

PHARMACEUTICAL CARE IN UKRAINE UNDER MARTIAL LAW: FEATURES OF DEVELOPMENT AND WAYS OF IMPROVEMENT

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INTRODUCTION

Pharmaceutical care is an integral component of the healthcare system of any country, as the availability, quality, and safety of medicinal provision for the population depend on its effectiveness. The state and level of pharmaceutical care in a country serve both as a guarantee and an indicator of the positive or negative image of the healthcare sector and its pharmaceutical component.

In Ukraine, which is experiencing a full-scale war and active European integration, the issues of transforming pharmaceutical care (PC) have become particularly acute. Martial law has created unprecedented challenges for the pharmaceutical sector of the healthcare system: destruction of infrastructure, disruptions in logistics chains, absence of pharmacy outlets in frontline and de-occupied territories, migration of qualified personnel, and rising prices of medicinal products (MPs). At the same time, European integration processes require the alignment of national legislation with European Union standards, which provide for the establishment of new regulatory bodies, implementation of modern quality control mechanisms, and expansion of patient access to effective pharmacotherapy.

The aim of the study was the theoretical substantiation and practical development of strategic directions for improving pharmaceutical care in Ukraine under martial law and European integration, based on a comprehensive analysis of strategic documents, the current state of the sector, and innovative medicine delivery models.

3 The objectives of the study were to analyze the strategic documents for the development of the healthcare system of Ukraine; to perform a SWOT analysis of the current state and prospects for the development of pharmaceutical care in Ukraine; to investigate modern medicine delivery models under wartime conditions, particularly those involving the use of unmanned aerial vehicles; to analyze the regulatory and legal aspects of using drones for medicine delivery

in Ukraine; and to develop recommendations for improving the pharmaceutical care system in Ukraine. The object of the study was the pharmaceutical care system for the population of Ukraine under martial law and European integration transformations. The subject of the study comprised strategic directions, organizational models, and legal mechanisms for improving pharmaceutical care, including innovative approaches to the delivery of medicinal products.

The following research methods were used in the study: content analysis to examine the content of strategic documents; the pairwise comparison method to compare Strategy-2025 and Strategy-2030; SWOT analysis (according to the Council on Pharmacy Operations Management standard) to diagnose internal and external factors influencing pharmaceutical care; the TOWS matrix to develop strategic alternatives; and systems analysis and the method of generalization to formulate conclusions and recommendations.

The scientific novelty of the obtained results lies in the comprehensive comparative analysis of Strategy-2025 and Strategy-2030, which made it possible to identify the evolution of state policy from peacetime to wartime conditions; the adaptation of the SWOT analysis methodology to the conditions of pharmaceutical care in Ukraine using the TOWS matrix; the systematization of modern drone-based medicine delivery models in Ukraine; and the identification of strategic priorities and risks for the development of pharmaceutical care under martial law.

The practical significance of the obtained results lies in the possibility of their use for improving strategic documents related to the development of the pharmaceutical component of Ukraine's healthcare sector; substantiating the need for adequate funding for the establishment of the Ukrainian Pharmaceutical Agency (UPA); developing the regulatory and legal framework for the implementation of a pharmaceutical service and the Pharmacists Register; and scaling up pilot projects on drone-based medicine delivery to regions that lack appropriate pharmaceutical provision.

1. Theoretical and Organizational Foundations of Pharmaceutical Care

Pharmaceutical care is a set of organizational and legal, specialized medical-pharmaceutical, and socio-economic measures aimed at ensuring effective pharmacotherapy through the rational use of medicinal products. Pharmaceutical care also includes addressing issues related to the individual prescribing of medicines and the participation of the pharmacist, together with the physician, in the treatment process with regard to substantiating the choice of necessary medicines, counseling and educating the patient on their use, monitoring and evaluating the results of pharmacotherapy, achieving optimal clinical outcomes with minimal economic costs, optimizing the system for

selecting necessary medicines, and optimizing information about them for the public in order to optimize pharmacotherapy¹. Pharmaceutical care has a specific (pharmaceutical), market-economic, and social dimension. Its constituent elements include the process of supplying the population with medicines and medical devices, pharmaceutical care, pharmaceutical ethics, and deontology. The components of pharmaceutical care include pharmaceutical prevention and pharmaceutical diagnostics².

Pharmaceutical care is provided at three main levels: health-preserving, life-sustaining, and service-oriented³. The life-sustaining level of care is guaranteed by the state and society and is supported by the financial institutions of the national healthcare system, which includes pharmacy as a component of the healthcare system. It is characterized by the use of medicines to preserve vital human functions. For example, it includes the treatment of emergency conditions and pathologies that threaten patients' lives. The health-preserving level of care is also guaranteed by the state and society and supported by the financial institutions of the national healthcare system. It is aimed at maintaining, preserving, and improving people's health through the treatment of diseases, injuries, and other conditions that threaten a patient's health or ability to work. Pharmaceutical care provided at the service-oriented (commercial) level at contractual prices has a monetary value and is referred to as a pharmaceutical service. The provision of care at the service level is aimed at meeting the needs of the population that fall outside the scope of state social guarantees.

Pharmaceutical services are all types of services provided by pharmaceutical personnel within the framework of pharmaceutical care. In addition to the dispensing of medicinal products (MPs), they also include informing, educating, and promoting public health; providing information on medicinal products and counseling; carrying out regulatory activities; and professional education and training of personnel. Pharmaceutical practice includes the sale and circulation of medicines, pharmaceutical services, and pharmaceutical care, and encompasses all of the above-mentioned activities and services performed by a pharmacist within the healthcare system.

Today, the pharmaceutical sector of Ukraine is undergoing a profound systemic transformation. Under martial law and in the context of European integration processes, a new model of pharmaceutical care is being formed

¹ Про лікарські засоби : Закон України від 28.07.2022 № 2469-IX. *Відомості Верховної Ради України*. URL: <https://zakon.rada.gov.ua/laws/term/57254> (дата звернення: 28.04.2026).

² Фармацевтична допомога. *Фармацевтична енциклопедія*. URL: <https://www.pharmacencyclopedia.com.ua/article/310/farmaceutichna-dopomoga> (дата звернення: 28.04.2026).

³ Фармацевтична послуга. *Фармацевтична енциклопедія*. URL: <https://www.pharmacencyclopedia.com.ua/article/315/farmaceutichna-posluga> (дата звернення: 28.04.2026).

that must meet both contemporary challenges and European Union standards. The pharmaceutical sector of Ukraine's healthcare system is one of the most powerful in Eastern Europe: 128 Ukrainian companies manufacture medicinal products and export them to more than 70 countries worldwide⁴. The market demonstrates resilience even under wartime conditions; however, its further development requires continued improvement of the regulatory framework.

The main problem of the current system for regulating the circulation of medicines in Ukraine is its fragmentation. Key functions are distributed among several institutions, which complicates processes, creates duplication of functions, and blurs responsibility for decision-making.

According to the results of 2025, total consumption of medicinal products in Ukraine increased by 13% in monetary terms; however, in terms of packages sold, the market decreased by 3%⁵. At the same time, the state covers only about 14% of medicine consumption, while all remaining expenditures are financed directly by patients, making market development highly dependent on the population's purchasing power⁶.

A key direction for improving pharmaceutical care is the establishment of a single state regulatory authority – the Ukrainian Pharmaceutical Agency (UPA), which is expected to become operational on January 1, 2027⁶. This decision is aimed at overcoming the fragmentation of regulation and consolidating key functions within a single institution in compliance with European Union standards. On January 27, 2026, the website of the Ministry of Health of Ukraine published a draft resolution of the Cabinet of Ministers entitled “On the Establishment of the Ukrainian Pharmaceutical Agency.” The Agency will operate in four global areas: market authorization and quality control of medicines, technical regulation of medical devices and cosmetic products, control over the circulation of narcotic drugs, and oversight of blood donation activities. The establishment of the UPA will help increase trust in Ukrainian medicinal products, facilitate manufacturers' access to international markets, and strengthen Ukraine's position within the European pharmaceutical system.

One of the remaining issues is the financing of pharmaceutical care. Centralized procurement of medicines in 2025 amounted to UAH 11.8 billion,

⁴ Internews Ukraine (2026, April 22). Фармрегулятор за стандартами ЄС. <https://internews.ua/project/pharma-regulator-communications-support>.

