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## REQUIREMENTS FOR MEDICAL PERSONNEL PROVIDING MEDICAL CARE AT ONSITE INDUSTRIAL FACILITIES IN THE RUSSIAN ARCTIC CONTINENTAL SHELF

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**Introduction.** The development of the Arctic zone of the Russian Federation implies the operation of offshore structures under extreme climatic conditions, high industrial hazards, and remoteness from onshore infrastructures. In such a context, provision of efficient medical care becomes of strategic importance. However, personnel training for health posts on offshore structures remains insufficient. In addition, there is no professional standard for a “shipboard medical specialist,” with the existing qualification requirements covering only a portion of all necessary competencies.

**Objective.** To analyze and generalize the regulatory, organizational, and personnel requirements for medical staff at health posts of offshore structures on the Arctic Shelf, and to develop proposals for improving their training system.

**Materials and methods.** The study was conducted using an analytical retrospective design. The research base included the regulatory legal acts of the Russian Federation (2010–2025), orders of the Ministry of Health, the Ministry of Labor, and the FMBA of Russia, corporate regulations of two oil and gas companies, as well as medical evacuation statistics. Methods of analytical review and content analysis were applied.

**Results.** Staff shortages and the lack of specialized training were established as the limiting factors in the sustainable functioning of the entire system. The necessity of a multi-level training model was substantiated, including mandatory qualification requirements, regular simulation trainings, specialized courses and introductory courses for physicians, as well as the requirement for certificates permitting physicians to work.

**Conclusions.** Regular additional training and the formation of a unified registry of physicians who have completed the full training program are key conditions for ensuring the medical safety of remote facilities in the Arctic zone of the Russian Federation and for developing the personnel potential.

**Keywords:** Arctic shelf; offshore structures; health post physician; qualification requirements; professional standards; additional training; simulation training

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**Compliance with ethical principles:** the study did not use personal data and did not involve interventions with patients. The analysis was based exclusively on the current legislation of the Russian Federation, regulatory legal acts of Federal executive bodies, as well as on the generalization of corporate regulations and practical experience in organizing medical support for offshore oil and gas platforms. In this regard, approval from an ethics committee was not required.

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## ТРЕБОВАНИЯ К МЕДИЦИНСКОМУ ПЕРСОНАЛУ, ОСУЩЕСТВЛЯЮЩЕМУ МЕДИЦИНСКУЮ ПОМОЩЬ НА СТАЦИОНАРНЫХ ПРОИЗВОДСТВЕННЫХ ОБЪЕКТАХ В РАЙОНЕ АРКТИЧЕСКОГО ШЕЛЬФА РОССИИ

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**Введение.** Освоение Арктического шельфа Российской Федерации сопровождается эксплуатацией морских сооружений в условиях экстремального климата, высокой производственной опасности и удаленности от береговой инфраструктуры. В этих условиях обеспечение медицинской помощи приобретает стратегическое значение, однако подготовка кадров для здравпунктов морских сооружений остается недостаточной: отсутствует профессиональный стандарт «судовой медицинский работник», а действующие квалификационные требования охватывают лишь часть необходимых компетенций.

**Цель.** Провести анализ и систематизацию нормативных, организационных и кадровых требований к медицинскому персоналу здравпунктов морских сооружений Арктического шельфа и разработать предложения по совершенствованию системы их подготовки.

**Материалы и методы.** Исследование выполнено в аналитическом ретроспективном дизайне. В качестве базы использованы нормативно-правовые акты РФ (2010–2025 гг.), приказы Минздрава, Минтруда и ФМБА России, корпоративные регламенты двух

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нефтегазовых компаний, а также статистика медицинских эвакуаций. Применялись методы аналитического обзора и контент-анализа.

**Результаты.** Установлено, что кадровый дефицит и отсутствие специализированной подготовки ограничивают возможности устойчивого функционирования системы. Показана необходимость многоуровневой модели обучения, включающей обязательные квалификационные требования, регулярные симуляционные тренинги, специализированные курсы и вводный курс для врачей, а также наличие сертификатов, допускающих врачей к работе.

**Выводы.** Регулярная дополнительная подготовка и формирование единого реестра врачей, прошедших полную программу обучения, являются ключевыми условиями для обеспечения медицинской безопасности удаленных объектов Арктической зоны и развития кадрового потенциала отрасли.

**Ключевые слова:** Арктический шельф; морские сооружения; врач здравпункта; квалификационные требования; профессиональные стандарты; дополнительное обучение; симуляционные тренинги

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**Финансирование:** работа выполнялась без спонсорской поддержки.

