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On the 100th anniversary of the Saint Petersburg State Pediatric Medical University

The role of Alexander Nikolaevich Antonov in the founding of the Leningrad Institute for the Protection of Motherhood and Infancy — the Saint Petersburg State Pediatric Medical University, in the development of neonatology and the organization of child healthcare

Galina L. Mikirtichan, Irina A. Savina

Saint Petersburg State Pediatric Medical University, 2 Litovskaya str., Saint Petersburg, 194100, Russian Federation

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ABSTRACT. The article is dedicated to A.N. Antonov (1884–1947) — one of the initiators and founders of the Leningrad Institute for the Protection of Motherhood and Infancy (PMI, from 1935 — Leningrad Pediatric Medical Institute (LPMI), now Saint Petersburg State Pediatric Medical University (SPbSPMU)), a prominent pediatrician, neonatologist, theorist, and organizer of the protection of motherhood and infancy. In 1921, A.N. Antonov, together with Z.O. Michnik and V.O. Mochan, developed the project for the PMI Institute, which was opened in 1925 and where he worked until 1947. Actively involved in building healthcare system on new foundations, A.N. Antonov made a significant contribution to the theory and practice of the PMI system, the development of new forms and methods of work for institutions for women and children, which contributed to the improving of the quality of medical and preventive care and reducing cases of morbidity and mortality. These innovations were adopted not only in Leningrad but throughout the country. Among them are the substantiation of the main directions of activity for outpatient institutions for women and children: antenatal fetal protection, patronage of pregnant women and sanitary-educational patronage of children, recommendations for proper infant feeding and care, etc. He paid special attention to the health of girls as future mothers, being the first to develop a program and organize classes aimed at fostering a conscious attitude towards future maternal responsibilities. A.N. Antonov also made a significant contribution to the training of secondary and junior medical personnel. As a pediatrician, A.N. Antonov was at the forefront of neonatology, studying the anatomical and physiological characteristics of newborns, feeding problems, and was one of the first in the country to research issues concerning erythroblastosis in children, the significance of the new blood factor Rh in neonatal pathology, the role of vitamin K in the prevention of hemorrhagic disease, and others. Remaining in besieged Leningrad, he continued to work at LPMI, doing everything necessary with his colleagues to save children. Summarizing the unique experience of working with newborns during the most difficult days of 1941–1942, he presented a clinical and statistical characteristics of newborns during the Leningrad blockade period. A number of A.N. Antonov's works testify to his valid contribution to the history of pediatrics and the protection of motherhood and childhood, historical demography, and bibliographical studies. He was an active member of the Leningrad Society of Pediatricians, the Council for Medical and Preventive Care for Children of the Ministries of Health of the USSR and RSFSR, and a participant in all-Union pediatric congresses and meetings on maternal and child health.

KEYWORDS: Alexander Nikolaevich Antonov, protection of motherhood and infancy, PMI, Leningrad Institute of PMI, Leningrad Pediatric Medical Institute (LPMI), Saint Petersburg State Pediatric Medical University (SPbSPMU), personnel training, child and maternal mortality, forms and methods of work of institutions for women and children, health of girls as future mothers, physiology and pathology of newborns

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✉ Galina L. Mikirtichan. E-mail: glm306@yandex.ru

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Роль Александра Николаевича Антонова в основании Ленинградского института охраны материнства и младенчества — Санкт-Петербургского государственного педиатрического медицинского университета, развитии неонатологии и организации детского здравоохранения

Галина Львовна Микиртичан, Ирина Александровна Савина

Санкт-Петербургский государственный педиатрический медицинский университет, 194100, г. Санкт-Петербург, ул. Литовская, д. 2, Российская Федерация

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РЕЗЮМЕ. Статья посвящена А.Н. Антонову (1884–1947) — одному из инициаторов и основателей Ленинградского института охраны материнства и младенчества (ОММ, с 1935 г. — Ленинградский педиатрический медицинский институт (ЛПМИ), ныне Санкт-Петербургский государственный педиатрический медицинский университет (СПбГПМУ)), видному ученому-педиатру, неонатологу, теоретику и организатору охраны материнства и младенчества. В 1921 г. А.Н. Антонов совместно с З.О. Мичник и В.О. Мочаном разработал проект Института ОММ, открывшегося в 1925 г., в котором работал до 1947 г. Активно включившись в строительство здравоохранения на новых основах, А.Н. Антонов внес существенный вклад в теорию и практику системы ОММ, разработку новых форм и методов работы учреждений для женщин и детей, способствующих повышению качества лечебно-профилактической помощи и снижению заболеваемости и смертности, получивших распространение не только в Ленинграде, но и во всей стране. Среди них обоснование главных направлений деятельности амбулаторных учреждений для женщин и детей: антенатальная охрана плода, патронаж беременных и санитарно-просветительный патронаж детей, рекомендации по правильному вскармливанию ребенка и уходу за ним и др. Он обратил особое внимание на здоровье девочек как будущих матерей, впервые разработал программу и организовал занятия с целью формирования у них сознательного отношения к будущим материнским обязанностям. Большой вклад внес А.Н. Антонов в подготовку среднего и младшего медицинского персонала. Как ученый-педиатр А.Н. Антонов стоял у истоков неонатологии, изучал анатомо-физиологические особенности новорожденных, проблемы вскармливания, одним из первых в стране исследовал вопросы эритробластозов у детей, значения нового фактора крови Rh в патологии новорожденных, роли витамина К в профилактике геморрагической болезни и др. Оставаясь в блокированном Ленинграде, он продолжал работать в ЛПМИ, вместе со своими коллегами делая все необходимое для спасения детей. Обобщая уникальный опыт

✉ Галина Львовна Микиртичан. E-mail: glm306@yandex.ru

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работы с новорожденными детьми в самые тяжелые дни 1941–1942 гг., он представил клинико-статистическую характеристику новорожденных периода блокады Ленинграда. Ряд работ А.Н. Антонова свидетельствуют о его вкладе в историю педиатрии и охраны материнства и детства, историческую демографию, библиографоведение. Он был активным членом Ленинградского общества детских врачей, Совета по лечебно-профилактической помощи детям министерств здравоохранения СССР и РСФСР, участником всесоюзных педиатрических съездов, совещаний по охране материнства и детства.

КЛЮЧЕВЫЕ СЛОВА: Александр Николаевич Антонов, охрана материнства и младенчества, ОММ, Ленинградский институт ОММ, Ленинградский педиатрический медицинский институт (ЛПМИ), Санкт-Петербургский государственный педиатрический медицинский университет (СПбГПМУ), подготовка кадров, детская и материнская смертность, формы и методы работы учреждений для женщин и детей, здоровье девочек как будущих матерей, физиология и патология новорожденных детей

Источник финансирования. Авторы заявляют об отсутствии внешнего финансирования при проведении исследования.

As we mark the 100th anniversary of the Saint Petersburg State Pediatric Medical University (SPbSPMU), we pay tribute to the individuals whose efforts led to its founding and successful development. Among them, Alexander Nikolaevich Antonov (1884–1947) holds a worthy place. He was one of the initiators and founders of the Leningrad Institute for the Protection of Motherhood and Infancy (known from 1935 as the Leningrad Pediatric Medical Institute LPMI, now the Saint Petersburg State Pediatric Medical University), as well as a prominent pediatrician, neonatologist, and theorist and organizer of maternal and infant welfare.

Today, the name of Alexander Nikolaevich Antonov is little known to pediatricians and organizers of medical and preventive care for children. Nevertheless, his work in the fields of pediatrics and maternal and infant welfare deserves attention and places him alongside such major figures of Russian pediatrics and healthcare as V.P. Lebedeva, A.A. Kisel, G.N. Speransky, M.S. Maslov, A.F. Tur, and others.

