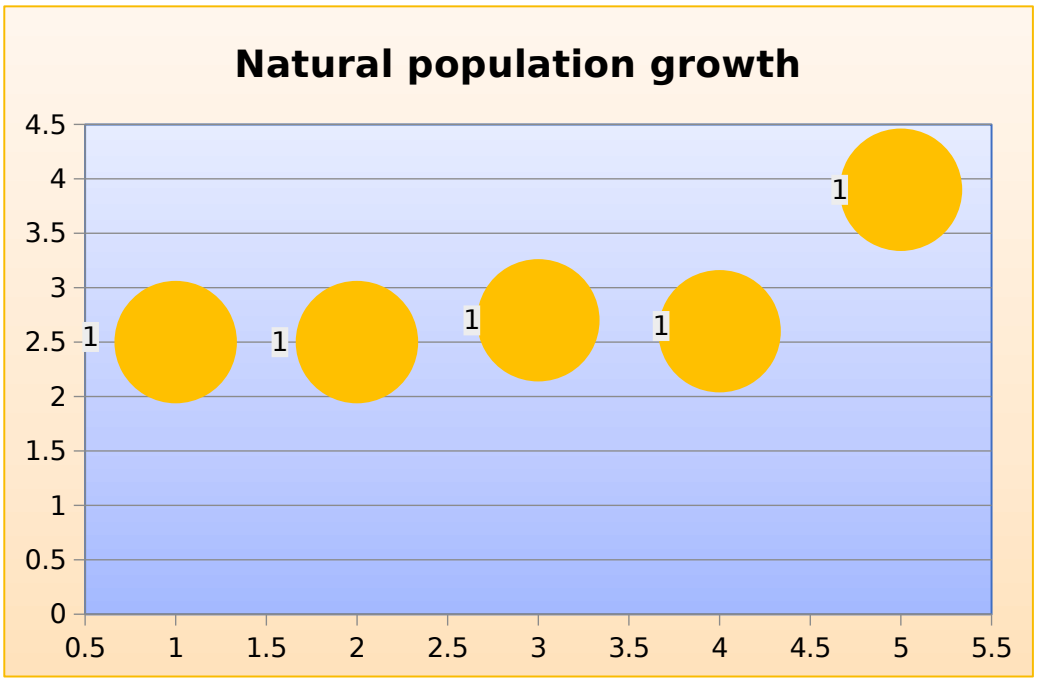


Fig. 2. Indicators of natural population growth in the Chukotka Autonomous Area in 2011–2015 (with p<0.05)

This fact allows us to look to the future of Chukotka confidently, especially given the likely prospects of building a perinatal center in the region. Decrease in overall mortality of the population in the region to 9.6 per 1000 population also contributed to the positive dynamics in the values of indicators of natural population growth in 2015 in the Chukotka Autonomous District Area. As shown in Figure 3 (in 2011 – 11.0, in 2012 – 11.5, in 2013 – 10.5, in 2014 – 10.7), this indicator looks especial if we take into account the situation in the Far-Eastern Federal district where natural population decline persists, and the rate of natural population growth in recent years has become negative, equal to -0.9.