**Соответствие принципам этики:** в исследовании не использовались персональные данные и не проводились вмешательства с участием пациентов. Анализ базировался исключительно на действующем законодательстве Российской Федерации, нормативно-правовых актах федеральных органов исполнительной власти, а также на обобщении корпоративных регламентов и практического опыта организации медицинского обеспечения на морских нефтегазовых платформах. В связи с этим одобрение этического комитета не требовалось.

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## INTRODUCTION

The development of the Russian Arctic Zone is accompanied by active exploitation of the continental shelf and commissioning of stationary and floating offshore oil and gas facilities.<sup>1</sup> These facilities are operated under extreme climatic conditions and hazardous production factors, at the same time as being significant remote from onshore medical infrastructures. In such hubs of industrial activity, the issues of worker health protection are acquiring strategic importance. Provision of medical care in remote and hard-to-reach locations is impossible without specially trained medical personnel capable of functioning efficiently in autonomous conditions [1–7].

However, the system of personnel training for providing medical services in such conditions remains underdeveloped. The nomenclature of medical specialties is currently lacking a “maritime (shipboard) medicine” track. In addition, the professional standard for a “shipboard medical worker” requires revision. The existing qualification requirements are limited to the profiles of “general practice,” “therapy,” and “surgery,” which only partially correspond to the range of tasks faced by a health post physician serving at an offshore facility.

Medical personnel at offshore facilities are expected to effectively perform the functions of both a general practitioner, surgeon, anesthesiologist–intensivist, and public health physician, working under conditions of limited resources and the absence of a

possibility of rapid evacuation to shore. However, the current system of postgraduate education does not include specialized training that accounts for the specifics of working in Arctic maritime conditions. This creates a deficit of critically important competencies for providing advanced medical care, conducting sanitary-epidemiological control, and organizing evacuation in the setting of complete autonomy and extreme climatic factors [8].

Facing a shortage of specialists, employers are forced to independently develop personnel requirements and training programs. Major oil and gas companies are creating corporate standards that include mandatory courses in industrial and extreme medicine, sanitary-epidemiological control, and telemedicine interaction [9, 10]. While such initiatives partially compensate for legal and educational gaps, they are fragmented in nature and cannot replace an integrated approach to training physicians capable of safeguarding worker health in conditions of isolation and autonomy [11, 12].

In this study, we set out to analyze and generalize the regulatory, organizational, and personnel requirements for medical staff operating health posts at offshore facilities of the Arctic Shelf, with the subsequent development of proposals for establishing a unified physician training system. To that end, the following research objectives are set:

- to analyze the current regulatory framework of the Russian Federation governing the activities of

<sup>1</sup> GOST R 55311-2024. National Standard of the Russian Federation. “Oil and Gas Industry. Offshore Oil and Gas Production Facilities. Terms and Definitions” (approved and enacted by Order of Rosstandart No. 831-st dated 18.06.2024). URL: [https://meganorm.ru/mega\\_doc/norm\\_update\\_05072025/gost-r\\_gosudarstvennyj-standart/0/gost\\_r\\_55311-2024\\_natsionalnyj\\_standart\\_rossijskoy.html?ysclid=mhwzq877jw104846731](https://meganorm.ru/mega_doc/norm_update_05072025/gost-r_gosudarstvennyj-standart/0/gost_r_55311-2024_natsionalnyj_standart_rossijskoy.html?ysclid=mhwzq877jw104846731)

medical professionals working at offshore facilities of the Arctic Shelf in order to identify key gaps and contradictions;

- to generalize the organizational and personnel requirements for physicians of health posts at offshore facilities, including their qualifications, professional skills, work experience, and specific training for operating in autonomous and high-risk conditions;
- to develop proposals for establishing a unified system of basic training and continuing professional education for physicians working at onsite offshore facilities of the Arctic Shelf, taking into account remoteness, extreme climatic factors, and the necessity for interdisciplinary competencies.

## MATERIALS AND METHODS

The search for scientific literature was conducted via electronic bibliographic databases in the Russian (eLibrary, CyberLeninka) and English (Scopus, Google Scholar) languages. In addition, regulatory documents from the ConsultantPlus legal reference system and official governmental websites were analyzed.

The study employed an analytical research method, which included the examination and comparison of regulatory legal acts of the Russian Federation governing the organization of medical support on marine vessels and facilities of the Arctic Shelf (Federal Laws, Orders of the Ministry of Health of Russia, the Ministry of Labor of Russia, the Ministry of Transport of Russia, the FMBA of Russia, etc.), current orders and draft regulatory documents defining qualification requirements for medical specialists, the procedure for licensing medical activities, as well as regulations governing the operation of health posts.