In 1910, A.N. Antonov graduated from the Military Medical Academy in St. Petersburg, where he studied in the same cohort as Mikhail Stepanovich Maslov, who later became a leading pediatrician.

Immediately after graduating, A.N. Antonov, as a junior physician of the 155th Infantry Regiment, was sent to the Caucasus, to the settlement of Sarakamysh near the city of Kars¹ [1]. Military service held little appeal for him; he was far more interested in the growing public movement for the protection of motherhood and infancy, which aimed to address issues of organizing care for mothers and children and to develop measures to combat child mortality. The statistics were staggering: in 1910, infant mortality in St. Petersburg was 261 per 1,000 live births; in Moscow, 296; in Vienna, 166; in Berlin, 161; in Rome, 122; in London, 105; in Paris, 99; and in Amsterdam, 76 per 1,000 [2].

In 1913, A.N. Antonov became a resident physician at the “Drop of Milk” institution under the Union for Combating Child Mortality. This Union was a public charitable organization founded in 1904 on the initiative of Ural zemstvo physician N.A. Russkikh (1857–1916), who had thoroughly

studied child mortality, and prominent pediatrician Professor N.P. Gundobin (1860–1908). “Drop of Milk” institutions first emerged in Europe and then in Russia at the beginning of the 20th century. Their primary goal was to supply sterilized milk and formula to infants unable to breastfeed — essentially functioning as milk kitchens. However, Russia's advantage was that each such institution provided regular medical follow-up for the child and counseling for the mother on proper child-rearing and infant feeding [3]. During World War I, Antonov was drafted into the army, serving as a junior physician of the 87th Infantry Regiment, stationed in the Arakcheev barracks in Novgorod Governorate [4].

Upon returning to Petrograd in 1917, he remained faithful to his interests and his chosen specialty of pediatrics, taking a position as assistant head of the sanitary education department of the All-Russian Guardianship for the Protection of Motherhood and Infancy (VPOMM), where the October Revolution found him.

The VPOMM was founded in 1913 on the initiative of eminent pediatrician K.A. Rauchfuss and represented Russia's largest public-state organization, operating under imperial patronage. It was envisaged that the government would play the leading role in the Guardianship's activities; however, charitable efforts came to predominate and depended on local public and private initiative. According to the VPOMM Charter, the organization's purpose was “to reduce child mortality and promote the growth of a healthy population in Russia by protecting the health of women during pregnancy, childbirth, and immediately thereafter, as well as by protecting the health of young children, especially infants” [5]. The VPOMM's tasks included establishing shelters for mothers and children, counseling centers, milk kitchens, children's hospitals, maternity shelters, and similar facilities. One of its main objectives was to disseminate sound concepts and proper skills in infant care and feeding, as well as to organize permanent and traveling exhibitions, museums, lectures, and courses. It also aimed to publish printed materials on maternal and infant welfare.

Furthermore, Article 4 of the Charter stipulated that a Central Institute of Maternal and Infant Welfare be established within the VPOMM. K.A. Rauchfuss worked out its aims and tasks, as well as the structure and functions of each department, down to the finest detail. He also outlined the main areas of activity, including

¹ The city of Kars was captured by Russian troops in November 1877 following a swift assault and, under the Treaty of San Stefano in 1878, was ceded to Russia. Until 1917, it served as the center of the Kars Oblast of the Russian Empire. In 1918, it became part of Turkey.

the scientific, clinical, and educational domains and their integration. As Rauchfuss envisioned: “The Institute shall serve as a scientific and educational institution for the theoretical and practical study of infant care, the study of the causes of infant diseases and their prevention and treatment, as well as a statistical and reference institution on all issues relating to child mortality and its control” [5].

Despite his short time at the Guardianship, every day was meaningful for Alexander Nikolaevich. There he gained unique knowledge, expanded his understanding of many aspects of maternal and infant welfare, and worked alongside outstanding advocates for children's health. Among them were lawyer P.I. Lyublinsky, pediatricians and child healthcare organizers P.S. Medovikov, V.O. Mochan, Z.O. Michnik, A.V. Popova, prominent statistician S.A. Novoselsky, and many others who later became active architects of the Soviet system of maternal and infant welfare.

That same year, he passed his qualifying examinations at the Clinical Institute of Grand Duchess Elena Pavlovna for Postgraduate Physician Training and began research for his future dissertation. The institute was known after 1917 as the Leningrad State Institute for Postgraduate Physician Training, then from 1992 as the Saint Petersburg Medical Academy of Postgraduate Education, and from 2011 as the North-Western State Medical University named after I.I. Mechnikov.

After the 1917 revolution, protecting the health of women and children and combating high morbidity and infant and maternal mortality became a state priority. A.N. Antonov immediately became involved in building the Soviet system of maternal and infant welfare and in organizing medical and preventive care for children on new foundations. Following the dissolution of the VPOMM, from 1918 he worked as a resident pediatrician at the Mariinsky Maternity Hospital (known as the Schroeder Maternity Hospital, located on Petrograd Side at 13 Maly Prospekt; it operated until 1995 as Maternity Hospital No. 3 of Leningrad). A.N. Antonov organized the work of the newborn unit, opened a consultation center for infants with a milk kitchen, a unit for pregnant and breastfeeding mothers, and the first birth control counseling center [6].

At the Mariinsky Maternity Hospital, a Midwifery School for training midwives had been operating since 1871, which after the 1917 revolution was transformed into courses for nurses. It

was at these courses that Alexander Nikolaevich began his teaching career, delivering a course on dietetics and hygiene of early childhood (Fig. 1).

From 1918 to 1931, he also served as a resident at the Vasileostrovsky Maternal and Infant Welfare Center No. 15, headed by Zinaida Osipovna Michnik (1878–1942), a prominent organizer of outpatient pediatric care. This model comprehensive outpatient facility served children up to three years of age, offering a pediatric consultation center with access to a pediatrician and specialists, a milk kitchen, and other services. It also served mothers, offering a women's consultation center, social and legal advice, and a venereologist's clinic. Many new forms of pediatric care initiated by Antonov and Michnik were tested at this Center (Fig. 2).

Beginning in 1919, at the same Center, Antonov directed the courses for nurses and nannies in maternal and infant welfare that he had organized. It was here that his teaching talent emerged. These highly popular courses became known as “Antonov's courses”. During the 1920s, he also taught at a paramedic-midwifery school and other institutions for mid-level medical personnel, work he never declined. He synthesized his teaching experience and formulated proposals for training mid-level personnel — nurses for the rapidly growing network of



Fig. 1. Alexander Nikolaevich Antonov (1884–1947)¹

Рис. 1. Александр Николаевич Антонов (1884–1947)

¹ Photos 1, 2, 3, and 5 from the museum collections of Saint Petersburg State Pediatric Medical University.



Fig. 2. Maternity and Child Protection Center No. 15 of the Vasileostrovsky District. From left to right: Chief Physician Zinaida Osipovna Michnik, physician and specialist in pediatric nutrition Vera Borisovna Kiseleva¹, Head of the Nursing Courses for the Protection of Motherhood and Infancy (PMI) courses Alexander Nikolaevich Antonov

Рис. 2. Пункт ОММ № 15 Василеостровского района. Слева направо: главный врач Зинаида Осиповна Мичник, врач, специалист в области детского питания Вера Борисовна Киселева, заведующий курсами сестер ОММ Александр Николаевич Антонов

maternal and infant welfare institutions — and developed a methodologically sound, detailed curriculum for theoretical and practical training, taking into account the financial and organizational realities of the time [7].

