



Development of Mobile Ophthalmologic Aid in Yakutia

E.K. Zakharova¹, V.V. Neroev², T.R. Poskachina³, A.N. Nazarov¹, O.A. Kiseleva²,
A.M. Bessmertny², O.V. Robustova²

¹ Yakutsk Republican Ophthalmologic Hospital, Yakutsk,

² FSBI "MSI of Eye Illnesses named after Helmholtz" Ministry of Health of Russia,
Moscow,

³ Northeast Federal University, Medical Institute, Yakutsk

ABSTRACT

The article presents the data about first mobile eye groups founded in Russia at the end of XIX for fight against trachoma that was a prototype of modern mobile crews for solving other problems. In order to approach the highly skilled ophthalmologic help to a residence of patients as well as to ensure its availability to any patient mobile operational modules on the basis of different types of transport were established. The similar module in the Republic of Sakha (Yakutia) was created in 2002 that allowed approaching the qualified ophthalmologic help to the population of remote areas of the republic, to reduce economic expenses and patient's psycho-emotional stress, and also to liquidate the list for planned treatment for cataract patients in RS (Y).

Keywords: trachoma, eye groups, mobile ophthalmosurgical team.

Eye illnesses were widespread among the population of Russia even before the World War I. In 1910 there were 300 thousands patients all over the country rated at 21,4% with trachoma, 19,2% with blindness due to glaucoma, 13,5% with cornea diseases, 12,1% with smallpox, 4,9% with eye blennorrhoea of newborns, 4,8% with optic nerve atrophy, 3,9% with diseases of central nervous system and vascular periorbital, 3,7% with syphilis and eye injuries and 1,8% with congenital blindness [1].

The Mariinsky blinds' protectorate founded in 1881 by the state secretary K.K. Grotom, named after the empress Maria Aleksandrovna was engaged in organizing ophthalmologic aid in the country. It worked as a charitable organization. The protectorate established clinics, organized permanent "oculist" aid posts, supplied them with tool kits and glasses, drugs [8]. By the initiative of the Prof. L. G. Bellyarminov, the chairman of the blinds' protectorate



department, in 1893 a project of organization of eye groups (EG) was worked out fighting against blindness prevalence among the population and implementation of surgical help to patients with eye diseases [12]. At the same year first seven flying EG started working, in 1894 they numbered 21, in 1895 – 24, in 1896 – 31, in 1897 – 33. In four years (1893-1896) on behalf of the protectorate 150016 patients received medical aid and 38867 eye operations [8] were performed. Further the number of groups began to increase gradually and reached the maximum in 1900 (38 EG). Then this number decreased and fluctuated between 30 and 32 (except 1904-1905 when it went down to 17-19). In reports of the protectorate about blinds it was informed that for 20-year term 535 groups were working in the European Russia, Siberia and the Caucasus. 1008564 primary patients, on the average 1885 per one group were accepted. EGs performed 177384 larger and 142316 small operations and operational grants. EGs were to prepare personnel for further permanent job on local places [5] as well.

In the Soviet period People's Health Committee of RSFUR, the Russian Society of the Red Cross and People's Health Committee of some republics took part in supplying equipment and supporting flying EG. EGs went to autonomous republics and districts which had been mainly affected with trachoma or in such places, where no satisfactory eye help was conducted.

The first eye group was sent to Yakutia by the blinds' protectorate on the petition of the Yakut governor Kraft and the Yakut bishop Makariy in 1908. The group worked in Olyokma, Yakutsk and Namsky village, 2446 people [2] were examined.

In Yakutsk a special eye aid post was opened in 1910, it started functioning at the Yakut civil hospital, as a constant office. Since then the head Grinyova – Pleskaya conducted periodic journeys to other districts. During the Civil war all these measures fell apart and only in 1924 in Yakutia the project of organizing the eye groups was recreated. The main activity of this group organized by the Siberian Office of the Red Cross concentrated in the Yakutsk district, in uluses (regions) where the group led by Dr. Titov S. performed mass inspections of the population along with out-patient and stationary activity. In 1925 high mortality of the Yakut population and enormous distribution of trachoma induced the Commission of Academy of Sciences of the USSR to organize medical and sanitary groups for studying health of the population of the Yakut Autonomous Socialist republic (YaASSR). The group staff was headed by the ophthalmologist Dorofeyev V. N., they tending to work for 1,5 years. Due to remote areas of the territory in the republic, the study was concentrated first of all in the central regions of the republic: Vilyuysky and Olyokma. As a result of the conducted research, among 2667 patients with pathology of eyes, high incidence of trachoma at indigenous people, especially among



women was revealed. The prevalence of trachoma among Yakuts in the Vilyuysky district amounted to 49,22%, in Olyokma 27,75%. Trachoma was the main reason of one eye blindness, in the Vilyuysky district making 72%, in Olyokma - 33,3%. As a result of the research, several measures were taken to prevent trachoma [2]. In 1925 in Yakutsk the trachoma clinic with inpatient department on 15 beds was established, it involving the organization of network of ophthalmologic establishments in Yakutia, having changed the quality of the work profile. Besides rendering the medical aid, diagnostic and prophylactic measures were carried out thanks to EG in areas of the republic. EGs went out to settlements annually since 1925 to 1942, rendering ophthalmologic help to the population of remote areas of the republic. Within the clinic there was a permanent EG having own staff and budget as well. As a result of such fruitful work such severe disease as trachoma, being one of the common diseases of the past, had been liquidated by 1962 [13].