The research involved an analysis of regulatory and methodological documents published in 2010–2025, draft professional standards and methodological recommendations from the FMBA of Russia, as well as internal regulations and technical specifications from oil and gas sector companies. Additionally, statistical data on the provision of all types of medical care at offshore structures was examined. Particular attention was paid to materials concerning the medical evacuation of workers to onshore healthcare facilities, with an assessment of the frequency, timelines, and outcomes of evacuation operations.

## RESULTS AND DISCUSSION

### Identified issues

The key challenge in organizing medical care at health posts on offshore structures, including marine oil platforms and support vessels, remains the provision of these facilities with qualified medical personnel capable of delivering the full range of medical services, including emergency<sup>2</sup> care, under conditions of remoteness from onshore infrastructure and limited resources [13].

A physician at such a facility must be prepared to perform functions that extend far beyond standard primary health care. These imply providing intensive therapy, maintaining vital functions until evacuation, conducting pre-shift medical examinations and, if necessary, testing for alcohol, narcotic, and other toxic substance use, implementing preventive measures, monitoring the sanitary-hygienic condition of production areas, common areas, food service, and water supply, and organizing medical triage in mass casualty incidents [14]. In the Arctic zone, where medical evacuation can take up to several days, such competencies become critically important for ensuring industrial safety and preserving workers' lives [15, 16].

In the Russian nomenclature of specialties approved by Order No. 700n<sup>3</sup>, the specialty "Maritime (Shipboard) Medicine" is absent, which hinders the formation of a comprehensive personnel training system. Nevertheless, Order No. 205n<sup>4</sup> establishes the position of a "Physician on Shipboard", and Order No. 206n<sup>5</sup> sets qualification requirements allowing specialists with certification in general medical practice, therapy, or surgery to hold this position. The General Medical Practice program provides the physician with interdisciplinary knowledge — from therapy and surgery to psychiatry, infectious diseases, and occupational pathology — which is crucial in conditions of limited access to specialized care.

At the Pirazlomnaya platform (the only onsite ice-resistant oil platform in the Russian Arctic), extensive experience has been accumulated in organizing the work of an anesthesiologist–resuscitator<sup>6</sup> and obtaining the corresponding license to provide specialized medical care under the conditions of high industrial risks [17].

The absence of an approved professional standard for a "shipboard medical specialist" requires the employers to independently formulate additional qualification

<sup>2</sup> Federal Law of the Russian Federation No. 323-FZ "On the fundamentals of public health protection in the Russian Federation" dated 21.11.2011. URL: [https://gb7omsk.gosuslugi.ru/netcat\\_files/8/9/323\\_FZ.pdf?ysclid=mhwzenpfg546200203](https://gb7omsk.gosuslugi.ru/netcat_files/8/9/323_FZ.pdf?ysclid=mhwzenpfg546200203)

<sup>3</sup> Order of the Ministry of Health of the Russian Federation No. 700n "On the nomenclature of specialties for specialists with higher medical and pharmaceutical education" dated 07.10.2015. URL: <https://base.garant.ru/71250136/>

<sup>4</sup> Order of the Ministry of Health of the Russian Federation No. 205n "On the approval of the nomenclature of positions for medical and pharmaceutical workers" dated 02.05.2023. URL: <https://www.garant.ru/products/ipo/prime/doc/406872398/?ysclid=mhbrddrmps968226694>

<sup>5</sup> Order of the Ministry of Health of the Russian Federation No. 206n "On the approval of qualification requirements for medical and pharmaceutical workers with higher education" dated 02.05.2023. URL: <https://www.garant.ru/products/ipo/prime/doc/406889654/?ysclid=mg544wih8a549224078>

<sup>6</sup> Order of the Ministry of Health of the Russian Federation No. 919n "On the approval of the procedure for providing medical care to the adult population in the specialty 'anesthesiology and resuscitation'" dated 15.11.2012. URL: <https://base.garant.ru/70301502/?ysclid=mhww086pzs492303295>

requirements for physicians in the technical specifications for medical services. Consequently, alongside the mandatory requirements of a higher medical education in General Medicine, a valid certificate (accreditation), and confirmed practical experience of at least five years, there is a need for targeted additional training programs. These programs must ensure the physician's readiness for autonomous work at offshore facilities under conditions of remoteness and a high level of occupational risks [8, 13, 18].