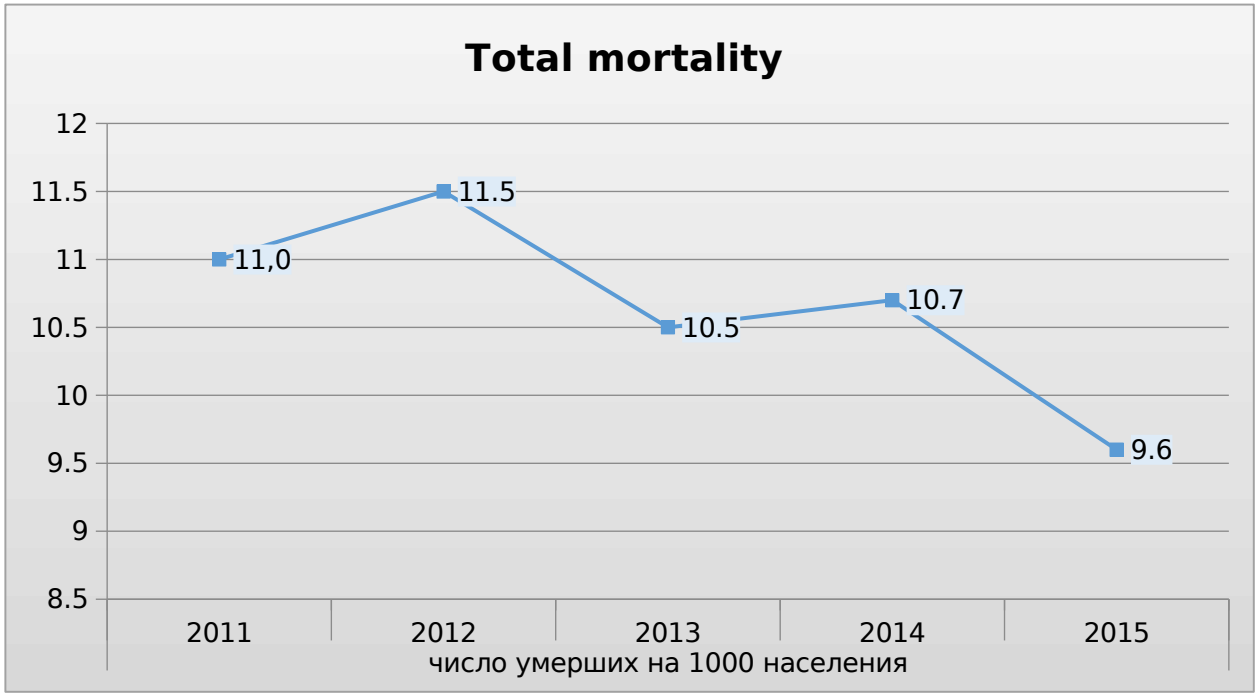


Fig. 3. Indicators of total mortality in the Chukotka Autonomous Area in 2011 – 2015 (the number of deaths per 1000 population (with $p<0.05$))

Among the causes of death of the adult population about half of the deaths occur from diseases of the circulatory system. Given that the percentage of the ambulances rides is 98.7% (the planned number is 98.9%) with mean ride time not exceeding 20 minutes, the solution of the problem of the adult deaths from the diseases of the circulatory system can be in the nearest future of the region.

One should pay attention to the reduction of infant mortality. So in 2015 the infant mortality rate was the lowest of the four-year period and amounted 17.5 per 1000 newborns (in 2011 – 14.2, in 2012 – 22.5, in 2013 – 23.7, in 2014 – 24.7) (Fig.4).