⁵ LA Law Firm. Нове регулювання цін на ліки: підсумки 2025 р. і перспективи 2026 р. 2026. URL: <https://www.legalalliance.com.ua/novini/nove-reguluvanna-cin-na-liki-pidsumki-2025-r-i-perspektivi-2026-r/> (дата звернення: 28.04.2026).

⁶ Health-ua.com. Майбутнє фарміндустрії 2026: Стратегічний діалог лідерів у Києві. 16 лют. 2026. URL: <https://health-ua.com/news/terapiya-i-semeynaya-meditsina/81747-maibutnje-farmindustriyi-2026-strategichniy-dialog-lideriv-u-kijevi> (дата звернення: 28.04.2026).

covering only 59.4% of the actual need⁷. At the same time, in 2025, an additional UAH 3.2 billion was secured, making it possible to procure more than 400 medicinal product items. The “Affordable Medicines” program remains an effective mechanism of state influence on pricing. As of December 2025, reimbursement expenditures exceeded the planned budget: UAH 7.17 billion was spent compared to the planned UAH 6.6 billion. For 2026, UAH 8.7 billion was allocated for this program. Thanks to the reimbursement program, some manufacturers have significantly reduced the prices of their products, while market mechanisms continue to encourage further price reductions. S. Kuzminykh, Chair of the Parliamentary Subcommittee on Pharmacy, noted that centralized procurement remains a sensitive issue and that “the lists can be expanded faster than the system’s capacity to cover them.” An important step taken in 2025 was the introduction of the National Catalogue of Prices for Medicinal Products. However, according to analysts, the maximum retail price declared in the Catalogue is, on average, 27% higher than the weighted average retail price recorded in December 2025. This means that manufacturers declared higher prices, allowing a margin for future price increases, while the actual market price remained lower. As noted by Serhii Kuzminykh, the National Catalogue of Prices, discounts on the TOP 100+ medicines, and limitations on distributor and pharmacy mark-ups represent “an attempt to restore control over processes that had long operated according to informal rules.” Law of Ukraine No. 4239-IX introduced new regulations governing marketing services in the pharmaceutical sector, which sparked considerable discussion within the industry. The issue of selling medicines at petrol stations was particularly controversial. The position of the Chair of the Parliamentary Subcommittee remains unchanged: “selling medicines without a pharmacist is nonsense.” The presence of a pharmacist is mandatory—either physically or through an online consultation – since the pharmacist is responsible for the safe use of medicines and for taking contraindications into account.

The pharmacovigilance system in Ukraine demonstrated its ability to withstand the challenges of wartime conditions in 2025⁸. The Center processed more than 100,000 drug safety reports, including 16.7 thousand adverse reaction reporting forms submitted by physicians, pharmacists, and patients, as well as

⁷ The Pharma Media. Фармацевтичний ринок без ілюзій: що змінив 2025 рік і які завдання стоять на 2026. 29 груд. 2025. URL: <https://thepharma.media/uk/news/40621-farmaceuticnii-riнок-bez-ilyuzii-shho-zminiv-2025-rik-i-yaki-zavdannya-stoyat-na-2026-i-29122025> (дата звернення: 28.04.2026).

⁸ Державний експертний центр МОЗ України. Системна робота заради безпеки ліків: як працювала система фармаконагляду у 2025 році. 2026. URL: <https://www.dec.gov.ua/news/systemna-robota-zarady-bezpeky-likiv-yak-praczuvala-systema-farmakonaglyadu-u-2025-roci/> (дата звернення: 28.04.2026).

84.3 thousand CIOMS reports from applicants. Nearly 15 thousand reports on adverse reactions to medicines and vaccines were submitted to the WHO global database. As a result of monitoring the websites of stringent regulatory authorities, more than 170 drug safety communications were published. Within the framework of ongoing cooperation with marketing authorization holders, more than 9.6 thousand registration dossier materials were reviewed.

According to the Chair of the Parliamentary Subcommittee on Pharmacy, the key priorities for the coming years, particularly for 2026, are:

1. The introduction of pharmaceutical services as a mandatory requirement starting from 2027.

2. The establishment of a Pharmacists Register as a fundamental prerequisite for the implementation of pharmaceutical services.

3. Rethinking the role of the pharmacist, including the possibility of prescribing or renewing prescriptions.

4. The introduction of an independent and guaranteed remuneration system for pharmacists.

5. The expansion of the “Affordable Medicines” program and the identification of funding sources to support it.

6. Preparation for the establishment of a new state regulatory authority in 2027 without repeating the chronic underfunding issues of the past.

7. The utilization of the opportunities provided by the European Critical Medicines Act for the development of domestic pharmaceutical manufacturing and the diversification of supply chains, which is a strategic priority of the EU.

Particular attention should be paid to the development of the long-awaited Law of Ukraine “On Pharmacy Practice,” as well as to the regulation of medicine sales in hospital pharmacies. An example cited is the experience of a municipal pharmacy in the frontline city of Kramatorsk, where a pharmacy operates with a 17% mark-up – “a real example that can easily be scaled to relatively peaceful regions”.

In 2026, the integration of EU standards, the technological modernization of pharmaceutical manufacturing facilities, and ensuring their stable operation under wartime challenges are critically important for the pharmaceutical sector. Pharmaceutical care in Ukraine is undergoing a stage of systemic transformation. The year 2025 was not about perfect solutions, but rather about a system that began to change consciously.

Ahead lies challenging work on the regulatory framework and institutional reforms, particularly the establishment of the Ukrainian Pharmaceutical Agency (UPA) and the introduction of pharmaceutical services. The key conditions for success are adequate funding, appropriate workforce training, and effective communication of changes to all stakeholders – including businesses, the medical community, and patients.

In order to identify directions for improving pharmaceutical care for the population under emergency conditions, we conducted a screening of scientific articles. The experience of the full-scale war in Ukraine, as well as lessons learned from past disasters, particularly the accident at the Chornobyl Nuclear Power Plant, have become a powerful catalyst for re-evaluating approaches to pharmaceutical care in emergency situations (ES)⁹. Today, the main directions for improving this area include the adaptation of the regulatory framework, integration into international mechanisms, protection of logistics chains, workforce training, and the establishment of strategic reserves (Fig. 1).

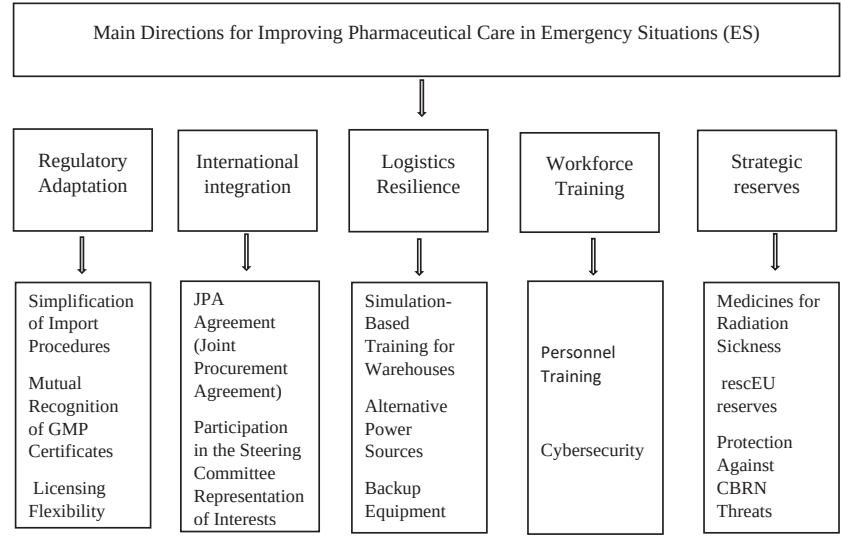


Fig. 1. Flowchart: General Structure of Improvement Directions

One of the key problems is the mismatch between existing procedures and the realities of martial law (Table 1). At the beginning of the full-scale invasion, Ukraine introduced a temporary simplified import regime that made it possible to maintain supply chains without compromising the safety and quality of medicines. According to publicly available data, no cases of substandard medicines entering circulation due to the absence of GMP certification were recorded¹⁰. As of 2026, the situation has become more complicated. The European Business Association

⁹ World Health Organization (WHO). Forty years after Chornobyl: supporting the health system to respond to threats. 26 Apr. 2026. URL: <https://www.who.int/europe> (дата звернення: 28.04.2026).