### Mandatory qualification requirements for medical personnel working at offshore health posts

Appointment to the position of a health post physician at an offshore facility requires the specialist to possess a higher medical education degree, confirmed by a valid license (or certificate of accreditation), and practical experience in the relevant specialty for at least five years after obtaining the specialist physician certificate. Priority is given to experience working in a remote health post of an industrial enterprise, which assumes the physician's readiness to perform professional duties in conditions of autonomy and limited resources [13].

The qualification level of medical personnel must strictly comply with the legislative requirements outlined in Order No. 541n<sup>7</sup>. Additionally, the physician is required to possess a specialist certificate or a state-accredited specialist credential, which must conform to the provisions of the professional standards for paramedics and physicians, as defined by Orders No. 470n<sup>8</sup>, No. 293n<sup>9</sup>, and No. 743n<sup>10</sup>. Modern practice emphasizes the importance of not only formal certification but also the alignment of specialists with professional and psychophysiological criteria. In particular, the physician must demonstrate stress resistance and be in a physical condition that allows them to perform procedures requiring rapid and precise motor coordination.

Particular attention is paid to the physician's readiness to provide emergency medical care. In accordance with Orders No. 911n<sup>11</sup>, No. 543n<sup>12</sup>, and No. 252n<sup>13</sup>, the specialist is required to possess up-to-date knowledge

and practical skills in resuscitation and intensive care. This includes the ability to:

- perform cardiopulmonary resuscitation in cases of sudden cardiac and respiratory arrest;
- manage comatose and allergic states;
- address the consequences of electrical injuries and drowning.

The physician must be proficient in securing airway patency using alternative techniques and master the protocols for the diagnosis and emergency management of:

- cardiovascular and respiratory diseases;
- pathology of the abdominal organs;
- endocrine and infectious diseases;
- mental disorders and allergic reactions.

Furthermore, the health post specialist is required to:

- know the fundamentals of medical triage in mass casualty incidents;
- perform electrocardiogram (ECG) acquisition and interpretation;
- determine blood glucose levels using portable devices;
- utilize pulse oximetry for assessing respiratory function.

Practical activities of such specialists require them to:

- safely operate medical equipment and handle medical gases;
- administer medications, including narcotic and potent drugs, considering indications, contraindications, and potential side effects;
- apply modern algorithms for the pharmacological treatment of cardiac arrest;
- perform tracheobronchial tree suction;
- utilize oxygen therapy methods;
- perform local anesthesia, primary wound care, control of external hemorrhage, and anterior nasal packing for epistaxis;
- master the techniques of urinary bladder catheterization, gastric lavage via tube, application of an occlusive dressing for pneumothorax, and aspiration of air from the pleural cavity.

A crucial element of competencies is the ability to perform immobilization for bone fractures, spinal injuries, and crush syndrome<sup>14</sup> [13].

<sup>7</sup> Order of the Ministry of Health and Social Development of the Russian Federation No. 541n "On the approval of the unified qualification directory of positions of managers, specialists, and other employees, section 'qualification characteristics of positions of workers in healthcare'" dated 23.07.2010. URL: <https://base.garant.ru/12178397/?ysclid=mg54n0gt8m637337655>

<sup>8</sup> Order of the Ministry of Labor and Social Protection of the Russian Federation No. 470n "On the approval of the professional standard 'Paramedic'" dated 31.07.2020. URL: <https://base.garant.ru/74561326/?ysclid=mg54qq7rz1942350327>

<sup>9</sup> Order of the Ministry of Labor and Social Protection of the Russian Federation No. 293n "On the approval of the professional standard 'General Practitioner (district physician)'" dated 21.03.2017. URL: <https://base.garant.ru/71648500/?ysclid=mg54v0od59747838905>

<sup>10</sup> Order of the Ministry of Labor and Social Protection of the Russian Federation No. 743n "On the approval of the professional standard 'surgeon'" dated 26.11.2018. URL: <https://base.garant.ru/72125210/?ysclid=mg54y0six259152912>

<sup>11</sup> Order of the Ministry of Health of the Russian Federation No. 911n "On the approval of the procedure for providing medical care for acute and chronic occupational diseases" dated 13.11.2012. URL: <https://base.garant.ru/70290544/?ysclid=mg552x1via951179129>

<sup>12</sup> Order of the Ministry of Health and Social Development of the Russian Federation No. 543n "On the approval of the regulation on the organization of primary health care for the adult population" dated 15.05.2012. URL: <https://base.garant.ru/70195856/?ysclid=mg554d4suc208371979>

<sup>13</sup> Order of the Ministry of Health and Social Development of the Russian Federation No. 252n "On the approval of the procedure for delegating to a paramedic or midwife by the head of a medical organization, when organizing the provision of primary health care and emergency medical care, certain functions of the attending physician for the direct provision of medical care to a patient during observation and treatment, including the prescription and use of medicinal products, including narcotic and psychotropic medicinal products" dated 23.03.2012. URL: <https://base.garant.ru/70170588/?ysclid=mg555ye84c234152130>

<sup>14</sup> Bagnenko SF, ed. Emergency medical care. Clinical guidelines. Moscow: GEOTAR-Media; 2022.