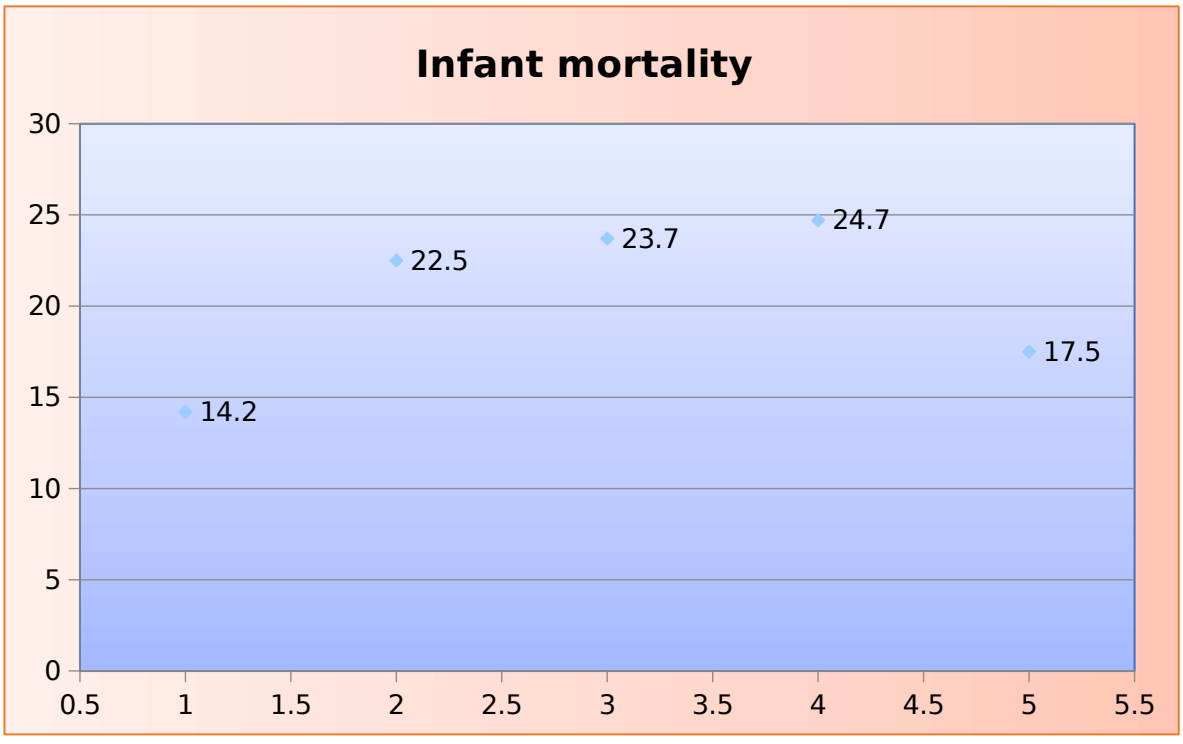


Fig.4. Infant mortality in the Chukotka Autonomous Area in 2011 – 2015 (the number of infant deaths per 1000 newborns (with p<0,05))

The main cause of the infant mortality was perinatal pathology (75% of all deaths). Unfortunately, Chukotka Autonomous Area was one of the only large regions of our country which was not included in the program of development of perinatal centers in the Russian Federation, approved by the Government Decree (12.09.2013) adopted for the period from 2013 to 2016 because of the low indicator of labor per year (less than 1000). From a geopolitical viewpoint that decision is not far-sighted! However, despite the lack of perinatal center no maternal deaths were registered in the Chukotka Autonomous Area in 2007. We consider it appropriate to update the construction of such a center in the Chukotka, which, in our opinion, will definitely solve the problem of reducing the infant mortality rate from diseases of the perinatal period!

It should be noted that in the last decade in the Chukotka Autonomous Area there is a tendency to a decrease in general and primary morbidity (Fig. 5). This can be explained by summing the positive accumulations of the regional health reforms of the past, their right development, as well as by intense multidirectional help from the Ministry of Health of the Russian Federation.