From 1923 to 1935, A.N. Antonov directed the Mother and Child Home. His work in various children's institutions gave him a deep understanding of the challenges involved in improving the organization of care for children. During

these years, maternal and infant welfare acquired a state character, its institutionalization began, a legislative framework was established, and public participation in addressing maternal and infant welfare issues intensified. There was an urgent need for scientific substantiation and critical evaluation of proposed maternal and infant welfare measures, as well as for mutual exchange of experience and ideas. All of this gave rise to the Scientific Society for the Protection of Motherhood and Infancy, organized on the initiative of V.O. Mochan in 1920 in Petrograd–Leningrad. According to the Society's charter, its aim was the study and scientific development of issues relating to: 1) the sanitary, social, and legal protection of motherhood and infancy; 2) child mortality and its control, as well as related issues of demography and statistics; further objectives included 3) the physiology and pathology of infancy; 4) the health improvement and socio-legal protection of the younger generation. The Society brought together the most active workers in maternal and infant welfare of that time — including Professor F.A. Walter, Professor P.I. Lyublinsky, Dr. D.A. Paryshev, Dr. A.V. Popova, Professor V.V. Pavsky, Professor L.G. Lichkus, Professor V.O. Mochan, and Associate Professor (docent) Z.O. Michnik, among others — and motivated

¹ Kiseleva Vera Borisovna (1884–1948?) was a pediatrician and specialist in pediatric nutrition. After the opening of the Institute of Maternal and Infant Welfare, she worked there as a nutrition instructor. During the siege, she worked in the nutrition department and headed a food station. Both the department staff and she personally were greatly credited with developing and preparing nutritional formulas for children using natural products during times of milk shortage. They showed great attention and inventiveness in diversifying the taste of food and creating new recipes for infant feeding, taking into account the age and condition of the child. Collaboration with A.N. Antonov continued throughout their years of work at the Leningrad Pediatric Medical Institute; he was the editor of her books, which went through several editions in 1926–1930, 1939, and others: Kiseleva V.B. Children's Kitchen. Preparation of Food for Children from 6 Months to 3 Years (241 Recipes). Edited and with an introduction by Associate Professor A. Antonov. Leningrad: Priboi; 1926.

them to engage in scientific research on maternal and infant welfare issues. A.N. Antonov repeatedly presented reports at meetings of the Society, which existed until 1930 [8].

Even earlier, at the end of 1918, the Council for Maternal and Infant Welfare was established in Petrograd on the initiative of the Health Commissariat Board of the Union of Communes of the Northern Region¹ and Health Commissar E.P. Pervukhin. Until 1921, this Council carried out theoretical and scientific development of measures in the field of maternal and infant welfare. The Council for Maternal and Infant Welfare included prominent pediatricians Professors S.A. Ostrogorsky, V.O. Mochan, Z.O. Michnik, A.V. Popova, F.F. Gaze, and M.L. Abelman, as well as leading obstetricians and gynecologists D.O. Shirshov, L.G. Lichkus, L.L. Okinchits, and A.M. Shuster. It also included renowned jurists F.A. Walter, P.I. Lyublinsky, and N.S. Timashev, along with other specialists representing various commissariats. In March 1919, the Council received the authority of a governing body and took charge of all maternity and children's institutions in the city, with particular attention given to children's consultation centers. In addition, important reforms were implemented in maternity shelters: newborn units were established, and pediatricians were added to the staff.

In January 1919, the Council raised with the Health Commissariat the issue of teaching a special course on child care and maternal and child hygiene in higher educational institutions [9]. The development of the curriculum for such a course was undertaken by A.N. Antonov, who by that time had already established himself as one of the most competent specialists in this field.

At one of the Council's meetings, Z.O. Michnik presented a plan for the development of maternal and infant welfare in which one of the key points was the establishment of a scientific institute and model institutions [10]. This idea was supported by the Council members. A.N. Antonov and V.O. Mochan actively participated in developing the institute's project. In August 1921, A.N. Antonov delivered a report entitled "The Institute for the Protection of Motherhood and Infancy and Its Tasks" at a meeting of the Scientific Council for Maternal and Infant Welfare. Having studied the

pre-revolutionary work of the VPOMM on the creation of such an institute, he concluded that "in the current era of extensive social reconstruction, which also encompasses the field of maternal and infant welfare, the need for establishing such an institution is felt much more acutely than eight years ago, when the Guardianship put forward its project" [11]. In his report, Antonov defined the name of the future institute, formulated its program, and presented its structure, aims, and tasks: "The activities of the Institute for the Protection of Motherhood and Infancy — as this scientific and educational institution must be called — should develop in two directions. In the purely scientific sphere, the institute's task is to comprehensively study all issues related to the protection of mother and child; in the practical sphere, to organize model institutions and train personnel of various categories for maternal and infant welfare institutions, primarily, of course, physicians, organizers, and directors of these institutions" [11].

In that same year, 1921, the project for the Institute of Maternal and Infant Welfare was submitted to the Petrograd Provincial Health Department. However, the difficult conditions in Petrograd in the early 1920s, resulting from the aftermath of the Civil War, delayed the decision to establish the Institute for some time.

The commission for the establishment of the Institute of Maternal and Infant Welfare included A.N. Antonov, V.O. Mochan, Z.O. Michnik, Professors F.A. Walter, L.T. Lichkus, L.L. Okinchits, M.S. Maslov, P.I. Lyublinsky, and others. They became the first organizers of the Institute and participated in the subsequent development of the main directions of its activities. The Institute of Maternal and Infant Welfare began its work in January 1924 under the direction of V.O. Mochan, and on January 7, 1925, the Scientific and Practical Institute of Maternal and Infant Welfare was officially opened (from 1935, the Leningrad Pediatric Medical Institute, now SPbSPMU)². Alexander Nikolaevich was immediately elected Secretary of the Scientific Council (a position he held until 1940). He repeatedly proposed initiatives related to improving the training of physicians and nurses, formulating and developing the Institute's scientific problems, opening new departments and defining their tasks, improving working conditions for medical personnel, and other pressing issues³.

¹ The Union of Communes of the Northern Region was a regional association of Soviets that existed in the Russian Soviet Federative Socialist Republic (RSFSR) from May 1918 to February 1919, established after the relocation of central party and Soviet bodies from Petrograd to Moscow.

² Central State Archive of Saint Petersburg (TsGA SPb), fund 4301, inventory 1, file 2044, sheet 3.

³ Ibid., fund 4337, inventory 1, file 13, sheets 2–7, 12, 27.



Fig. 3. Physicians attending advanced training courses with instructors from the Leningrad Institute for the Protection of Motherhood and Infancy (1926). Second row, left to right: second — Yu.N. Sadykova?, third — P.I. Lyublinsky, fourth — V.O. Mochan, Director of the Institute, fifth — P.S. Medovikov, sixth — A.V. Popova?, seventh — L.I. Erlich, eighth — V.I. Morev. Fourth row, second from right — A.N. Antonov

Рис. 3. Слушатели курсов усовершенствования врачей с преподавателями Ленинградского института ОММ (1926). Второй ряд слева направо: вторая — Ю.Н. Садыкова?, третий — П.И. Люблинский, четвертый — В.О. Мочан, директор Института, пятый — П.С. Медовиков, шестая — А.В. Попова?, седьмой — Л.И. Эрлих, восьмой — В.И. Морев. Четвертый ряд второй справа — А.Н. Антонов

He worked in the pediatric clinics of LPMI under the direction of A.F. Tur and simultaneously as an associate professor at the Department of Social Hygiene of Women and Children, established in 1928 and headed by the Director of the Institute of Maternal and Infant Welfare, Yu.A. Mendeleva [12]. He conducted extensive research, delivered lectures, and led classes in continuing medical education and postgraduate physician training courses, as well as in courses for nurses, and later taught students at LPMI. For several years, he chaired the Pedagogical Commission of the Institute of Maternal and Infant Welfare. The Commission developed and approved curricula and course programs for the advanced training of physicians and nurses in maternal and infant welfare, identified children's institutions for practical training, and performed other related functions¹ (Fig. 3).