The professional duties of medical personnel at off-shore health posts extend beyond therapeutic and diagnostic activities. The physician is responsible for:

- proper storage of medications and equipment;
  - maintaining medical documentation, including confidential and personal data;
  - organizing sobriety checks for workers and preparing corresponding official reports;
  - processing documentation for temporary disability.
- Additionally, the physician ensures:
- the correct disposal of medical waste;
  - possesses personal computer skills;
  - monitors the sanitary-hygienic and anti-epidemic condition of production and residential premises, including catering facilities and shift camps.

Regular completion of occupational health and safety briefings and knowledge assessments in this area are also an important part of their professional activity.<sup>15</sup>

The health post physician must be proficient in differential diagnosis techniques and provide qualified medical care for injuries, poisonings, and other emergency conditions [19–21]. They are responsible for monitoring the inventory of necessary medical supplies at the health post, recognizing the symptomatology of diseases related to long-term exposure to occupational hazards, and facilitating their early detection. The set of required competencies includes organizing the evacuation of casualties to medical facilities, arranging consultations with specialists via communication means, and facilitating the hospitalization of patients in specialized departments<sup>16</sup> [21].

Planning and organizing therapeutic and preventive work holds a significant place. The physician develops an annual operational plan for the health post, ensures its implementation, conducts activities for the early diagnosis and treatment of general and occupational diseases, and analyzes the structure of morbidity and injuries. On this basis, the specialist submits proposals for reducing occupational risks and developing preventive programs. The specialist also conducts dynamic monitoring of workers' health, assesses the quality of medical examinations, and participates in bringing working conditions into compliance with sanitary standards [22].

Thus, the qualification requirements for medical personnel at health posts integrate formal legal norms, clinical competencies, and organizational tasks. The physician at an industrial health post acts not only as a

clinician but also as a manager of the medical process, an analyst of morbidity, and a participant in the occupational health and safety system. The versatility of their training and the continuous improvement of practical skills become key conditions for ensuring worker health and maintaining industrial safety.

### Additional requirements, skills, and competencies for medical personnel

In the current context of providing medical care at industrial enterprise health posts, the systematic additional training of medical personnel is of particular importance. A physician working in remote and resource-limited settings is obliged not only to meet formal qualification requirements but also to regularly confirm their level of practical skills through specialized training. International and domestic experience indicates that simulation-based courses are a key tool for maintaining professional readiness. These courses provide the opportunity to replicate clinical scenarios and practice action algorithms for life-threatening conditions [23].

A mandatory requirement for health post physicians must be training at accredited educational centers with a frequency of at least once every two years. The result of completing such training is the receipt of a certificate or credential, which, while not a state-issued document, confirms the mastery of modern algorithms for providing emergency care at the pre-hospital stage. This form of continuing education ensures the maintenance and updating of knowledge in accordance with current clinical guidelines and international standards [2].

Of particular importance is the foundational level of training, represented by courses in life support, specifically the “Basic Cardiopulmonary Resuscitation” program.<sup>17</sup> This training entails mastering techniques for basic cardiopulmonary resuscitation, the safe use of an automated external defibrillator, as well as algorithms for providing first aid in cases of airway obstruction and drowning. The duration of such training is typically up to eight academic hours, serving as a minimum competency requirement for a health post physician.

A more preferable direction is advanced training within the “Advanced Resuscitation Measures” course<sup>18,19,20</sup> [24]. These programs develop skills in advanced cardiopulmonary resuscitation as part of a physician–nursing team, teach the differentiation and treatment of

<sup>15</sup> Decree of the Government of the Russian Federation No. 2464 “On the Procedure for Occupational Health and Safety Training and Testing Knowledge of Occupational Health and Safety Requirements” dated 24.12.2021. URL: <https://base.garant.ru/403324424/?ysclid=mi04bcq88n710340032>

<sup>16</sup> Zakrevsky YuN. Substantiation of a system for providing medical care and treatment to victims of maritime disasters: abstract of a dissertation for the degree of Doctor of Medical Sciences. Arkhangelsk, 2013.