¹⁰ The New Voice of Ukraine. Ukraine’s drug supply at risk as GMP delays stall imports during wartime shortages. 3 Feb. 2026. URL: <https://nv.ua/> (дата звернення: 28.04.2026).

(EBA) has raised concerns about the cumbersome procedures for GMP certificate verification, which lead to delays in imports. This creates risks of therapy interruptions for patients with oncological, cardiovascular diseases, and diabetes. The first direction for improvement is the mutual recognition of GMP certificates issued by leading international regulatory agencies (EudraGMP, FDA, MHRA), which would reduce the burden on the system and accelerate the supply of medicines (Table 1).

In 2025, Ukraine took a strategic step by acceding to the Joint Procurement Agreement (JPA) for medical countermeasures, which has been in force in the European Union since 2014¹¹. The ratification of this Agreement by the Verkhovna Rada in early 2026 provides access to the European mechanism for the joint procurement of critically important medicines, vaccines, and antiviral drugs. This allows Ukraine to participate in joint procurement tenders, obtain better prices through volume consolidation, and be represented on the JPA Steering Committee, thereby strengthening its capacity to respond to pandemics, medicine shortages, and other serious threats.

Table 1

Characteristics of the Main Directions for Improvement

Direction	Problem	Actions	Expected result
Regulatory adaptation	Delays in the importation of medicines due to bureaucratic procedures for the verification of GMP certificates	Mutual recognition of GMP certificates issued by leading regulatory agencies (EudraGMP, FDA, MHRA); simplified licensing procedures during emergency situations	Acceleration of the supply of critical medicines; reduction of the administrative burden
International integration	Inability to independently meet all needs under conditions of shortages	Accession to the Joint Procurement Agreement (JPA) for medical countermeasures; participation in joint EU procurement tenders	Access to European procurement mechanisms; better pricing; diversification of supply sources
Logistics resilience	Risks of medicine and vaccine spoilage due to power outages and damage to infrastructure	Regular simulation-based training for warehouse personnel (equipment failures, power outages, transportation incidents)	Identification and elimination of gaps in alert systems, backup capacities, and personnel preparedness

¹¹ Міністерство охорони здоров'я України. Верховна Рада ратифікувала Угоду про спільні закупівлі медичних контраходів з країнами ЄС. 14 січ. 2026. URL: <https://moz.gov.ua/> (дата звернення: 28.04.2026).

Continuation of table 2

Direction	Problem	Actions	Expected result
Workforce training	Insufficient preparedness of pharmaceutical personnel to work under emergency conditions	Training in chemical preparedness, radiation response, and decontamination; provision of backup power sources	Enhancing pharmacists' capacity to operate under extreme conditions
Strategic reserves	Lack of stockpiles of specific medicines for radiological and chemical threats	Establishment of stockpiles of medicines for acute radiation syndrome (PLX-R18, Entolimod); utilization of rescEU reserves	Guaranteed availability of critical medicines for the treatment of victims of radiological and chemical disasters

The second direction involves integrating Ukrainian manufacturers into European supply chains for critical medicines. The war has created unprecedented challenges for the physical preservation of medicines, particularly vaccines that require strict temperature-controlled storage conditions (Fig. 2).

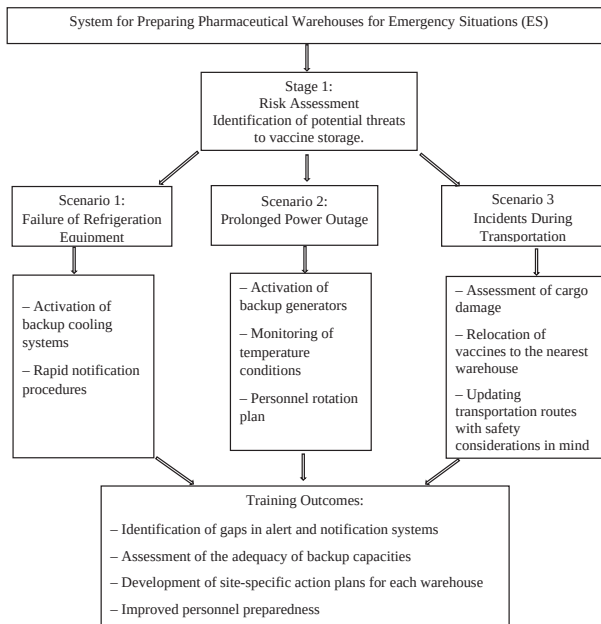


Fig. 2. Flowchart: Logistics Preparedness of Vaccine Warehouses for Emergency Situations (ES)

In 2025, large-scale functional simulation exercises were conducted in 18 regions of Ukraine at 25 regional vaccine warehouses^{12, 13}. The seven-hour training program included risk assessment and three consecutive scenarios: equipment failure, prolonged power outage, and transportation incidents. These exercises revealed systemic gaps in alert systems, backup capacities, and personnel preparedness. The third direction is the implementation of regular practical training exercises as a mandatory component of preparing pharmaceutical and logistics units to operate in emergency situations (ES).

The human factor remains critical (Table 2). Since the beginning of the full-scale invasion, the WHO has trained more than 4,600 healthcare professionals across approximately 150 institutions, including training in chemical preparedness, radiation response, and decontamination procedures.

Table 2

**International Organizations Providing Support to Ukraine During
Emergency Situations**

Organization	Type of help	Result
WHO	Technical Assistance and Training	Training of more than 4,600 healthcare professionals (chemical preparedness, radiation response, and decontamination); equipping over 100 healthcare facilities with dosimeters, spectrometers, and decontamination kits
	Material and Technical Assistance	248 units of backup power equipment, 23 ambulances, and 4 modular primary healthcare clinics
rescEU	Strategic Reserve	Finland provided equipment for the detection of chemical, biological, and radiological threats; medical devices; and instruments for measuring radioactivity
JPA	Joint Procurement Mechanism	Ukraine’s accession to the Joint Procurement Agreement (JPA) for medical countermeasures; participation in joint procurement tenders; representation on the Steering Committee

In addition, the WHO supplied Ukraine with more than 248 units of backup power equipment and 23 ambulances in early 2025 alone, as well as 4 modular

¹² Gaievskiy S., Khomenko O., Karkishchenko O., et al. Improving emergency preparedness of subnational vaccine stores in Ukraine: co-creation and implementation of on-site functional simulation exercises. *Frontiers in Public Health*. 2026. Vol. 14. URL: <https://www.frontiersin.org/journals/public-health> (дата звернення: 28.04.2026).

¹³ Grechukha Y., Kone S., Benes O., Castro M. Improving emergency preparedness of subnational vaccine stores in Ukraine: co-creation and implementation of on-site functional simulation exercises. *TechNet-21*. 2026. URL: <https://www.technet-21.org/> (дата звернення: 28.04.2026).

primary healthcare clinics¹⁴. Finland, for its part, provided assistance from the rescEU reserves, including equipment for the detection of chemical, biological, and radiological threats¹⁵. The fourth direction is the deployment of targeted training programs for pharmacists focused on logistics during power outages and cybersecurity preparedness, as well as safeguarding pharmacy infrastructure through the provision of uninterruptible power supply systems. The lessons of Chornobyl and the current wartime situation require preparedness for radiological and chemical incidents (Fig. 3).

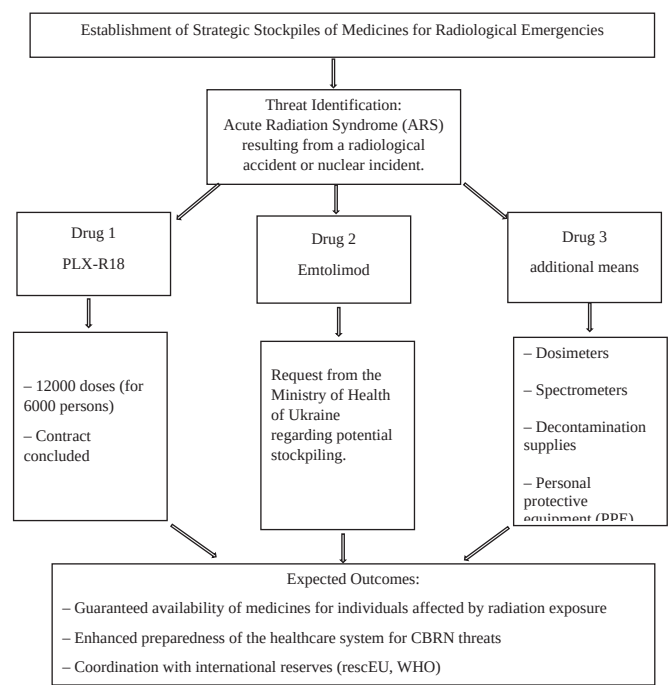


Fig. 3. Flowchart: Establishment of Strategic Reserves for Radiological Threats

In 2026, Ukraine intensified its efforts to establish stockpiles of specific medicines. In particular, a contract was signed for the supply of 12,000 doses

¹⁴ Міністерство охорони здоров'я України. МОЗ України та ВООЗ обговорили пріоритети співпраці на 2026 рік. 16 груд. 2025. URL: <https://moz.gov.ua/> (дата звернення: 28.04.2026).