In 1927, a Scientific Advisory Bureau was established under the Council of the Institute of Maternal and Infant Welfare, headed by A.N. Antonov, MD, Associate Professor. This Bureau

played an important role in maintaining direct contact with physicians who had received training at the Institute. Its tasks included providing information on scientific, medical, and organizational aspects of maternal and child health to physicians, as well as to all other persons working in this field of healthcare. The Bureau's staff offered advice and guidance, and developed plans and programs relating to: a) the content and scientific development of material on maternal and infant welfare issues; b) the scientific organization of observation in all types of maternal and infant welfare institutions; c) the proper and most effective organization of work in newly established institutions; d) legal issues arising in the course of work of maternal and infant welfare institutions. They also addressed personnel training, various bibliographic references, guidance on literary sources, and similar matters. Inquiries came both from the center and from the distant peripheries of the Union [13].

Furthermore, from 1928, he was also in charge of the postgraduate section at the Leningrad Institute of Maternal and Infant Welfare. By 1935, LPMI had 12 postgraduate students, and by 1940,

¹ Ibid., fund 4301, inventory 1, file 2701, sheets 700, 700 verso, 701, 701 verso.

70. During these same years, he taught at the Institute of Preschool Education and, from 1925, at the Leningrad Institute for Postgraduate Physician Training, in the Department of Pediatrics headed by Professor Petr Sergeevich Medovikov (1873–1941). Medovikov was a prominent pediatrician and phthisiologist, one of the first staff members of the Leningrad Institute of Maternal and Infant Welfare, and the organizer of the first department of childhood tuberculosis in the USSR, established at LPMI. At the Leningrad Institute for Postgraduate Physician Training, Alexander Nikolaevich was first hired as an instructor, then as a privat-docent (a university lecturer without a chair) in the Department of Pediatrics, and in 1937 he moved to the Department of Physiology and Children's Dietetics. It was there, in 1924, that he defended his dissertation entitled “Rural Summer Nurseries in Russia and Their Significance for the Protection of Infancy”.

It was precisely in the pre-war period that the main theoretical foundations were laid and new principles and methods of work for the protection of women's and children's health were put into practice. A.N. Antonov can rightly be considered one of the ideologists and theorists of maternal and infant welfare in our country. As early as 1919, when in his view this concept had “not yet fully crystallized and its scope had not yet been definitively determined”, he offered the following definition: “By the protection of motherhood and infancy, we should understand the totality of legislative, sanitary, and social measures aimed at creating the most favorable conditions for the health and life of the mother and child during the period of physiological connection between them, i.e., during pregnancy, childbirth, and breastfeeding. It goes without saying that the life and health of the mother and child are subject to a wide variety of influences not only during this period, which generally lasts about two years ...” [11]. In 1929, he viewed the concept of “protection of motherhood and infancy” more broadly, understanding it as “the totality of socio-legal and socio-hygienic measures aimed at creating the most favorable living conditions for the mother and child during the period of physiological connection between them, i.e., during pregnancy, childbirth, and breastfeeding”, and included in this concept the proposition that the protection of motherhood and infancy should begin not from the moment of conception, but even earlier: “in every growing girl and young woman we must see a future mother, and accordingly, care for their physical

health and their preparation for the performance of their future maternal duties must be included ... in the scope of maternal and infant welfare. On the other hand, the demands of life have forced us to expand the concept of 'infant welfare' to include not only the protection of infants but also of young children (from 1 to 3 years of age)” [14].

Regardless of the institution in which Alexander Nikolaevich worked, he always felt a need to share his knowledge with young physicians, nurses, and other medical personnel. Everywhere he was the organizer of special courses in maternal and infant welfare. His remarkable lectures always drew large audiences and were highly successful. Over the years of his teaching activity, many young Soviet physicians and nurses acquired and improved their qualifications in the fields of pediatrics and maternal and infant welfare. Alexander Nikolaevich correctly assessed the enormous role of nurses and nannies in preventive and therapeutic work with children. He believed that the success of children's medical and preventive institutions depended to a large extent on the quality of their work and knowledge. Delivering lectures and conducting classes for physicians, nurses, and students continued throughout his entire working life and was permeated with enthusiasm, a creative approach, love for his work, and care for his listeners. According to A.F. Tur, Alexander Nikolaevich was “a great master of the pedagogical process”; his lectures, interesting in form, “were distinguished by great substance and exceptional clarity and simplicity of presentation” [15].

In 1929, A.N. Antonov published a manual for physicians entitled “Protection of Motherhood and Infancy”, based on his lectures. This was the first such manual for physicians working in maternal and infant welfare across the vast territory of our country. In the preface, he wrote: “My listeners — physicians attending courses at the State Institute for Postgraduate Physician Training and the Leningrad Institute of Maternal and Infant Welfare — have repeatedly expressed the wish that I publish the materials I usually use when delivering lectures. I promised to do so at the first opportunity, and I am now keeping that promise” [14].

While gathering information for the book, Alexander Nikolaevich undertook an enormous amount of work, carefully collecting historical materials on the development of maternal and infant welfare in Russia and abroad. He studied numerous Russian and foreign sources, reviewing virtually all Russian medical and philanthropic periodical

and non-periodical literature from its inception at the end of the 18th century up to the 1920s. The results of this work included not only the aforementioned manual for physicians, containing the first essay in our literature on the organization of maternal and infant welfare in foreign countries, but also the first bibliography of works on maternal and infant welfare, which had been lacking. He wrote: "I do not regret the time and effort spent on this painstaking work. I consider several quite unexpected and highly interesting literary finds to be sufficient reward, as they have made it possible to add several details to the overall picture of the development of infant welfare in pre-revolutionary Russia. It goes without saying that all measures for infant welfare in pre-revolutionary Russia are now of only historical interest to us, since state protection of motherhood and infancy in the USSR, advancing by leaps and bounds, is a child of the October Revolution and owes both its existence and its development to it" [14].

When publishing his book "Protection of Motherhood and Infancy", he understood that not all problems of this complex medical and social field had been addressed in this edition, explaining that "these shortcomings are a natural consequence of the book having been written by a single author rather than a team of specialists" [14].

In addition to addressing issues of the history and theory of the maternal and infant welfare system in Russia, A.N. Antonov persistently sought to provide a scientific basis for the practice of contemporary maternal and infant welfare measures. His works reflected a desire to study these issues using historical analysis, statistics, and scientifically conducted clinical observation.

The problems of infant and maternal mortality were always within his sphere of interest, and several of his works, based on identifying and analyzing the causes of these phenomena, were devoted to this topic. An example is his work "The Reduction of Infant Mortality in Leningrad as a Result of the Activities of Maternal and Infant Welfare Centers" (1925), in which he examined the complex of factors leading to the decline in this indicator and substantiated the main one: 80% of all pregnant women and infants in Leningrad passed through maternal and infant welfare centers, where systematic preventive and health education work was constantly conducted [16].

In 1931, A.N. Antonov published a monograph on this problem entitled "Infant and Young Child Mortality, Its Causes and Measures for Its

Control" (1931). As in all his works, the book presents information on the history of the subject under study from the 17th century onward. It also analyzes and systematizes extensive material available in Russian and foreign literature on child mortality, including statistical data, and includes a bibliographic index of Russian literature on child mortality compiled by him, covering the periods before and after 1918. Alexander Nikolaevich also addressed the terminology of child mortality. During the years when the book was being written and for decades afterward, the concept of child mortality included mortality of children under one year of age. A.N. Antonov believed that "child mortality" should refer to mortality between the ages of 0 and 15 years (the age from birth to puberty, which was then considered childhood). He proposed calling mortality in the first month of life neonatal — this neologism had not yet entered Russian scientific terminology at the time — and "to denote intrauterine mortality", he wrote, "I will use a term that has already gained citizenship in Western literature — antenatal mortality, contrasting it with postnatal mortality, i.e., mortality after birth" [17]. However, in the book, he uses the term "child mortality" in the generally accepted understanding of the time — as mortality from 0 to 1 year of age.