<sup>17</sup> Glushchenko VA, Golovanov NB, et al. Basic Cardiopulmonary Resuscitation: a textbook for students in secondary, higher and continuing professional education systems. — St. Petersburg: Petrov National Medical Research Center of Oncology; 2022.

<sup>18</sup> Practical Guidelines / European Resuscitation Council Guidelines 2025. Advanced cardiopulmonary resuscitation in adults. URL: <https://airhab.ru/wp-content/uploads/2025/11/ALS-2025.pdf>

<sup>19</sup> Order of the Ministry of Health of the Russian Federation No. 908n “On the procedure for establishing the diagnosis of human brain death” dated 25.12.2014 (registered with the Ministry of Justice of the Russian Federation on 12.01.2015, No. 37230, entered into force on 01.01.2016). URL: <https://base.garant.ru/71021232/?ysclid=mhww3d4tv688936936>

<sup>20</sup> Resolution of the Government of the Russian Federation No. 950 “On the approval of the rules for determining the moment of a person's death, including the criteria and procedure for establishing a person's death, the rules for terminating resuscitation measures, and the form of the protocol for establishing a person's death” dated 20.09.2012. URL: <https://base.garant.ru/70231774/?ysclid=mhww92ukww179218179>

life-threatening arrhythmias, the interpretation of ECG monitoring, and the application of modern methods for securing airway patency. The duration of such training in this case is up to 16 hours, enabling the integration of the physician into interdisciplinary pre-hospital care protocols.

An integral component of training for physicians at health posts of remote industrial facilities is mastering trauma care algorithms within the course entitled “Advanced Pre-Hospital Trauma Care.”<sup>21</sup> This course equips specialists with competencies for stabilizing the condition of trauma patients, ensuring control over vital functions, and preparing for medical evacuation. The program’s practical focus and its duration of up to 16 hours, preparing the health post physician to act effectively in situations involving polytrauma and mass casualty incidents.

Furthermore, the mandatory training program includes courses on:

- medical escort of patients during evacuation by air transport;
- training in methods of ultrasound diagnostics for superficial tissues and fluid accumulations in body cavities.

These skills become particularly critical in the absence of specialized consultants and the need for rapid decision making at an isolated facility.

In accordance with licensing requirements, a health post physician must possess additional certifying competencies, confirmed by valid certificates. Mandatory certifications include:

- the right to conduct medical examination for intoxication;
- the right to conduct pre-shift and post-shift (pre-trip and post-trip) medical examinations<sup>22</sup>;
- the right to perform temporary disability assessment<sup>23</sup>.

Thus, the regular completion of additional educational programs and simulation training equips health post physicians with a comprehensive set of professional and organizational competencies that align with international standards for delivering medical care in remote settings. Systematic continuing education is a key element in ensuring the safety of industrial enterprise workers and a factor in reducing the risks of adverse outcomes in acute and critical conditions.

### Introductory course for a health post physician

In the setting of offshore facilities operating in remote areas with limited transport accessibility, particularly in

the Arctic Shelf waters, medical care acquires distinct features. The inability to rapidly evacuate patients, the limited resources of health posts, and the high probability of emergencies create a demand for special training of medical professionals. To ensure their readiness to work in extreme conditions, it is advisable to conduct an additional “Introductory Course.”<sup>24</sup> This course supplements the basic qualification requirements and develops the specific competencies necessary for autonomous practice.

The “Introductory Course” for a health post physician assigned to an offshore structure or vessel is a mandatory preparation stage before commencing work. This program has been developed by specialists in the field of industrial medicine, based on more than 25 years of experience in organizing the healthcare system and providing medical care at remote and hard-to-reach industrial facilities. Practice demonstrates that this course enables the physician not only to refresh theoretical knowledge and practical skills but also to gain the confidence necessary for rapid adaptation to the specifics of safeguarding the health of personnel on offshore platforms and vessels. The program’s primary objective is to ensure the physician’s readiness for:

- monitoring workers’ professional fitness based on health status;
- preventing chronic non-communicable diseases;
- organizing emergency medical response in autonomous conditions.

The content of the “Introductory Course” is based on an assessment of worker health risks and professional standards, ensuring its alignment with current qualification requirements. The training duration is 92 academic hours, of which 49 hours are allocated to theoretical studies and 43 hours to practical skill development. The thematic plan covers a wide range of disciplines and ensures comprehensive training that integrates clinical, organizational, and sanitary-preventive competencies (Table 1).