¹⁵ Valtioneuvosto (Finnish Government). Finland delivers assistance from EU strategic stockpile to Ukraine. 8 Jan. 2026. URL: <https://valtioneuvosto.fi/> (дата звернення: 28.04.2026).

of PLX-R18 for the treatment of Acute Radiation Syndrome (ARS), sufficient for approximately 6,000 individuals¹⁶. In addition, the Ministry of Health of Ukraine submitted a request for information regarding the potential strategic stockpiling of Entolimod, a medicinal product intended for the treatment of radiation exposure¹⁷.

The rescEU reserves in Finland, which have already provided assistance, contain equipment for the detection of and protection against CBRN threats, as well as medical devices and instruments for measuring radioactivity. The WHO, in turn, equipped more than 100 healthcare facilities with specialized equipment (dosimeters, spectrometers, and decontamination kits). The fifth direction is the diversification of supply sources and the establishment of targeted reserves of essential medicines for radiological and chemical disasters through the use of international assistance mechanisms. Table 3 presents a comparison of regulatory approaches to the factors influencing the functioning of the pharmaceutical market before and during emergency situations (ES).

Table 3

Regulatory Approaches to the Factors Affecting Pharmaceutical Market Functioning Before and During Emergency Situations (ES)

Factors Affecting the Functioning of the Pharmaceutical Market	Regulatory approaches	
	Before ES	While ES
GMP Certificate Verification	Full verification of documentation for each manufacturer.	Mutual Recognition of Certificates EudraGMP, FDA, MHRA
Import Control Timeline	Lengthy (weeks to months)	Accelerated (days)
Licensing of warehouses	Strict requirements for premises and equipment.	Temporary relaxation of requirements while maintaining quality control.
Quality control of medicines	Scheduled inspections	Risk-based approach; enhanced control of critical drugs

The main efforts are focused on import deregulation, integration into European procurement systems, strengthening logistics resilience through training exercises (simulations), personnel training, and the establishment of specialized strategic stockpiles to address radiological and chemical threats (Fig. 4).

¹⁶ Kyiv Daily Post. Ukraine Acquires Medication for Nuclear Threat Preparedness. 15 Apr. 2026. URL: <https://kyivdailypost.com/> (дата звернення: 28.04.2026).

¹⁷ GeneOnline News. Ukrainian Ministry of Health Requests Information on Entolimod for Emergency Preparedness. 31 Mar. 2026. URL: <https://geneonline.news/> (дата звернення: 28.04.2026).

As noted by the WHO Representative Office, emergency preparedness is a critical investment in health security that enables the protection of people before an emergency situation occurs.

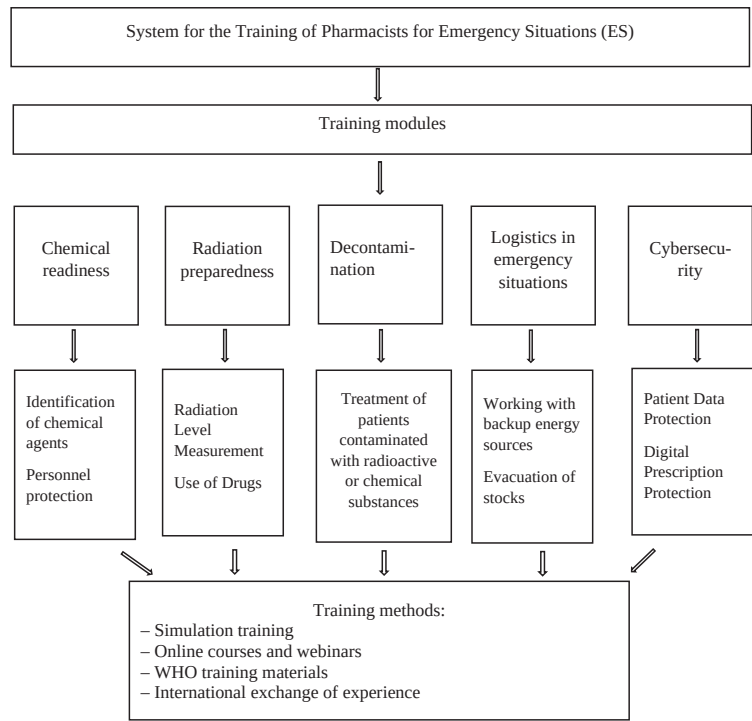


Fig. 4. Flowchart: Personnel Training of Pharmacists for Emergencies

Pharmaceutical care is often disease-specific in its focus. Contemporary pharmaceutical practice in European Union countries is gradually transforming from a model focused solely on the dispensing of medicines to a comprehensive patient-centered care approach. This transition is accompanied by intensive discussions regarding the ethical appropriateness and practical effectiveness of various models of pharmaceutical intervention, particularly for patients with chronic diseases. An analysis of global experience in the implementation of pharmaceutical care for arterial hypertension, diabetes mellitus, bronchial asthma, and tuberculosis, as well as the identification of priority directions for the development of pharmaceutical care in Ukraine, are discussed by the authors in the following sections.

Hypertension continues to represent a major global medical and social challenge, as it constitutes a fundamental risk factor for most serious cardiovascular disorders. Successful management of this condition is impossible without continuous, evidence-based long-term pharmacotherapy accompanied by regular medical supervision. The contemporary experience of developed European Union countries demonstrates a shift from the simple provision of medicines toward the implementation of integrated national strategies. These programs currently include not only medication reimbursement schemes but also digital monitoring tools, such as telemedicine, enabling real-time supervision of patients' health status. Recent statistical evidence unequivocally demonstrates that strict adherence to prescribed treatment regimens remains the most effective barrier against the development of resistant hypertension, a condition that is particularly difficult to control and manage.

Furthermore, expanding access to fixed-dose combination therapy ("single-pill combinations") and implementing screening programs at the primary healthcare level have significantly reduced premature mortality rates. Thus, systematic pharmaceutical care is being transformed from a purely economic issue into a strategic instrument for preserving the workforce and improving the overall quality of life of the population¹⁸.

The results of a pilot study conducted in the United Kingdom demonstrated that the implementation of pharmaceutical care in the management of arterial hypertension contributes to improved blood pressure control and promotes the appropriate prescribing of antiplatelet agents and statins for the prevention of coronary heart disease and atherosclerotic vascular disease¹⁹. Similar findings were reported in the ESSENCE study, where the use of SMS reminders to improve adherence to therapy resulted in a statistically significant reduction in both systolic and diastolic blood pressure²⁰.

Diabetes is another condition for which pharmaceutical care has demonstrated high effectiveness. Studies evaluating the impact of pharmaceutical care in diabetes management have been conducted in many countries worldwide. In Portugal and Germany, specialized diabetes care services have been established, integrating

¹⁸ Mohammed J. U., Chowdhury A. K. M. S., Khan M. M., et al. Evaluation of the Impact of a Pharmacist-Conducted Hypertension Clinic. *Journal of Pharmacy and Bioallied Sciences*. 2024. Vol. 16, Suppl 2. P. S1234–S1240. URL: <https://pubmed.ncbi.nlm.nih.gov/39169929/> (дата звернення: 28.04.2026).

¹⁹ Pharmacy Quality Alliance. Effects of a community pharmacy cardiovascular practice transformation (CPT) program on blood pressure. *Journal of the American Pharmacists Association*. 2024. Vol. 64, № 3. P. 101–109.