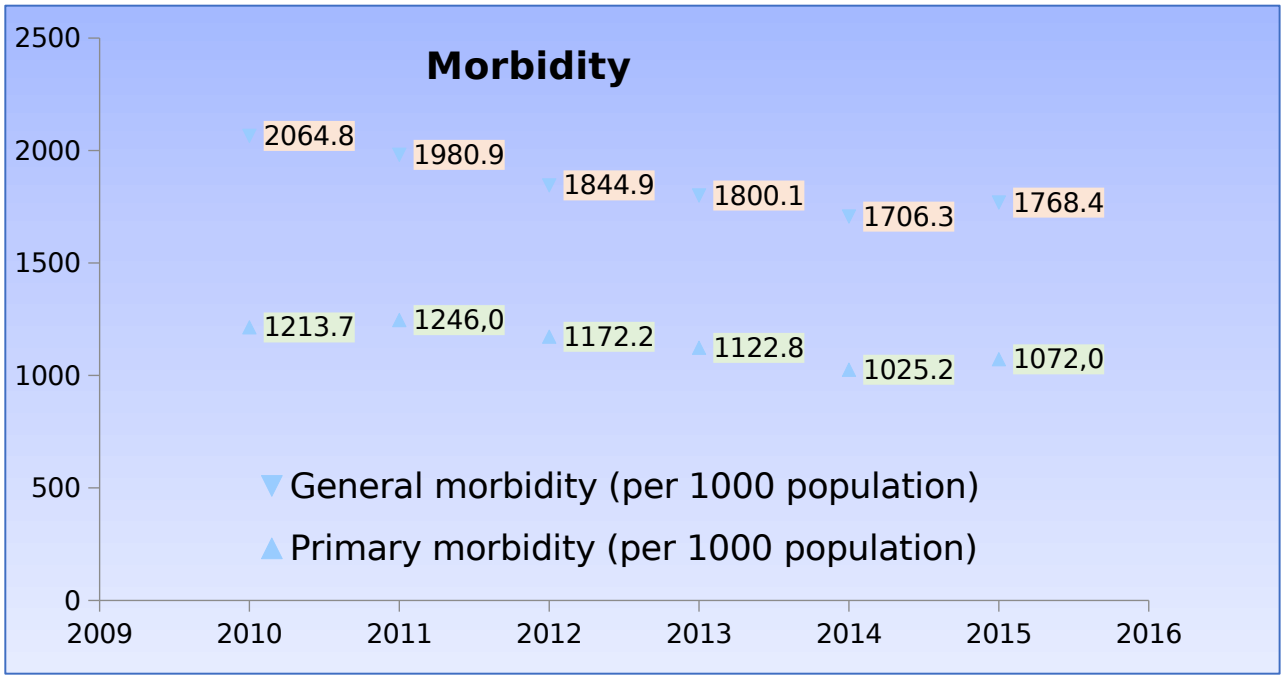


Fig.5. Indicators of general and primary morbidity in the Chukotka Autonomous Area in 2011 – 2015 (with p<0,05)

Medical institutions of regional submission don't have the capacity to ensure certain types of high-tech and specialized medical care to the population of the region, which is why such care is provided in the federal state institutions of other regions of the Russian Federation. So, since 2014 about 300 people received specialized medical care, which costed about 30 million rubles, and about 700 people received hi-tech medical care, which costed more than 20 million rubles. Systemic approaches, essentially similar to the military-medical, that were used, in particular, to manage pandemic dangerous influenza virus type

A (H1N1) in 2015, let the medicine Chukotka to get out of the All-Russian flu epidemic with his head held high, without losing a single patient. Our doctors showed the top of the art of healing!

One of the features of providing emergency medical care in the Chukotka Autonomous Area, is its preferential implementation of sanitary aviation. For many years, our ambulance transport of patients to regional hospitals have been performed smoothly by "ChukotAvia" airline. Using the authority of historical pages of the magazine, we want to express immense gratitude to the ex- and current pilots of air ambulance of Chukotka not only from regional health authorities, but also from the patients survived! The cost of these flights sometimes reaches 1 million rubles and more…

Expenditures form the budget of the Chukotka Autonomous Area in 2015 related to the provision of sanitary-aviation aid to people made more than 220 million rubles, and the average cost of sanitary aviation hour reached 280000 rubles. That is enormously expensive for the local budget, but a human life costs so much more!

To overcome the difficulties of the territory of Chukotka sanitary aviation is a great medical worker, especially in the implementation of the clinical examination of the residents of villages in inaccessible areas of the region, including workers of reindeer brigades who undergo physical and instrumental (lung fluorography) examinations, numerous laboratory investigations, including analysis for hydatid disease. The initiative to establish courses of sanitary instructors among the herders' is considered within the immediate prospects associated with the improvement of medical aid to reindeer brigades.

Bringing drugs in the most remote places of the Chukotka Autonomous Area has been diligently done for many years by punctual pharmacists of "Chukotfarmatsiya" State Enterprise. Drug provision of certain categories of citizens, from the number of patients with oncological and hematological profiles, as well as suffering from other severe pathologies is made at the expense of allocations from the federal and regional budgets, and only in the past 2015 has exceeded 45 million rubles.

Sure, the solution of the above problems appears to be possible in the immediate implementation of the **State Strategy for the Development of Healthcare of the Far North**, in which we need to provide positive solutions to some of the region's needfull issues:

1) creating the conditions for high-quality diagnosis and treatment of patients, including the use of telemedicine technologies;

2) availability and timeliness of the drug supply for the whole population of the Chukotka;

3) strengthening the material-technical base of medical institutions in rural sparsely populated areas;

4) growth of provision of sparsely populated and remote areas of the Chukotka Autonomous Area with necessary medical personnel;

5) development of small aircraft for the organization of the provision of ambulance sanitary-aviation aid in sparsely populated and remote areas of the Chukotka Autonomous Area;

6) creation of conditions for ensuring the state guarantees in providing the citizens of the rural areas of the Chukotka Autonomous Okrug of free medical care in full.

Health Department of the Chukotka Autonomous Area is preparing a series of measures to implement medical support of such strategic government initiatives as the development of the Northern Sea Route and the implementation of the program of development of the Arctic.