After eliminating trachoma the time revealed new, not less complex problems: glaucoma was identified in most cases as pathology of the vision organ and has become the main reason of blindness for the last years; cataract as a disease of people at senior age; protection of children's eyes; medical aid to patients with eye injury; providing all types of correction; introduction of modern technologies in diagnostics and treatment of eye diseases; preparation of highly qualified specialists; extended preventive measures among the population at the level of new and modern requirements.

Till 1957 in the republic patients with glaucoma were not officially reported. According to data of the outpatient department within the trachoma clinic in 1955 314 patients with glaucoma were registered, in 1961 their number increased up to 910 persons. Glaucoma was seriously taken into account after adopting the order of Ministry of Health of RUSFSR No. 275 "About measures on early reveal of patients with glaucoma". In order to prevent glaucoma at early stages mass inspections of the population were conducted at people of 40 years old and over. [13].

With the purpose to approach the highly skilled ophthalmologic help to remote residence of patients, ensuring its availability to everyone with eye diseases, in 1986 S. N. Fedorov worked out a project of establishing intersectoral scientific and technical complex "Eye Microsurgery" (ISTC "EM"). The ophthalmologic clinic equipped with modern equipment – the scientific research institute ISTC "EM" and its branches in 11 cities of Russia became material resources of a new form of the ophthalmologic help: Cheboksary, Khabarovsk, Novosibirsk, Irkutsk, Krasnodar, St. Petersburg, Ekaterinburg, Orenburg, Volgograd, Tambov, Kaluga [3].

The idea of forehanded introduction and distribution of the latest technologies to remote settlements as well as available ophthalmologic help led to creation of mobile operational modules. Firstly such ophthalmologic operations with modules were carried out in the 70-s of the XX century by American surgeons in clinic "Orbis" on a basis of the plane. In our country the similar operation was performed in 1978 in ISTC "EM". According to the project of the research laboratory of experimental and clinical eye surgery the Finnish firm "Kiitokori" constructed a mobile operational bus [14]. Further there were three generations of such modules. The latest is executed by Carrus firm on the basis of Volvo buses where a modern operational and a diagnostic compartment are located. Such modules allow carrying out about 70% of all operations worked out in ISTC.

Now each ISTC branch in its regions has medical and diagnostic offices, advisory offices, rehabilitation and diagnostic posts, mobile diagnostic laboratories and operational on the basis of different transports. The main purposes of regional offices are to approach the qualitative ophthalmologic help to the residence of patients, to provide early identification of eye diseases, to carry out out-patient treatment and rehabilitation [7].

Despite the huge potential of ISTC "EM» with mobile structures, there is badly need for high-tech medical care (HMC) for regions of Russia. For the purpose of HMC availability, clinics of the republican level began to apply the experience of mobile structures in their work. As an example, the mobile ophthalmologic crew of the Kemerovo regional clinical ophthalmologic hospital carries out 100 departures of medical and sisterly crews to the remote rural areas [10-4]; the mobile medical microsurgical group of the Regional ophthalmologic clinic of the Tyumen region carried out 145 departures [6].

The territory of the Russian Federation is extensive and, despite efforts of experts of the health care organization, it is actually difficult to carry out qualitative medical care with the use of modern medical and diagnostic equipment to inhabitants of the remote settlements, and as well as with use of the latest techniques and approaches to prevention and treatment of various eye diseases.

The Republic of Sakha (Yakutia) is the subject of Russia, not having analogs on natural and territorial conditions on the planet. Considering features of the region, the huge territory (3,1 million sq.km), being in the permafrost zone, with remote means of communication and small population density (0,3 on 1 sq.km) for rendering the organizational and methodical, advisory and treatment-and-prophylactic help to the population of the remote areas of the republic in 2002 mobile teams including 2 surgeons and the 1 nurse were organized on the basis of the Yakut



Republican Ophthalmologic Hospital (YROH). During the period from 2002 to 2008 the mobile groups were carried out to the areas where on the basis of central regional hospitals there were equipped ophthalmologic offices and an ophthalmologist who was revealing and preparing patients to operation as well as keeping a close watch on patients after operational treatment. The surgery of cataract was carried out by a method of extra capsular extraction with implantation of a rigid intraocular lens (RIL), with subsequent seam overcasting. A patient with glaucoma had surgical infiltration – deep sclerectomy with back sclera trepanation. For that period 1111 operations were performed concerning cataract of 74%, glaucoma – 8,5%, others – 17,5%. Due to high cost of work in mobile teams, such activities were carried out within the voluntary medical insurance (VMI). The date 2008 was considered to be of great significance in the work of mobile crews in RS (Ya), when in cataract surgery the technique of ultrasonic phacoemulsification (FE) with implantation of IOL flexible models was introduced. In glaucoma surgery due to long postoperative rehabilitation of patients, not infiltrating deep sclerectomy was selected for operations. As this type of operation is carried out only at an open-angle form and ineffective at a closed-angle form, the number of glaucoma operations carried out was reduced. With introduction of hi-tech methods in the work of mobile crews, the total amount of mobile operations carried out in 2010 as compared with data of 2008 increased up to 131%, including cataract - 195%, while glaucoma surgery decreased by 17% [10].