²⁰ Canguçu E., Lima C. A. P., Santos T. C., et al. Use of text messages to promote medication adherence and reduce blood pressure in patients with hypertension: the ESSENCE study. *Cadernos de Saúde Pública*. 2024. Vol. 40, № 11. e00050023. URL: <https://pubmed.ncbi.nlm.nih.gov/39775770/> (дата звернення: 28.04.2026).

pharmacists into multidisciplinary healthcare teams²¹. In the Netherlands, a substantial number of community pharmacies provide regular blood glucose monitoring services, enabling the timely detection of abnormalities and appropriate adjustments to treatment²². In Switzerland, a pharmaceutical care model for patients with type 2 diabetes mellitus has been developed, incorporating regular monitoring of glycemic parameters and optimization of therapy²³. In Belgium and Switzerland, screening programs aimed at identifying individuals with undiagnosed diabetes mellitus have been conducted, enabling the initiation of treatment at earlier stages of the disease. An economic evaluation of pharmaceutical interventions for diabetes mellitus conducted in Iran demonstrated their cost-effectiveness: the ratio of costs to quality-adjusted life years (QALYs) gained was considered acceptable for the healthcare system. The SMART Pharmacist program in North Macedonia demonstrated that the active involvement of pharmacists in the management of patients with diabetes contributes to improved disease control and enhances patients' quality of life.

A considerable number of studies examining the role of pharmaceutical care for patients with bronchial asthma in community pharmacies have been conducted in Denmark, Finland, Germany, Malta, Northern Ireland, the Netherlands, and Spain. Most of these studies were successful and demonstrated a significant positive impact of pharmaceutical care on economic, clinical, and humanistic outcomes.

Like diabetes mellitus, bronchial asthma is among the diseases for which the implementation of pharmaceutical care can be particularly effective²⁴. A study in Australia found that introducing an expanded asthma care program in pharmacies led to better disease control, reduced exacerbation rates, and increased patient satisfaction²⁵. A qualitative study examining the experiences of patients with asthma found high levels of trust in pharmacists as a source of information about the disease and medications²⁶.

²¹ Ghasemi Z., Rezaei S., Karimi S., et al. Cost-effectiveness analysis of a community pharmacist-based intervention to prevent cardiovascular complications in patients with type 2 diabetes in Iran. *Cost Effectiveness and Resource Allocation*. 2025. Vol. 23, № 1. P. 44. URL: <https://pubmed.ncbi.nlm.nih.gov/40883843/> (дата звернення: 28.04.2026).

²² Serhal S., Penka S., Petroska T., et al. SMART Pharmacist Program: A public health initiative focused on diabetes in North Macedonia. *Pharmacy Practice*. 2025. Vol. 23, № 2. P. 156–167.

²³ Langhinrichsen-Rohling J., Jenkins L., Rakes K. et al. Charitable Pharmacies as Catalysts for Coordinated Care: Pharmacist Management of Blood Glucose Among Under-Resourced Patients With Type 2 Diabetes. *Health Promotion Practice*. 2024. Vol. 25, № 2. P. 254–262.

²⁴ Належна фармацевтична допомога – запорука покращення громадського здоров'я. *Фармацевтична палата України*. URL: <http://farmpalata.com.ua/novyny/nalezchna-farmatsevtichna-dopomo-ga-zaporuka-pokrashhennya-gromadskogo-zdorov-ya/> (дата звернення: 28.04.2026).

²⁵ Serhal S., Saini B., Bosnic-Anticevich S., et al. Delivery of Enhanced Asthma Care in Pharmacies: Perceptions and Experiences of Australian Service Providers. *Journal of the American Pharmacists Association*. 2024. Vol. 64, № 6. 102252.

²⁶ Patient experiences of their current asthma care and their views toward providing support for patients with asthma in community pharmacy: A Qualitative study. *BMJ Open*. 2024. Vol. 14, № 6. e082345.

Tuberculosis remains an extremely important public health issue in Ukraine. Currently, this respiratory disease is the most prevalent opportunistic infectious disease and ranks first among infectious causes of mortality²⁷. In Ukraine, 680,671 individuals have been diagnosed with tuberculosis, representing approximately 1.4% of the country's total population, while patients with active forms of tuberculosis account for nearly 21.2% of this number²⁸. Studies and analyses of the factors contributing to the prevalence of tuberculosis indicate that the problem is multifaceted in nature. The principal contributing factors include delayed detection and diagnosis of the disease; insufficient availability of anti-tuberculosis medicines for prevention, treatment, and relapse-prevention antimycobacterial therapy; a near-complete lack of monitoring of medication adherence; an increasing number of cases of drug-resistant tuberculosis; the spread of TB/HIV co-infection; a reduction in the workforce of tuberculosis control services; chronic underfunding of tuberculosis healthcare facilities; inadequate preventive and educational activities aimed at patients; failure to ensure compliance with sanitary and hygienic standards in public places; and the overall deterioration of the population's socio-economic living conditions.

An analysis of the experience of Eastern European countries, particularly Georgia, Kazakhstan, Kyrgyzstan, and Moldova, where similar trends have been observed, indicates the need for a comprehensive approach to tuberculosis control. Social support programs for patients, including directly observed treatment, financial assistance, and psychosocial support, have demonstrated greater effectiveness compared with traditional approaches.

Pharmaceutical care for chronic non-communicable diseases, including arterial hypertension, diabetes mellitus, and bronchial asthma, is an effective tool for improving clinical outcomes, enhancing treatment adherence, and optimizing healthcare system expenditures. At the same time, in Ukraine, the most pressing challenges remain those associated with infectious diseases, particularly tuberculosis, where the primary priorities are ensuring the basic availability of medicines and implementing effective mechanisms for treatment monitoring and adherence control. Therefore, the above considerations underscore the importance of studying this condition not only from a social perspective but also in terms of implementing comprehensive, high-quality medical care and effective pharmaceutical care for patients with tuberculosis, bronchial asthma, diabetes mellitus, and arterial hypertension²⁹.

²⁷ Dahl V. N., Kaplan A., Kalmambetova G., et al. Drug-Resistant Tuberculosis, Georgia, Kazakhstan, Kyrgyzstan, Moldova, and Ukraine, 2017–2022. *Emerging Infectious Diseases*. 2024. Vol. 30, № 4. P. 712–720. URL: <https://pubmed.ncbi.nlm.nih.gov/38526186/> (дата звернення: 28.04.2026).

²⁸ What works best for ensuring treatment adherence. Lessons from a social support program for people treated for tuberculosis in Ukraine. *BMC Public Health*. 2019. Vol. 19, № 1. P. 1130. URL: <https://pubmed.ncbi.nlm.nih.gov/31449542/> (дата звернення: 28.04.2026).

²⁹ Котвицька А. А., ред. Соціальна фармація в Україні: стан, проблеми та перспективи : матеріали всеукр. наук.-практ. інтернет-конференції за участю міжнародних спеціалістів (3 квіт. 2013 р.). Харків : Вид-во НФаУ, 2013. 350 с.

2. Methodological and Practical Aspects of the Transformation of Medicine Delivery Systems

The regulatory and legal aspects of using drones for medicine delivery constitute a key element in ensuring the provision and delivery of pharmaceutical care under contemporary conditions. The use of unmanned aerial vehicles (UAVs) for the delivery of medicines to frontline areas and hard-to-reach regions represents one of the most promising directions for the development of pharmaceutical logistics during martial law. The successful operation of such a system requires a comprehensive approach to addressing three groups of issues: technological (the technical characteristics of drones and related equipment), organizational (route planning, coordination, and workforce support), and regulatory and legal (registration, authorization procedures, and taxation) aspects (Fig. 5).

Ukraine's experience, having actively implemented drone-based logistics within the pharmaceutical supply system since 2022, provides unique material for such an analysis. The operation of a drone delivery system requires the availability of:

- Launch and landing sites (protected and often mobile);
- Storage and order-fulfillment hubs (hub pharmacies and warehouses);
- Communication systems (secure data transmission channels);
- Charging stations (particularly for battery-powered drones);
- Technical maintenance and repair infrastructure.