In the monograph "Infant and Young Child Mortality, Its Causes and Measures for Its Control", Alexander Nikolaevich included an article by Professor V.V. Pavsky (1893–1934), a Soviet statistician and demographer who worked at the Leningrad Institute of Maternal and Infant Welfare and was a founder of statistics in the field of maternal and infant welfare. The article was entitled "Methods of Measuring Child Mortality at Ages 0–1 Years". In addition, one of the founders of sanitary and demographic statistics, S.A. Novoselsky (1872–1953), familiarized himself with the content of the book, provided valuable guidance to the author, and permitted him to use some of his materials that had not yet been published. A.N. Antonov expressed his gratitude to these two distinguished scholars.

In this book, he also included a chapter on maternal mortality, as he believed that "antenatal mortality and maternal mortality share many common causes, and moreover, maternal mortality has a definite influence on neonatal and postnatal mortality" [17]. This chapter by A.N. Antonov and his 1928 article "On Maternal Mortality" were among the first in our literature on this issue

[18]. He also presented a report on this topic at the Fourth All-Union Congress on Maternal and Infant Welfare, held in Moscow from June 1 to 7, 1929.

With his characteristic thoroughness, Alexander Nikolaevich discussed the causes of maternal mortality, presenting statistics from various countries. He examined the dependence of the mortality rate on maternal age, birth order and number of deliveries, marital status, rural or urban residence, family economic status, maternal health and complications during pregnancy, the performance of obstetric operations, and other factors. All of this provides grounds to consider A.N. Antonov one of the founders of historical demography.

A.N. Antonov not only formulated the meanings, ideas, and tasks of maternal and infant welfare and communicated them to his audience, but also actively participated in their practical implementation. He examined in detail the main components of the work of various institutions — children's and women's consultation centers, nurseries — and demonstrated their significance as measures for combating child mortality, particularly in rural areas. Several of his works were devoted to this topic, and he presented a seminal report entitled “Protection of Infancy in the Village” at the Second All-Russian Conference on Maternal and Infant Welfare in Moscow in 1924 [19].

Alexander Nikolaevich actively developed the system of antenatal infant welfare as an important factor in reducing mortality during the first weeks of life. He identified measures for protecting the health of pregnant women as the most important condition, and chief among them was ensuring access to appropriate medical, socio-hygienic, and socio-legal care. In his view, “the decisive influence on child mortality is exerted not by biological but by social factors. Among these, we must place in first place the family's economic situation and the method of infant feeding; in second place, family culture and housing conditions, since both depend on the family's economic circumstances” [20]. He also insisted on the introduction of such a form of work as home visiting for pregnant women, believing that “home visiting for pregnant women is as natural a complement to consultations for pregnant women and mothers as health education home visiting for infants complements the work of infant consultation centers. Thanks to home visiting, it is possible to significantly expand and deepen the activities of consultations for pregnant women”. The goal pursued by home visiting for pregnant women, he wrote, “is to

reduce maternal mortality from childbirth and postpartum diseases and mortality during the first weeks of life” [21].

Several of A.N. Antonov's works were devoted to the main organizational forms of outpatient facilities for women and children — children's and women's consultation centers. In this area, he collaborated with Zinaida Osipovna Michnik, a founder of outpatient pediatric care in Russia dating back to the pre-revolutionary period. With complete objectivity and fairness, Z.O. Michnik and A.N. Antonov can be called theorists and practitioners of outpatient care for mothers and children up to three years of age. Their joint work was highly successful. The methods they developed for the operation of outpatient facilities became standard practice in these facilities throughout the USSR. These methods included health education home visiting for infants, strategies for attracting mothers with newborns to consultation centers, methods for systematic follow-up of children under one year of age both at home and at consultation centers, promotion of breastfeeding, regulation of mothers' visits to consultation centers, and other approaches. Of great methodological importance were the detailed instructions for home visiting nurses, which clearly defined their functional responsibilities [22, 23].

Two works by A.N. Antonov devoted to the prevention of abortion deserve special attention: “Birth Control Consultation Centers as a Measure for Combating Abortion” (1926) and “Two Years of Activity of a Birth Control Consultation Center” (1929) [24, 25]. Such a consultation center was organized on the initiative of A.N. Antonov and Z.O. Michnik by the Maternal and Infant Welfare Department of the Leningrad Provincial Health Department in February 1926, at Maternal and Infant Welfare Center No. 15 on Vasilievsky Island, where Alexander Nikolaevich worked. The tasks of this consultation center were: 1) to provide assistance to women who, for various reasons, could not or did not wish to become pregnant at a given time; 2) to provide assistance to women who wished to become mothers but, for various reasons, could not conceive. During the two years of the center's operation, under conditions of the decriminalization of abortion, methods of educating women on contraception were developed, and more effective social support for pregnant women was organized.

From the very first steps of his work in the field of protecting women's and children's health,

A.N. Antonov showed a particularly keen interest in the health education work of physicians and nurses in maternal and infant welfare as one of the main components of the work of children's institutions. He correctly assessed the enormous practical importance of this area of activity within the overall system of measures. These measures were aimed at reducing child morbidity and mortality, preparing women for motherhood, and ensuring proper care and feeding of infants and young children, among other goals. At the same time, he recommended that medical workers use various methods of popularizing knowledge about the child, both time-tested and new, which he developed and presented in detailed recommendations for physicians and nurses working in maternal and infant welfare institutions. An example is his brochure "Health Education Work in Maternal and Infant Welfare", which went through editions in 1925, 1926, and 1928 [26]. Among the new methods of health education work, mention should be made of the "infant competition", held for the first time in our country in Petrograd in 1920 on the initiative of Alexander Nikolaevich and Zinaida Osipovna Michnik at the Vasileostrovsky Maternal and Infant Welfare Center No. 15. The competition involved normally developing healthy children who were under the systematic supervision of the children's consultation center. Mothers whose children had the best health indicators received prizes — a medal and a certificate of commendation — and many were also given child care items. The competition emphasized the role of systematic medical and nursing supervision and the importance of consultation centers for raising a healthy child [26]. The goal of this new form of health education was also to provide material assistance to mothers. Based on the experience of Leningrad, similar competitions were subsequently held in other cities.

In 1930 (2nd edition, 1932), the "Manual for the Maternal and Infant Welfare Nurse" was published, containing essential information on the physiology and pathology of pregnancy and childbirth, the specifics of child development, feeding guidelines, infectious diseases in children, therapeutic techniques, first aid in accidents, and other topics. The appendices included the laws in force at that time on the protection of the rights and interests of women and children in the USSR, as well as various instructions and regulations, reference cards, and sample talks for

pregnant women and practical training sessions on child care. A.N. Antonov defined the purpose of preparing such a publication for the maternal and infant welfare nurse as follows: "Deprived of constant medical assistance and guidance, she is often forced in her daily work to give advice, instructions, or even take justified actions that sometimes go far beyond the scope of her immediate duties in the protection of mother and child. She cannot make diagnoses and should not attempt to treat. But she must be able to provide first aid in the event of a sudden illness of the mother or child and in accidents; she must give necessary instructions regarding isolation and precautions in cases of suspected infectious disease, and so on" [27]. The "Manual for the Nurse" also drew attention to the ethics of conduct: "Home visits by the nurse should by no means be of a formal nature. Through gentle treatment, patience, constant readiness to provide assistance, and genuine interest in the needs of the mother and child, the nurse must earn the mother's trust, which is the key to the fruitful work of maternal and infant welfare nurses" [27].

In 1930, A.N. Antonov published a short manual entitled "Artificial Feeding of Infants" (1930), and in 1934 (2nd edition, 1937), his guide "Hygiene and Dietetics of Early Childhood" was released to assist physicians and nurses studying in maternal and infant welfare courses.