The thematic plan encompasses a wide range of disciplines, reflecting the multifunctional nature of a physician’s activity at an offshore facility. The theoretical part covers the fundamentals of industrial medicine, regulatory frameworks for medical practice, prevention of chronic non-communicable and infectious diseases, assessment of professional fitness, specifics of mental disorders and addictions, as well as aspects of sanitary and epidemiological control [13, 18]. The practical part is focused on developing clinical and organizational skills, such as performing resuscitation procedures, ensuring airway patency, providing care for trauma and bleeding,

<sup>21</sup> Guidelines for trauma emergency care. World Health Organization. URL: <https://thanatoradiology.ru/wp-content/uploads/2020/10/по-неотложной-помощи-при-травмах.pdf>

<sup>22</sup> Order of the Ministry of Health of the Russian Federation No. 835n “On the approval of the procedure for conducting pre-shift, pre-trip, and post-shift, post-trip medical examinations” dated 15.12.2014. URL: <https://www.garant.ru/products/ipo/prime/doc/70880038/?ysclid=mi08d0gffs396757788>

<sup>23</sup> Order of the Ministry of Health of the Russian Federation No. 195n “On the approval of the procedure for conducting temporary disability examinations” dated 11.04.2025. URL: <https://www.garant.ru/products/ipo/prime/doc/411912828/?ysclid=mi08f0rwnw487672576>

<sup>24</sup> Methodological recommendations for medical support of personnel on marine vessels and structures in the Arctic. Methodological document of Gazprom Neft Shelf LLC. 2025.

**Table.** Thematic plan of the Introductory Course for a health post physician at an offshore facility

No	Module (Topic)	Theory, h	Practice, h
1	Industrial medicine and occupational health	8	–
2	Prevention of non-communicable and infectious diseases	7	1
3	Prevention of circulatory system diseases, critical conditions	4	4
4	Upper respiratory tract diseases, ARI/ARVI, ENT pathology, respiratory support	4	4
5	Diabetes mellitus at a remote industrial site	2	1
6	Allergic reactions (immediate and delayed hypersensitivity)	2	3
7	Surgical pathology, trauma	1	7
8	Bandaging techniques and primary surgical treatment	1	7
9	Physician role as the leader in a team with medical assistants	4	4
10	First aid training <sup>25</sup> and health education work	2	2
11	Transportation and immobilization	1	7
12	Mental disorders, addictions	2	2
13	Anti-alcohol policy	7	1
14	Health post equipment registers, pharmacopoeia, ship's first aid kit, narcotic analgesics, turnover	6	2
15	Industrial sanitary control and hygiene	2	2

Table adapted by the authors from the regulatory document<sup>26</sup>

executing immobilization and transportation of casualties<sup>27</sup>, and using personal protective equipment and medical devices [16, 25].

Particular emphasis is placed on preparation for managing critical conditions, including acute coronary syndrome, cardiac arrhythmias, severe allergic reactions, and polytrauma [25]. Independent modules are dedicated to providing care for respiratory tract diseases, glycemic control in diabetes mellitus, and managing patients under the influence of alcohol or drugs. The program also includes fundamentals of minor surgery and bandaging techniques, which is especially important when immediate evacuation is impossible.

An important component of the course is the development of leadership and teamwork skills. The health post physician typically works alongside medical assistants, thus being responsible for organizing adequate medical response in emergency situations. Practical sessions practice teamwork algorithms, medical triage in mass casualty incidents, and training enterprise workers in elements of first aid. Such preparation develops the physician's confidence in their own professional competence and readiness to coordinate staff actions in extreme situations [26].

An equally significant area comprises modules related to preventive work. The physician is trained to conduct dynamic monitoring of the worker health status, implement anti-alcohol programs, and supervise the sanitary conditions of living quarters, catering, and water supply. These aspects are particularly relevant for isolated groups, where infectious diseases and behavioral risks can rapidly escalate into a serious threat.

The "Introductory Course" not only reinforces the existing knowledge but also adapts this knowledge to the specifics of a remote offshore structure. As a result, the physician develops a specific set of competencies beyond standard training, allowing them to become a key figure in the entire system of medical safety at a particular industrial facility.