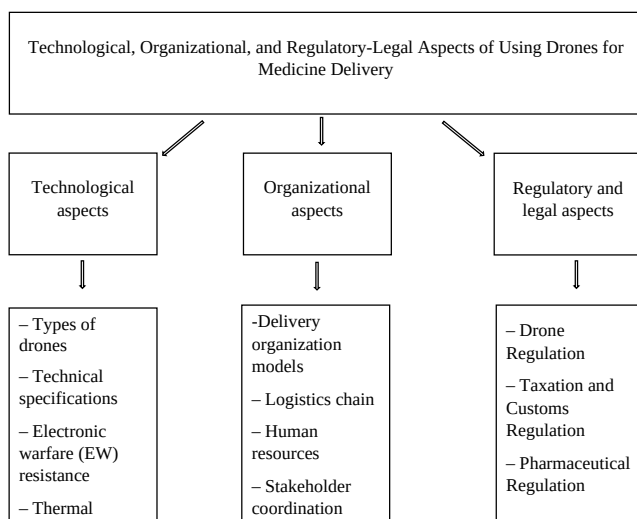


Fig. 5. Main Aspects of Using Drones for Drug Delivery

Under martial law, Ukraine operates a simplified regulatory framework for the use of unmanned aerial vehicles (UAVs) (Table 4). According to amendments introduced by the Ministry of Defence of Ukraine to the relevant regulatory acts (Order of the Ministry of Health No. 225 of 23 May 2024), for the duration of martial law and for three months following its termination, the following measures are *предусмотрен*³⁰: Exemption from mandatory state registration for certain types of UAVs; exemption of personnel operating certain types of UAVs from mandatory aviation medical examinations; and simplification of flight operation requirements for certain categories of UAVs.

Table 4
Regulatory and Legal Acts Governing Drone-Based Medicine Delivery in Ukraine

Regulatory act	Content of the regulation	Importance for drone delivery
Order of the Ministry of Defence of Ukraine No. 225 dated 23 May 2025	Simplification of UAV operations: exemption from registration requirements, simplification of personnel requirements, and introduction of a classification system for reusable and disposable aircraft	Allows the rapid deployment of drones for medical missions without unnecessary bureaucratic procedures
Resolution of the Cabinet of Ministers of Ukraine on the List of Goods Exempt from Taxation	Temporary exemption from import duties and VAT on drones, electronic warfare equipment, and tactical medical supplies	Reduces the cost of importing medical drones and their components
Law of Ukraine “On Medicinal Products”	Requirements for the storage, transportation, and dispensing of medicinal products	Defines the conditions for the transportation of temperature-sensitive cargo
Resolution of the Cabinet of Ministers of Ukraine No. 820 (on Mobile Pharmacy Units)	Procedure for dispensing medicines through mobile pharmacy units	May be adapted for operations involving the use of drones
Affordable Medicines Program (Resolution of the Cabinet of Ministers of Ukraine No. 911)	Reimbursement of the cost of medicines prescribed through an electronic prescription	Integration of drone delivery into the state program

³⁰ Про затвердження Змін до деяких нормативно-правових актів Міністерства оборони України з питань застосування безпілотних авіаційних комплексів : наказ Міністерства оборони України № 225 від 23.05.2025. *Lexcovery*. 2025. 26 січ. URL: <https://lexcovery.com/en/2025/06/on-approval-of-amendments-to-certain-regulatory-legal-acts-of-the-ministry-of-defense-of-ukraine-regarding-specific-issues-of-the-use-of-unmanned-aircraft-systems/> (дата звернення: 28.04.2026).

The Order also introduces a new classification of UAVs according to their intended use: reusable and disposable aircraft.

An important aspect is the simplification of import procedures for medical drones and their components. The Cabinet of Ministers of Ukraine has approved a list of goods that are temporarily exempt from import duties and value-added tax (VAT). This list includes drones, electronic warfare equipment, and tactical medical supplies³¹. The pharmaceutical component of drone delivery is regulated by: the Law of Ukraine “On Medicinal Products” (requirements for the storage, transportation, and dispensing of medicines); Resolution of the Cabinet of Ministers of Ukraine No. 820 “On Approval of the Procedure for Dispensing Medicinal Products and Medical Devices through Mobile Pharmacy Units” (which may be adapted for operations involving drones); and the Affordable Medicines Program (enabling patients to receive medicines prescribed through an electronic prescription with drone delivery).

Despite significant progress, a number of unresolved legal issues and challenges remain: the absence of specific legislation regulating the delivery of medicines by drones as a pharmaceutical service; insufficiently clear delineation of responsibility (among pharmacists, drone operators, and logistics personnel) for maintaining the quality of medicines during transportation; and the need to adapt the licensing requirements for pharmaceutical activities to operations involving drones. Other regulatory, organizational, and technological challenges, as well as groups of related aspects, are presented in Table 5.

Table 5

**Groups of Aspects and Key Challenges Requiring Solutions
for the Proper Delivery of Medicines by Drones**

Group of aspects	Main challenges
Technological	Resistance to electronic warfare (EW), protection against interception, maintenance of temperature control, limited payload capacity
Organizational	Coordination among stakeholders, workforce shortages, route planning under rapidly changing security conditions
Legal	Absence of specific legislation, lack of clarity in the allocation of responsibilities, and the need to adapt licensing requirements

Promising directions for the development of drone-based medicine delivery in Ukraine include the scaling up of pilot projects for medicine delivery by drones to other regions, particularly those where more than 20,000 villages lack pharmacy outlets; integration with the e-prescription system (automation of the process from prescription generation to medicine delivery); development of

³¹ Updated List of Tax-Exempt Goods and Services / Cabinet of Ministers of Ukraine. *Kyiv Daily Post*. 2026. 1 Apr. URL: <https://kyivdailypost.com/en/news/id-690> (дата звернення: 28.04.2026).

domestic production of medical drones and thermal containers; harmonization of legislation with EU standards to facilitate further integration into the European pharmaceutical area; and establishment of a centralized nationwide platform for coordinating drone-based medicine delivery.

The use of drones for the delivery of medicinal products in frontline areas and hard-to-reach regions is a complex, multifaceted task that requires the coordinated resolution of technological, organizational, and regulatory aspects (Table 5).

Ukraine's experience demonstrates that, under martial law, such a system can function effectively provided that the following conditions are met: adequate technical equipment (thermal containers, EW-resistant navigation systems); well-organized logistics chains and coordination among stakeholders; and the existence of simplified (but not unstructured) regulatory and legal frameworks.

The most relevant directions for further improvement include scaling up successful pilot projects, developing domestic manufacturing capacities, and harmonizing legislation with international standards.

The analysis of strategic documents related to the development of Ukraine's healthcare system was conducted using the content analysis method, which involves the systematic examination of textual content to identify key directions of public policy. The study was based on the official texts of the Operational Plan for the Implementation of the Strategy 2030 for 2025–2027 and the Healthcare System Development Strategy of Ukraine until 2030, approved by Resolution of the Cabinet of Ministers of Ukraine No. 34-r dated 17 January 2025. To accomplish the research objectives, the paired comparison method was applied, allowing the documents to be compared across six key parameters: key challenge, geopolitical orientation, organization of the healthcare network, priority areas, financing mechanisms, and quality control system.

Based on the comparative analysis, invariant elements preserved in both documents, as well as innovations introduced in the Strategy 2030, were identified. Particular attention was paid to identifying wartime priorities, including mental health, rehabilitation of veterans, and support for de-occupied territories.

The final stage of the study involved assessing the alignment of Ukrainian strategic documents with the WHO Country Cooperation Strategy for Ukraine up to 2030.

We also applied a methodology and conducted a SWOT analysis of the dynamics and prospects for the development of pharmaceutical care. The SWOT analysis of the current state and future prospects of pharmaceutical care in Ukraine was carried out in accordance with the method described in the CPOM (Council on Pharmacy Operations Management) standard³². To ensure maximum objectivity, the analysis was based on a convergent mixed-methods

³² Alqarni A. A. et al. A mixed-methods SWOT analysis of community pharmacy services in Saudi Arabia: stakeholder perspectives and strategic framework. *Frontiers in Medicine*. 2026. Vol. 13. 1728571.

design that combines quantitative and qualitative research approaches³³, and also incorporated elements of a quantitative method involving expert surveys to assess the significance of individual factors.

The information base for the analysis was formed from the following sources: regulatory and legal acts (laws of Ukraine, resolutions of the Cabinet of Ministers, and orders of the Ministry of Health); statistical data (pharmaceutical market volumes, expenditures on reimbursement programs, number of pharmacy establishments, and workforce indicators); analytical reviews (reports of consulting companies, industry studies, and scientific publications); and expert surveys (opinions of industry specialists)³⁴.