A.N. Antonov devoted much attention to the health of girls as future mothers. He originated the idea of introducing training for schoolgirls in the fundamentals of early childhood hygiene. He developed this idea in a number of articles, and it received full approval from the Fourth All-Union Congress of Pediatricians in 1927. His work "Preparing Girls for Motherhood" raised the issue of the need to teach girls child care while still in secondary school. In Antonov's view, widespread maternal practices of child rearing, child care, and infant feeding were based on "instinct", superstition, and prejudice rather than on elementary knowledge. These practices, he believed, determined the high infant mortality rates. The foundation of all maternal and infant welfare measures should be the desire to instill in women a conscious attitude toward fulfilling their maternal duty. It was also essential to provide them with a certain body of knowledge without which proper infant rearing is impossible. He understood that teaching an adult woman the basics of motherhood was by no means an easy task, as she was already burdened with the

knowledge she had acquired during her girlhood and childhood: "How can a mother believe the doctor that a baby does not need or is even harmed by swaddling clothes, a pacifier, or a cradle, if in her past she has become accustomed to them, has grown attached to them, if her early childhood memories are associated with these objects?" [28]. He believed that girls should be prepared for motherhood while still at school and taught child care. To this end, in the 1920s, he conducted such classes in schools in Staraya Russa and Leningrad, the first of their kind in the country. A.N. Antonov developed a curriculum consisting of 10 sessions, with no more than 10–12 girls aged 7 to 12 years in each group. The girls were shown various child care techniques and were asked to immediately practice them on dolls. Girls of this age in large families (of which there were many at that time) looked after their younger siblings, which helped them become better at caring for infants. Subsequently, classes with schoolgirls were conducted by maternal and infant welfare nurses under the supervision of A.N. Antonov.

For older girls (aged 15–16), 8 sessions were conducted according to a special curriculum that included questions on the social significance of child mortality, women's hygiene, infant hygiene, the main laws on the protection of mother and child, and the role of various maternal and infant welfare institutions. A.N. Antonov considered the main tasks of these sessions to be: "...first, to provide the girl with a certain amount of practical knowledge on maternal hygiene and child care, and second, to make an effort to develop in school-age girls a conscious attitude toward their future maternal responsibilities" [28].

A.N. Antonov attached great importance to health education work with mothers, which he began conducting as early as 1919, when he prepared a program outline for systematic lectures for pregnant women and mothers, delivered at children's consultation centers. Subsequently, this lecture course began to be given at "motherhood schools" affiliated with children's outpatient clinics and women's consultation centers.

In Antonov's view, "Health education work in the field of maternal and infant welfare should be conducted in two directions. On the one hand, it is necessary to awaken interest in maternal and infant welfare issues among the broad masses in order to involve as many people as possible in active work. On the other hand, it is equally necessary to widely disseminate information on maternal and child hygiene among the masses, to teach women, especially mothers, proper

infant feeding and child care, to combat harmful prejudices and superstitions, and to instill useful skills" [26]. Along with popular literature, lectures, and talks, he recommended distributing brochures and leaflets written in simple, understandable language to mothers, organizing exhibitions on maternal and infant welfare and so-called children's weeks, and using health education posters.

A.N. Antonov, together with Z.O. Michnik, wrote a popular scientific guide for mothers that went through four editions: the first three were published in 1925, 1928 (5,000 copies), and 1929 (10,000 copies) under the title "Mother and Child", and the 4th edition, published in 1937, the most complete, was entitled "Mother and Infant". The book contains information on the female body and its physiology, pregnancy and childbirth, and child care up to the age of three years according to age, including care for newborns and premature infants. It provides detailed recommendations on infant feeding (breastfeeding, mixed, and artificial feeding) and describes the normal development of a child up to three years of age and the principles of child-rearing. It characterizes maternal and infant welfare institutions where child health monitoring is conducted and assistance for various medical conditions can be provided. The work concludes with a chapter entitled "The Rights of Pregnant Women and Mothers under the Laws of the USSR". At the beginning of the book, the authors addressed their readers: "In Lieu of a Preface. This book is intended for young and inexperienced mothers. We would very much like it to become their advisor and friend. In every mother's life, there are moments when various doubts arise, when anxiety takes hold, when she wants to receive an explanation, advice, or help. If our book helps a young mother in such a difficult moment, we will consider that our efforts were not in vain" [29]. Undoubtedly, this popular guide for mothers, compiled by him together with Z.O. Michnik, enabled many mothers to become acquainted with the rules of hygienic child care.

In his works, A.N. Antonov directly addressed working mothers, explaining what a working woman needed to know about pregnancy, childbirth, and child care. He published brochures on this topic under the same title in 1928 and 1929 [30]. Another of Antonov's health education works, "The Mother's Primer: Infant Care and Feeding", was published in 1944, 1945, 1946, and 1948. He also authored a number of other popular science articles published in various journals.

Having become a recognized specialist in the field of maternal and infant welfare, Alexander Nikolaevich repeatedly put forward various proposals for the further development and improvement of maternal and infant welfare services, not only in Leningrad but throughout the country. As a speaker, he actively participated in all-union conferences on maternal and infant welfare, all-Russian congresses of pediatricians, meetings of the Leningrad Society for Maternal and Infant Welfare and the Leningrad Scientific Society of Pediatricians, and other events.

A.N. Antonov was an experienced clinical pediatrician. Working at the Institute of Maternal and Infant Welfare alongside A.F. Tur, one of the founders of Russian neonatology, and being his closest colleague, Alexander Nikolaevich also stood at the origins of neonatology. He studied in detail the anatomical and physiological characteristics of newborns, including changes in weight and height in newborn infants during the first days of life. He also examined the duration of weight loss and the average weight loss depending on the amount of milk consumed by the infant. A number of Antonov's works from 1923, 1924, 1925, and 1934 were devoted to this topic [31, 32]. His works on the physiology and pathology of lactation in women deserve mention ("The Effect of Fasting on Lactation", "Galactorrhea in Nursing Mothers", "On the Effect of Ultraviolet Irradiation on Lactation"). Of particular note are his works on dietetics and infant physiology, carried out in the 1940s. These include the results of his own observations and extremely informative and substantive reviews: on intrauterine respiratory movements of the fetus (1941), on epidemic diarrhea of the newborn (1941), on the causes of certain developmental defects (1948), on rickets, and others [33–36]. In 1946, Antonov's monograph "The Newborn Infant" was published (Leningrad, 1946).

During the Great Patriotic War of 1941–1945 and the Siege of Leningrad, Alexander Nikolaevich remained in Leningrad, continuing to work in the hospital clinics of the Leningrad Pediatric Medical Institute and heading the newborn unit. In 1942, he was elected Professor of the Department of Hospital Pediatrics at LPMI, headed by A.F. Tur. Together with the staff of the department and the institute, they endured all the trials and hardships of the siege, suffered from alimentary dystrophy, and lost loved ones. However, they considered it their duty to treat, save,

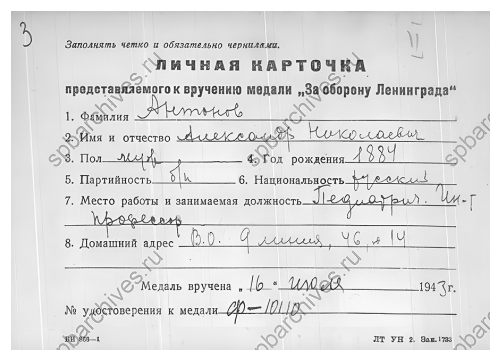


Fig. 4. Personal card of A.N. Antonov on the awarding of the medal "For the Defense of Leningrad" (1943)

Рис. 4. Личная карточка А.Н. Антонова о вручении ему медали «За оборону Ленинграда» (1943)

help, consult, teach, conduct research, and instill hope. On February 15, 1943, he was awarded the title of Honored Physician of the RSFSR, and on July 10, 1943, he received the Medal "For the Defense of Leningrad"¹ (Fig. 4).