Thus, the "Introductory Course" serves as a bridge between mandatory and additional competencies, on the one hand, and the practice of autonomous work at Arctic offshore structures, on the other. Its completion becomes a criterion of the specialist's readiness for work in remote conditions, a confirmation of the ability to combine clinical, organizational, and preventive activities, and a guarantee for the employer in ensuring personnel health and safety. This is why successful completion of

<sup>25</sup> Order of the Ministry of Health of the Russian Federation No. 220n «On the approval of the procedure for rendering first aid» dated 03.05.2024. URL: <https://www.garant.ru/products/ipo/prime/doc/409012510/?ysclid=mi04kavihx797820509>

<sup>26</sup> Guidelines for medical support of personnel on marine vessels and structures in the Arctic. Methodological document of Gazprom Neft Shelf LLC. 2025.

<sup>27</sup> Baranova NN. Medical evacuation of casualties in emergency situations: dissertation for the degree of Doctor of Medical Sciences. Moscow, 2022. [In Russ.].

the course is considered an essential requirement for a physician to be approved for work at offshore platforms and support vessels [27].

### Additional training and professional licensing requirements for healthcare professionals

To perform duties in remote industrial settings, including offshore structures and support vessels, medical personnel are required to undergo specialized training and possess verified documentation, which is an essential prerequisite for professional authorization.

For physicians working on emergency rescue duty vessels and at health posts of offshore ice-resistant fixed platforms, the following requirements are mandatory:

- a certificate in Basic Offshore Safety Induction and Emergency Training (BOSIET), or
- a certificate in Helicopter Underwater Escape Training (HUET), valid for at least one year from the commencement of medical service provision.

Additionally, a physician on an emergency rescue duty vessel must possess:

- a Seafarer's Identity Card,
- a Seaman's book, and
- a Medical Fitness Certificate for Seafarers, which confirms professional suitability for service in maritime conditions.

For physicians at health posts of offshore platforms, completion of training in the use of an evacuation slide (Sky Shute/Sky Scape) is mandatory, also with a certificate valid for at least one year.<sup>28</sup>

In addition, medical personnel are required to possess a valid health record book and an official medical certificate of professional fitness for work, issued in accordance with the current legislation of the Russian Federation. An important requirement is undergoing mandatory psychiatric examination with a conclusion from a specialized commission confirming the absence of mental disorders specified in the Decree of the Government of the Russian Federation.<sup>29</sup> This requirement applies to specialists working in the oil and gas industry, including those on a rotational basis in the Far North regions, as well as to employees whose activities involve the handling of narcotic and psychotropic substances and work in emergency medical services.

Mandatory admission conditions also include immunization of medical personnel according to the national and regional vaccination schedules, including vaccination against hepatitis B. This set of measures ensures not only the legitimacy of a physician's admission to perform professional duties but also their actual readiness to work under conditions of high professional load, elevated risks, and limited access to specialized medical care.<sup>30</sup>

### CONCLUSION

The conducted analysis has confirmed that training of medical personnel for health posts at offshore Arctic facilities remains one of the key unresolved tasks in the Russian healthcare system. The existing education system does not ensure the training of specialists capable of autonomous work in conditions of limited resources and prolonged transport inaccessibility.

The staffing insufficiency is exacerbated by the absence of a professional standard for a "shipboard (platform) physician," which hinders the creation of a stable personnel reserve for strategically important industrial facilities. The existing mandatory qualification requirements only allow for minimal confirmation of professional readiness and do not cover the entire range of competencies necessary for work in Arctic conditions.

Under these conditions, additional training becomes particularly important, including regular simulation trainings (BLS, ALS, ITLS) and specialized programs, as well as an "Introductory Course" that integrates clinical and organizational skills, taking into account the specific features of working at Arctic offshore structures. Such a multi-level training model equips physicians with competencies that go beyond standard requirements and fosters their readiness for patient management in autonomous conditions.

The final element in developing the medical support system should be the creation of a unified registry of physicians who have completed the full training program. This tool will enhance the transparency of personnel policy, simplify the selection of specialists for work at remote facilities, and ensure an adequate level of medical safety in the Arctic Zone of the Russian Federation.

<sup>28</sup> National Standard of the Russian Federation GOST R 54382-2021 "Oil and gas industry. Subsea pipeline systems. General technical requirements" (approved and enacted by Order No. 403-st of the Federal Agency for Technical Regulation and Metrology dated 20.05.2021).

<sup>29</sup> Decree of the Government of the Russian Federation No. 377 dated 28.04.1993 "On the implementation of the Law of the Russian Federation 'On psychiatric care and guarantees of citizens' rights in its provision'".

<sup>30</sup> Order of the Ministry of Health of the Russian Federation No. 1122n "On the approval of the national calendar of preventive vaccinations, the calendar of preventive vaccinations for epidemic indications, and the procedure for carrying out preventive vaccinations" dated 06.12.2021.

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