Based on the collected data, key factors were identified within four categories: S (Strengths – internal positive factors that provide advantages), W (Weaknesses – internal deficiencies that require improvement), O (Opportunities – external factors that can be leveraged for development), and T (Threats – external risks that should be avoided). In compiling the list of factors, the following requirement was observed: 5–8 factors were included within each category³⁵.

For the quantitative assessment of factor influence, a methodology was employed that involved surveying pharmaceutical sector specialists regarding the impact of individual factors on system development, followed by the calculation of aggregated indicators. To provide a quantitative justification of priorities, an approach was used that involved constructing a diagram of relationships among elements of the internal environment of the pharmaceutical sector and performing a quantitative assessment of factor influence to identify the most significant ones.

A preliminary analysis was conducted of contemporary medicine delivery models under wartime conditions. Until 2024, the use of drones for transporting medicines was considered a technology of the future, implemented primarily within civilian healthcare systems in Rwanda, Ghana, or geographically remote states of the United States. The full-scale invasion radically changed this picture. The war created an unprecedented demand for the safe, rapid, and controlled delivery of medicines to active combat zones, where ground logistics became nearly impossible due to minefields, shelling, and the constant threat of aerial attacks.

As of April 2026, Ukraine has developed a unique three-tier pharmaceutical drone logistics system that combines humanitarian missions, commercial

³³ How 'patient influencers' mislead patients on prescription drugs. *African Marketing Confederation*. 2023. 21 March. URL: <https://africanmarketingconfederation.com> (дата звернення: 28.04.2026).

³⁴ Зарічкова М. Ваш бізнес крізь призму SWOT. *The Pharma Media*. 2023. URL: <https://thepharmamedia/uk/marketing/31719-vas-biznes-skvoz-prizmu-swot-16032023> (дата звернення: 28.04.2026).

³⁵ Про затвердження Національної політики щодо забезпечення лікарськими засобами на період до 2025 року: Постанова Кабінету Міністрів України. URL: http://search.ligazakon.ua/_doc2.nsf/link1/NT2847.html (дата звернення: 29.04.2026).

services, and military units³⁶. In practice, the following models can be distinguished.

Model 1. State-Humanitarian (pharmacy chains + technology partners Zipline, Civilian Drones, and others). The largest civilian-humanitarian initiative is being implemented by the “Apteka 9-1-1” pharmacy chain in partnership with the American company Zipline. Logistics hubs established in the Kyiv region enable the delivery of critical medicines (up to 2 kg) within a radius of up to 100 km. Cargo is delivered by parachute with high precision, making it possible to supply frontline communities and stabilization points without requiring vehicles to enter dangerous areas. The Liki24 platform coordinates drone-based medicine delivery in challenging regions, cooperating with volunteer groups. UAVs cover the “last mile” where roads are mined or under fire control.

Model 2. Military Logistics (specialized units “Achilles”, “Vampire”, and others). For direct delivery to the “zero line” (trenches), civilian pharmacy drones are not used; instead, heavy military systems are employed. In January 2026, the 429th Separate Regiment of Unmanned Systems “Achilles” published a report on its activities during the Kupiansk operation: 689 flights and 9 tonnes of cargo delivered to frontline positions. According to military personnel, unmanned logistics has become “not a supporting tool, but a full-fledged element of combat support.” A special role is played by the heavy Vampire hexacopters (also known as “Baba Yaga”). They are capable of carrying up to 15 kg of cargo to an altitude of up to 400 meters and covering distances of up to 10 km³⁷. These aircraft deliver not only water, field rations, and equipment, but also medicinal products, including those that require special storage conditions. This model involves integration into the overall combat support system.

Model 3. International Technological Assistance (Draganfly, Coldchain Delivery Systems)^{38, 39}. During 2025–2026, international support intensified significantly. The Canadian company Draganfly supplied Ukraine with specialized medical drones equipped with thermal containers for the transportation of blood, vaccines, and insulin. As of March 2026, the total number of such aircraft delivered to the organization Revived Soldiers Ukraine had reached 10 units, while the overall order envisages the supply of up to

³⁶ More Coverage from ABC'S Derricke Dennis Report on Draganfly's Ukraine Drone Deployment. *Aerocontact*. 2026. 4 February. URL: <https://www.aerocontact.com/videos/104581-more-coverage-from-abc-s-derricke-dennis-report-on-draganfly-s-ukraine-drone-deployment> (дата звернення: 28.04.2026).

³⁷ Moroz S., Sahaidak-Nikituk R., Zoidze D. Implementation of the Quantitative SWOT Analysis Method in the Research on the Contemporary State and Prospects of Consistent Development of the Pharmaceutical Branch. *Research Journal of Pharmacy and Technology*. 2019. Vol. 12, № 11. P. 5199–5205.

³⁸ Council on Pharmacy Operations Management. Section 2.4: Competitive Analysis and SWOT Application in Pharmacy Operations. *CPOM Standards*. 2025. URL: <https://pharmacystandards.org/cpom/section-2-4-competitive-analysis-and-swot-application-in-pharmacy-operations/> (дата звернення: 28.04.2026).

³⁹ Silent rescuer: Police show how Vampire delivers ammunition, food, and water to the front. *РБК-Україна*. 2025. 24 черв. URL: <https://www.rbc.ua/ukr/news/bezshumnyy-ryativnik-polisiyi-pokazali-k-1750874165.html> (дата звернення: 28.04.2026).

200 drones. Draganfly technology enables the transportation of up to 35 pounds (approximately 16 kg) of temperature-sensitive medical cargo under controlled temperature conditions. According to the company’s CEO, Cameron Chell, “this technology will save tens of thousands of lives”.

Model 4. State–Municipal (community-based pilot projects). Delivery of medicines under the Affordable Medicines Program to remote villages. Prescriptions are issued by family physicians, and delivery is provided free of charge to patients. An example is the project implemented in the Tlumach community (Ivano-Frankivsk region), where medicines are delivered by drones. Healthcare workers, on a voluntary basis, visit settlements in advance and identify delivery points where a nurse receives individually labeled orders from the drones and subsequently distributes them to patients’ addresses or dispenses them at the outpatient clinic.

More than 20,000 towns and villages in Ukraine still lack even basic pharmacy outlets. Such conditions significantly hinder the population’s access to medicinal products.

The organization of the process from prescription issuance to medicine drop-off has its own specific features. Unlike conventional civilian “door-to-door” delivery, frontline drone logistics follows a specialized operational scheme (Fig. 6).

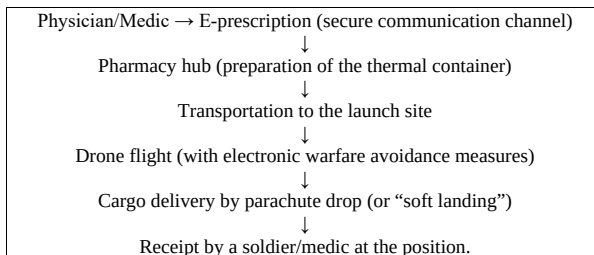


Fig. 6. Logistics Chain for Drone-Based Medicine Delivery

The operational models supporting drone-based medicine delivery systems can be classified according to their logistics chains. A typical logistics chain for drone delivery of medicines under wartime conditions includes the following stages:

1. Order placement (by a physician, patient, or military medic through secure communication channels).
2. Cargo preparation at a pharmacy hub (verification of expiry dates and packaging in a thermal container).
3. Transportation to the launch site.
4. Drone flight (avoiding electronic warfare zones and hostile fire).
5. Cargo delivery (by parachute drop or “soft landing”).
6. Receipt and verification of the cargo.

The operation of the system requires personnel from the following categories:

1. UAV operators (drone pilots).
2. Pharmacists (responsible for order preparation and quality control of medicines).

3. Logistics specialists (for route planning and coordination).

4. Technical specialists (for maintenance of drones and charging stations).

5. Healthcare personnel at cargo reception points.

An effective drone delivery system requires close coordination among:

1. The Ministry of Defence of Ukraine (for military missions).

2. The Ministry of Health of Ukraine (for civilian programs).

3. The State Service of Special Communications and Information Protection (for radio frequency management).

4. Local military administrations (for route approval and coordination).

5. Pharmacy chains and distributors.

6. Volunteer organizations and charitable foundations.

3. Strategic Analysis and Prospects for the Development of the Pharmaceutical Care System in Ukraine

The analysis of strategic documents governing the development of Ukraine's healthcare system (Strategy 2025 and the new Strategy 2030) was conducted based on a retrospective review of regulatory and legal acts.