Alexander Nikolaevich actively participated in the work of the Scientific Society of Pediatricians, which continued to function in besieged Leningrad and attracted dozens of physicians to its meetings. He also served on the Council for Curative and Preventive Care for Children of the Ministries of Health of the USSR and the RSFSR.

A.N. Antonov carefully studied the health status of newborn infants during the most severe period of the siege. It is known that in 1942–1943, the city's population consisted primarily of women. Their lot was meager, barely life-sustaining nutrition; heavy physical labor, often unfamiliar to them; night shifts on rooftops during frequent air raids; and existence in cold, unheated rooms, among other hardships. All these conditions adversely affected the health of Leningrad women, particularly the course and outcomes of pregnancy, the course of labor, intrauterine fetal development, and the physical condition of newborns during the siege period. A.N. Antonov testified: "Children born at the end of 1941 and the first half of 1942 to severely emaciated mothers were, for the most part, of low birth weight and exhibited extremely poor viability. Their mothers, as a rule, had very little milk, and therefore many newborns had to be supplemented with artificial formulas prepared from substitutes for cow's milk as early as the first days of life" [37].

¹ Ibid., fund R-7384, inventory 38, file 81, sheet 46; file 884-1, sheet 177.

At the beginning of the war, the newborn clinic at LPMI, which had a capacity of 120 children, was located in the four-story building of the obstetric and gynecological unit. During air raids, the newborns, placed on gurneys, were taken by elevator from the third floor to a bomb shelter specially equipped for them in the basement. However, in late autumn of 1941, as A.N. Antonov wrote, due to the failure of the central heating system, the obstetric clinic, having reduced the scope of its work, was moved to another premises that could be heated by makeshift stoves. This was a single ward for 15–20 children, but “the stove was too small to heat the children's ward, it often emitted smoke, there was too little firewood, and moreover, it was often damp. The temperature in the ward was usually very low (frequently dropping to 12–10 °C, and during the period of January 23–26, 1942, fell to 5–4 °C). The staff (physician, nurses) worked in their gowns worn over their outdoor clothing and in felt boots. The physical examination of the child or the nurse changing the child's swaddling clothes posed a threat of hypothermia. Hypothermia also threatened the child in the corridor and in the mothers' wards, where the child was taken for feeding, and where the temperature was even lower. The lack of hot water bottles and the inability to repair those that had broken down, the shortage of hot water (the water supply was not functioning, and water could only be heated in the ward on the makeshift stove) — all this further worsened the situation. Unsurprisingly, during this period, a significant number of newborns died from such conditions as scleroderma, sclerema, and pneumonia” [37].

Summarizing his experience of working with newborns during the siege, A.N. Antonov presented a detailed clinical and statistical characterization of newborns in the siege of Leningrad. His conclusions were as follows:

- “1. The severe degrees of quantitative and qualitative starvation experienced by Leningrad women during the siege affected the course and outcomes of their pregnancies and the condition of the newborn infant.
2. During the period of particularly profound starvation (the first half of 1942), the still-birth rate more than doubled compared to normal (to 5.6%), and the proportion of premature infants reached unprecedentedly high levels (41.2%).
3. The number of high-birth-weight full-term infants sharply decreased, while, conversely,

ly, the number of low-birth-weight infants sharply increased.

4. The average birth weight of full-term infants in the first half of 1942 decreased by 500–600 g compared to the first half of 1941.
5. The physiological weight loss lasted longer than usual, and the average weight loss was greater than usual.
6. Among the clinical features of newborn infants, the following deserve mention: a) generally reduced viability of newborns, b) pronounced physiological erythema, which often persisted for a long time in some infants, c) very rarely observed toxic erythema of the newborn, d) very rarely observed physiological engorgement of the breasts, e) unusually frequently observed craniotabes (congenital softening of the cranial bones).
7. The morbidity rate among newborns during this period was unusually high (32.3%), which should be partly attributed to their low viability. Among the diseases, the leading causes were scleroderma and sclerema, followed by pneumonia.
8. Newborn mortality, particularly in the first half of 1942, reached unprecedentedly high levels — 9% among full-term infants and 30.8% among premature infants — which should also be attributed to the low viability of many of them.
9. Even under severe degrees of starvation, a woman's ability to lactate is preserved; however, milk production sharply decreases, and the lactation period is significantly shortened.
10. While not fundamentally objecting to the existing view that the fetus behaves as a parasite in relation to the maternal organism, based on our data we can assert that the state of its host — the maternal organism — is far from indifferent to the 'parasite fetus', and that severe degrees of quantitative and qualitative starvation of the mother sharply affect fetal development and newborn viability” [37].

We know with certainty that the staff of LPMI did everything necessary to save the lives of newborns and premature infants [38].

A.N. Antonov submitted his article for publication in *The Journal of Pediatrics*, an international journal published monthly since 1932 by Elsevier [39]. The article generated considerable resonance and attracted the attention of many researchers in demography and history, nutrition specialists, and experts in obstetrics, pediatrics,

neonatology, genetics, and other fields. Foreign authors have cited Antonov's article over 350 times in publications up to 2023.

In 1944, a short monograph by A.N. Antonov entitled "Feeding and Care of the Young Child" was published, one of his many works on child dietetics [36].

As is well known, one of the leading research areas at the Department of Hospital Pediatrics of LPMI, headed by A.F. Tur, was childhood hematology. In the 1930s–1940s, studies on the morphology, physiology, and pathology of the blood system were conducted by A.N. Antonov, M.A. Zinger, R.B. Gefter, V.I. Lubenskaya, F.A. Lokshina, M.V. Miller-Shabanova, R.Ya. Mittelman, and others. A.N. Antonov authored one of the first works in the USSR on the topic "Erythroblastosis of the Newborn", published in 1940. He carried out extensive research and presented it in the form of a very detailed review of the world literature (138 sources, mostly from 1920 to 1940) on the then poorly understood issue of erythroblastosis of the newborn. He described this condition as a "triad of clinically completely heterogeneous but pathogenetically apparently very similar diseases" — referring to edema, anemia, and jaundice of the newborn [40]. Until the 1930s, this condition, termed erythroblastosis of the newborn or fetal erythroblastosis, had not been identified as a nosological entity. Knowledge of its etiology and pathogenesis was lacking. It is now known as hemolytic disease of the fetus and newborn, caused by incompatibility between the blood of the fetus and the mother with respect to erythrocyte antigens, most commonly the Rhesus system.

A.N. Antonov prepared his work and submitted it for publication in 1940, before the publication of the famous study by American researchers K. Landsteiner and A. Wiener on the Rh factor later that same year [41]. Alexander Nikolaevich continued to work in this direction, preparing a monograph during the siege. In 1947, he published a work entitled "Hemotherapy in Pediatrics in Light of the Discovery of the Rh Blood Factor". In it, he analyzed publications that had appeared since the discovery of the Rh factor, including descriptions of blood transfusion practices over the preceding years, paying special attention to whether the authors had taken into account the presence or absence of the Rh factor in this procedure. He noted that not all authors conducted appropriate monitoring during blood transfusions or

hemotherapy and called on physicians to routinely determine the Rh factor in patients and to take it into account in any blood transfusion. He strongly advised physicians to be particularly attentive to this procedure in girls: "We must view every girl as a future mother, and therefore it is necessary to establish as a rule the examination of all girls and young women for the Rh factor before transfusions or intramuscular blood injections. Those who prove to be Rh-negative must receive Rh-negative blood for transfusions" [42].