Medical support of the Northern Sea Route, in our opinion, involves tightening of the Russian Federation health capacities and health system of the Chukotka Autonomous Area to the strategic port sites and coastlines of the Arctic Ocean. Equipment of medical and ambulance stations with automated laboratory analyzers, both hematological and urological, can be one of such initiatives for the implementation along the Northern Sea Route. On the one hand, it will help from a medical point of view to ensure the smooth functioning of the federal and international traffic, on the other hand, it will provide further modernization of the hospitals that will participate in this initiative. **It is indisputable that the development of the Northern Sea Route without a chain of modern health facilities is hopeless!**

For the solution of the strategic objective related to the development of the Northern Sea Route on the level of Chukotka it is necessary to build-up capacity of district hospitals, particularly at least two strategic ports of Chukotka Autonomous Area:

- building a multifunctional Arctic medical center on the basis of "Chaun district hospital" in the port of Pevek, for medical support of the Chukotka segment of the Northern Sea Route;
- the formation of the Pacific Medical Center in ice-free port of Provideniya on the basis of "Providence district hospital" for medical support of the Chukotka segment of the Pacific way.

It seems that this measure will significantly increase the level of medical support of the Pacific-Arctic transport artery in the segment of Chukotka water transport arc.

This perspective will provide local benefits such as redistribution of flows of regional patients among the mentioned centers, saving money on sanitary aviation; cut time access to high-tech medical care through the use of air communication with Moscow (Airport Pevek); and most importantly, get the priority of federal funding for these, in fact, regional projects.

Empowering hospital complexes in the villages Pevek and Provideniya will allow forming on these medical bases the scientific medical facilities, which will accelerate the development of the Arctic, will allow scientists to not only examine the health issues in the cold Ground Zero, but also (and most importantly for the Chukotka) it will solve the medical problems of the Chukotka intercontinental North and Transoceaniya. For this region, the medical science of the Arctic and the Far North is an undeniable point of economic growth, as well as the point of aggravation of geopolitical weight!

We believe it is principal to sound medical series of Chukotka legislative initiatives to help untie the Gordian knot of all arctic districts of the Russian Federation in the sphere of public health. These initiatives have picked up the pioneering proposals of our medical colleagues – dear neighbors from the Republic of Sakha (Yakutia):

1) to take into account regional specificities, climatogeographic conditions, population density and transport accessibility territories of the Far North and the Arctic zone in preparing the order of the Ministry of Health of the Russian Federation "On the requirements for the placement of medical institutions of the state and community healthcare system based on the needs of the population";

2) to amend the Federal Law №326 "On Mandatory Medical Insurance in the Russian Federation" in Part 3 of Article 35, Part 2 of Article 36: the standard volumes of inpatient care can be established differentially for the subjects of the Russian Federation with a population density of less than 0.69 people per km2;

3) development of the Law "On sanitary aviation in the Russian Federation" must be congruent to the development of the law "On the sanitary transportation of the northern territories and the Arctic zone of the Russian Federation";

4) make changes, specifically for Chukotka, in the program of development of perinatal centers in the Russian Federation, approved by the Government Decree of 12.09.2013, adopted for the period from 2013 to 2016, which will provide the construction of perinatal centers in the regions with a low population density and birth rate of less than 1000 deliveries per year. This should be done this year!

Addressing a written speech to the attention of scientists, we invite You to a special scientific medical research on various aspects of Arctic Medicine, Pharmacology and Biology on the territory of the Chukotka Autonomous Area. Examples of topics for scientific research may be given below:

- development of panel-freezing injection solutions for emergency medical care to patients in arctic conditions;
- development of binary-dose syringes with injectable composition to withdraw patients from the state of hypothermia;
- the establishment of medical facilities of accelerated north adaptation;
- developing ways of improving the health and human survival in extreme conditions of the Arctic;
- development of dermatological protectors based on the synthetic films using solar technology;
- development of medical robotics with the potential to work in the Arctic tundra;
- to create a bank of stem cells of peoples and nationalities of the North, and other scientific problems that are of Your interest. For a number of some of the scientific aspects of the Arctic Chukotka Medicine has experience of gaining global priority. We are ready to share this experience!

For Russia the Arctic North is basically one more Russia! Pairing together such a large space is the problem for more than one generation of compatriots. But now, realizing the success of the glorious and proud Russia's past, we are creating the future related to the conquest of new Arctic latitudes by our mighty Russian Power!