Organizational forms of providing mobile ophthalmologic services are difficult, but are quite feasible. Besides advantages of high-quality and qualified ophthalmologic help, social and economic aspects that allow patients to save considerable funds on travel expenses are of great importance and promote the availability of high-quality medical care to social and unprotected parts of the population [11].

Despite the growth of surgical activity, requirements for the expeditious treatment of cataract remained insufficient as the mobile crews worked within VHI, that causing to a long-lasting list for planned surgical treatment. In order to increase the availability of hi-tech ophthalmologic help to the republic population on February 10, 2011 the order of the Ministry of Health (MH) of RS (Y) No. 01-8/4-117 "About organization of a mobile ophthalmologic team rendering medical help within the Territorial Program of Obligatory Medical Insurance (TP OMI) of RS (Ya)" was approved. The crew consisted of 2 ophthalmologist-surgeons, 1 ophthalmologist-diagnostician, 1 anesthesiologist, 2 operational nurses, 1 anesthesia nurse, 1 medical technician, 2 drivers. Financing of the medical services rendered by mobile ophthalmologic surgical teams (MOST) was made by medical insurance companies on tariffs



and methods of payment, approved by the General agreement on payment of the medical services within TP OMI in RS(Y). Payment options of medical services for “completed case” of treatment were made according to the standards of medical care approved by MH RS (Y). In the work of MOST standards on the following nosology were approved: cataract, glaucoma, progression and position of eyelid anomalies, pterigium. Since 2011 to 2012 the mobile crew performed 1078 operations. Introduction of the standards and "the case" treatments performed by MOST on free charge allowed to increase the amount of operations up to 31%; cataract surgery for 44,2%, glaucoma for 24,2%. During 11 years 3011 operations were performed by MOST YaROH, 84,3% of them concerning cataract. The number of operations carried out in a year has increased on 3 times. Since 2011 for rendering the consultative assistance to the population in remote areas of the republic doctors of the polyclinic of YaROH have carried out mobile aid, having examined 1781 patients from 2011 to 2012 [9].

Approaching the qualified ophthalmologic aid to the population of the remote republic settlements promoted the reduction of economic expenses and patents' psycho-emotional stress, as well as liquidating the list for planned treatment of cataract patients in RS (Ya). Considering high working costs of the mobile structures, in the remote areas of the Arctic region it is necessary to organize ongoing mobile specialized service on the basis of the Yakutsk Republican Ophthalmologic Hospital, giving medical aid within the Territorial Program of Obligatory Medical Insurance (TP OMI) of RS (Ya).

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Authors:

1. Zakharova Ekaterina Kimovna, position: head of the hospital, chief non-staff ophthalmologist of MH RS (Y), work place: State Budgetary Institution RS (Ya) YaROH, 677005, Yakutsk, 15, Sverdlov St., ph. 89142757704, e-mail: katya1961@mail.ru.
2. Neroev Vladimir Vladimirovich, professor, MD, director of Federal State Budgetary Institution MSI of eye illnesses named after Helmholtz Ministry of Health of Russia. 105062, Moscow, 14/19, Sadovaya-Chernogryazskaya St.
3. Nazarov Anatoly Nikolaevich, position: chief physician, State Budgetary Institution RS (Ya) YaROH, 677005, Yakutsk 15, Sverdlov St., ph. 89142757704, e-mail: nazarov_anatoly@mail.ru



4. Poskachina Tamara Romanovna, k.m.s., associate professor, head of ophthalmology department of MI NEFU, 677000, Yakutsk, 5/1, Ordzhonikidze St., flat 28, ph. 89248766662, e-mail: doka14@list.ru.
5. Kiseleva Olga Aleksandrovna, MD, head of glaucoma office of Federal State Budgetary Institution MSI of eye illnesses named after Helmgoltz of Ministry of Health of Russia. 105062, Moscow, 14/19, Sadovaya-Chernogryazskaya St., (495) 608-40-65, e-mail: glaucoma@igb.ru.
6. Bessmertniy Alexander Markovic, MD, senior scientific research associate, Federal State Budgetary Institution MSI of eye illnesses named after Helmgoltz of Ministry of Health of Russia, 105062, Moscow, 14/15, Sadovaya-Chernogryazskaya St. , ph. (495) 608-40-65, e-mail: glaucoma@igb.ru,
7. Robustova Olga Vyacheslavovna, k.m.s., ophthalmologist of Federal State Budgetary Institution MSI of eye illnesses named after Helmgoltz of Ministry of Health of Russia. 105062, Moscow, 14/15 Sadovaya-Chernogryazskaya St., (495) 608-40-65, e-mail: olga_robustova@mail.ru.