A.N. Antonov was one of the first in the country to study vitamin K. He authored a detailed review on the topic "Vitamin K and Its Use in Hemorrhagic Diseases of the Newborn", prepared during the siege and published in the journal "Pediatriya" in 1943 [43]. This was one of the first publications in Soviet literature and the first in pediatric literature. As is well known, vitamin K, whose deficiency causes hemorrhagic disease of the newborn, was isolated in 1939. This was achieved by Danish biochemist Carl Peter Henrik Dam (1895–1976), a professor at the University of Copenhagen, together with Swiss biochemist Paul Karrer (1889–1971), a Nobel Prize laureate in Chemistry in 1937. C.P. Dam was the first to use synthesized vitamin K for the treatment of newborns. In 1943, he received the Nobel Prize for the discovery and elucidation of the chemical structure of vitamin K, the only Nobel laureate in history to receive the prize for the discovery of a specific vitamin [44]. In 1943, a group of Soviet biochemists led by Academician A.V. Palladin synthesized a water-soluble analog of vitamin K (K_3 , vikasol). It was rapidly introduced into clinical practice, as it demonstrated high efficacy in patients with vitamin K deficiency.

A.N. Antonov's contribution to the study of blood pathology in newborns was confirmed after his death. On November 14, 1951, a joint meeting of the Leningrad Society of Pediatricians and the Society of Obstetricians and Gynecologists, together with the Institute of Blood Transfusion, was held in Leningrad. The meeting was chaired by M.S. Maslov, Full Member of the USSR Academy of Medical Sciences, Honored Scientist, Professor. The meeting discussed issues related to the Rh factor and its significance in the work of obstetricians and pediatricians. Other topics included the exchange transfusion method for hemolytic disease of the newborn and hemolytic anemia of the newborn (clinical presen-

tation, treatment, and long-term outcomes). At this meeting, A.F. Tur, Corresponding Member of the USSR Academy of Medical Sciences, Honored Scientist of the RSFSR, Professor, addressed the gathering and reminded those present of the role of the recently deceased Professor A.N. Antonov in the fight against hemolytic diseases of the newborn. He also drew attention to Antonov's position regarding the need for increased attention to the Rh factor and the necessity of monitoring this parameter. A.F. Tur noted with regret that “the issue of the Rh factor is still undeservedly underestimated by many. Only severe forms of erythroblastosis are recognized in maternity hospitals, while mild forms are overlooked — and it is these that subsequently lead to severe disability. Early exchange blood transfusion will undoubtedly reduce mortality and subsequent disability in children. Blood testing in newborns should be performed more frequently; this will help diagnose erythroblastosis earlier” [45].

A.N. Antonov published over 80 scientific works on various issues of maternal and infant welfare, including the physiology and pathology of the newborn period, infant feeding, hematology, and other topics. A characteristic feature of all his scientific works is their relevance and practical value for the daily work of physicians and nurses. It should be noted here that Alexander Nikolaevich was a recognized specialist in compiling bibliographic indexes of Russian and foreign literature on pediatrics, neonatology, and maternal and infant welfare. Bibliographic sections are present in his monographs. A bibliographic list of Russian works on maternal and infant welfare for 1924 was published in the journal “Maternal and Infant Welfare” in 1925 (No. 1). A list for 1925 appeared in the “Journal for the Study of Early Childhood” (1926, Vol. IV, No. 4). In A.F. Tur's textbook “Physiology and Pathology of Newborn Infants” (1936 and 1947, 2nd edition), the bibliographic index on neonatology was compiled by A.N. Antonov (Fig. 5).

In addition, he was a compiler and editor of scientific collections published by the institute. Of particular note are the publications issued for the anniversaries of the Leningrad Institute of Maternal and Infant Welfare (later LPMI): the 10th (1925–1935), 15th (1925–1940), and 20th anniversaries (1945). As the editor of these publications, he collected and summarized a large amount of



Fig. 5. A.N. Antonov. 1940

Рис. 5. А.Н. Антонов. 1940-е гг.

material on the practical, pedagogical, research, and organizational work of the institute during these periods. He also edited other scientific collections of LPMI, serving on their editorial boards.

Alexander Nikolaevich was the editor-in-chief of the journal “Maternal and Infant Welfare”, which was published in 1925, unfortunately, only three issues in total. The editorial board included V.O. Mochan, P.I. Lyublinsky, and other scholars. They likely chose this title in memory of a publication with the same name issued by the VPOMM in 1916–1918. From 1929, A.N. Antonov served continuously as a member of the editorial board and as the executive secretary of the journal “Issues of Pediatrics, Pedology, and Maternal and Infant Welfare” (from 1936, “Issues of Pediatrics and Maternal and Infant Welfare”), published by the Leningrad Institute of Maternal and Infant Welfare — LPMI.

A.N. Antonov's intensive scientific, teaching, and social activities during the grim days of the Siege of Leningrad took a toll on his health. He passed away on October 17, 1947, after a brief severe illness, still in the prime of his creative thought and full of plans. All who knew Alexander Nikolaevich emphasized the diversity of his interests and the fruitful results of his medical and scientific activities. They also noted his tireless energy in developing new forms of maternal and infant welfare, and his readiness to share his rich experience and knowledge with physicians, nurses, and all those working in the field of pediatrics and maternal and child health.

A.F. Tur, who worked with Alexander Nikolaevich for many years, called him a leading Soviet pediatrician and one of the founders of maternal and infant welfare in our country: “Until the end of his life, Alexander Nikolaevich remained a steadfast fighter for children's health; he was characterized by enthusiasm in his work and a drive to resolve controversial and difficult problems of maternal and child welfare. His works will always be used by researchers in the field of maternal and infant welfare, in the field of newborn physiology and pathology, and in matters of nutrition and upbringing of young children” [15].

The name of Alexander Nikolaevich Antonov is forever inscribed in the history of SPbSPMU. He belongs to the constellation of those scientists and organizers of maternal and infant welfare who, through their efforts, energy, and ideas, defined an era. They stood at the origins of the Pediatric University and contributed to its establishment and successful development.

ADDITIONAL INFORMATION

Authors' contribution. Mikirtichan G.L. — conceptualized or developed the research idea, collected data, analyzed and summarized literature, wrote the original text, and edited the manuscript; Savina I.A. — collected data, analyzed and revised the text, and selected illustrative materials.

All authors read and approved the final version before publication.

Competing interests. The authors declare that they have no competing interests.

ДОПОЛНИТЕЛЬНАЯ ИНФОРМАЦИЯ

Вклад авторов. Микиртичан Г.Л. — концептуализация или разработка идеи исследования, сбор данных, анализ и обобщение данных литературы, написание оригинального текста и редактирование текста рукописи; Савина И.А. — сбор данных, анализ и доработка текста, подбор иллюстративных материалов.

Все авторы прочли и одобрили финальную версию перед публикацией.

Конфликт интересов. Авторы декларируют отсутствие явных и потенциальных конфликтов интересов, связанных с публикацией настоящей статьи.

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AUTHORS' INFO

✉ **Galina L. Mikirtichan** — Dr. Sci. (Med.), Professor, Head of the Department of Humanities and Bioethics. E-mail: glm306@yandex.ru; <https://orcid.org/0009-0007-7913-4325>; SPIN: 3208-9066
Irina A. Savina — Director of the Saint Petersburg State Pediatric Medical University Museum. E-mail: iasavina@yandex.ru; <https://orcid.org/0009-0007-3925-3696>; SPIN: 5110-4676

ОБ АВТОРАХ

✉ **Галина Львовна Микиртичан** — д.м.н., профессор, заведующая кафедрой гуманитарных дисциплин и биоэтики. E-mail: glm306@yandex.ru; <https://orcid.org/0009-0007-7913-4325>; SPIN: 3208-9066
Ирина Александровна Савина — директор Музея Санкт-Петербургского государственного педиатрического медицинского университета. E-mail: iasavina@yandex.ru; <https://orcid.org/0009-0007-3925-3696>; SPIN: 5110-4676