Strategy 2025, developed on the basis of WHO recommendations, served as a political commitment of the state. It defined the framework for interaction among the public and private sectors, civil society organizations, and donors in order to ensure national security in the field of healthcare⁴⁰. The State Strategy, approved by the Cabinet of Ministers of Ukraine in 2018, represented a comprehensive framework of actions aimed at addressing challenges related to ensuring citizens' access to high-quality and safe medicines. This document defined the priorities for the development of the pharmaceutical sector for the following six years.

A comprehensive approach was implemented: the Strategy promoted innovative developments and ensured the rational selection of medicines for inclusion in the National List of Essential Medicines. Quality and accessibility were guaranteed: a key priority of the Ministry of Health was the introduction of mechanisms aimed at reducing medicine prices and creating opportunities for subsidizing high-cost treatments.

The governance system was reformed: the document provided for the establishment of a Health Technology Assessment agency and the launch of a centralized procurement agency.

⁴⁰ Про затвердження Державної стратегії реалізації державної політики забезпечення населення лікарськими засобами на період до 2025 року. URL: <https://zakon.rada.gov.ua/laws/show/1022-2018-%D0%BF> (дата звернення: 28.04.2026).

Procurement processes were optimized: public procurement was improved through a system for monitoring the actual needs of healthcare institutions.

Competition was strengthened: the Strategy promoted greater competitiveness among manufacturers, distributors, and pharmacy chains.

Physical accessibility was ensured: particular attention was paid to inclusiveness, including the mandatory installation of ramps in pharmacies to improve access for persons with reduced mobility.

The analysis of Ukraine's healthcare development strategies (Strategy 2025 and the new Strategy 2030) makes it possible to trace the evolution of state policy: from the basic reform of healthcare financing to the development of a resilient system under the conditions of full-scale war and European integration.

Both documents are based on the fundamental principles established by the 2017 healthcare reform:

- Patient-centeredness: a focus on patients' needs and ensuring universal access to healthcare services.
- The "Money Follows the Patient" principle: further development of the Medical Guarantees Program (MGP) as the primary healthcare financing mechanism.
- Digitalization (eHealth): both strategies identify the development of the electronic healthcare system as a key priority for improving transparency and efficiency.
- Prevention and public health: emphasis on the prevention of non-communicable diseases (cardiovascular diseases, cancer, diabetes) and the promotion of healthy lifestyles.

The main difference lies in the context (Table 6). While Strategy 2025 was developed under peacetime conditions (with a focus on COVID-19), Strategy 2030 is a document designed for wartime and post-war recovery.

The new strategy introduces areas that were previously considered supportive but have now become critical:

- Infrastructure recovery: not merely repair, but reconstruction according to the "build back better" principle, taking into account energy efficiency and inclusiveness.
- Human resources policy: the new strategy places greater emphasis on retaining healthcare professionals in Ukraine, reforming medical education, and ensuring decent working conditions in de-occupied regions.
- Military medicine and civil-military cooperation: closer integration of military and civilian healthcare systems for the treatment and rehabilitation of veterans.

Table 6

Comparative Analysis of Strategic Documents for the Development of Ukraine's Healthcare System

Comparison parameter	Strategy 2020–2025	Strategy until 2030
Key challenge	COVID-19 pandemic, network transformation	Full-scale war, destruction of infrastructure, shortage of personnel
Geopolitical vector	Approaching EU standards	Full harmonization with EU legislation (within the framework of candidate status)
Medical network	Formation of hospital districts	Implementation of a capable network of institutions (supracluster, cluster, general)
Mental health	General provisions on the reform of psychiatry	Priority number one: building a psychosocial support system (All-Ukrainian Mental Health Program)
Rehabilitation	Development as an additional service	Creating a powerful vertical of modern rehabilitation care with an emphasis on evidence
Pharmaceutics	Affordable medications, reimbursement	Development of our own production, implementation of health technology assessment

The 2020–2025 Strategy was aimed at transforming healthcare governance and financing mechanisms (shifting from budget-based allocations to contracts with the National Health Service of Ukraine). Strategy 2030 is focused on survival, resilience, and modernization. It is more comprehensive, as it must address the demographic crisis, the enormous burden of physical and psychological trauma, and the need for rapid adaptation to European standards in preparation for Ukraine's accession to the European Union.

An important characteristic of Strategy 2030 is its dynamic nature. Although it is designed to run until 2030, its implementation is carried out through three-year action plans. Should the need arise due to new challenges, technological developments, or changes in the security environment, the Strategy can be adjusted promptly⁴¹. The comparison between the Operational Plan for the implementation of the Strategy for the period 2025–2027 and Strategy 2030 is presented in Table 7.

The expected outcomes of the implementation of Strategy 2030 in the field of public health include reductions in mortality and morbidity rates, as well as improvements in citizens' functioning and participation, ultimately leading to better health and well-being of the population⁴². Strategy 2030 is a comprehensive document that defines the strategic directions for the development of Ukraine's healthcare system in the coming years. Its key features include:

⁴¹ Експертус. Що передбачає Стратегія розвитку системи охорони здоров'я до 2030 року : інтерв'ю з міністром Віктором Ляшком. 2025. URL: <https://expertus.com.ua/> (дата звернення: 28.04.2026).

⁴² Миронюк І. С., Слабкий Г. О., Білак-Лукиничук В. Й., Лопіт В. В., Савчук Л. М., Рожкова І. В. Місце громадського здоров'я в Стратегії розвитку системи охорони здоров'я України до 2030 року (Частина 1). *Вісник соціальної гігієни та організації охорони здоров'я України*. 2024. № 1 (99). С. 39–48.

– Integration of wartime and peacetime challenges – the document addresses both the needs arising from wartime conditions (veterans, internally displaced persons, de-occupied territories, and emergency preparedness) and the long-term objectives of peaceful development.

– European integration orientation – alignment with European Union directives is one of the key priorities.

– Rational use of the existing healthcare network – rather than reducing the number of hospital beds, the Strategy emphasizes optimizing patient pathways and ensuring reasonable waiting times for healthcare services.

– Expansion of the Affordable Medicines Program – significant increases in funding and broader population coverage.

– New quality control system – a three-stage model focused on clinical audit rather than solely on traditional state supervision.

– Flexibility and adaptability – the ability to adjust and update the Strategy in response to changing circumstances and emerging challenges.

Table 7

Characteristics of the Operational Plan for the Strategy for the Period 2025–2027 and Strategy 2030

Sign	Operational Plan 2025-2027	Strategy-2030
Document status	Operational Plan of measures for the implementation of the Strategy-2030	Order of the Cabinet of Ministers of Ukraine dated 17.01.2025 No. 34-r
Validity period	2025-2027 years	until 2030
Character	Specific steps, indicators, responsible executors	Strategic goals, directions, development philosophy
Key tasks	Expansion of “Affordable Medicines”, inclusion of all institutions in the PMG, rehabilitation, mental health, support for rural doctors, inclusivity ⁴³	Universal access to quality services; coordination and management; human capital development
Priority groups	Veterans, IDPs, residents of deoccupied territories, rural population	The entire population of Ukraine
Quality control	Creation of an expert institution for clinical audit	Three-step system: licensing self-governance clinical audit.
Financing (sample)	UAH 6.6 billion for “Affordable Medicines” in 2025	General reform of the financing system

In order to develop an objective strategic roadmap for the sector and assess its resilience under martial law conditions, a comprehensive SWOT analysis of pharmaceutical care in Ukraine was conducted in the study (Table 8).

⁴³ Про схвалення Стратегії розвитку системи охорони здоров'я на період до 2030 року та затвердження операційного плану заходів із її реалізації у 2025–2027 роках : розпорядження Кабінету Міністрів України від 17.01.2025 № 34-р. URL: <https://zakon.rada.gov.ua/laws/show/34-2025-%D1%80> (дата звернення: 28.04.2026).

Table 8

Swot Analysis of the Current State and Development Prospects of Pharmaceutical Care in Ukraine

S (Strengths)	W (Weaknesses)
Strong manufacturing capacity: 128 Ukrainian pharmaceutical companies export their products to more than 70 countries worldwide	Fragmented regulation: key functions are distributed among several institutions, creating duplication of responsibilities and diluting accountability
Availability of an effective reimbursement program, “Affordable Medicines” (program expenditures in 2025 amounted to UAH 7.17 billion)	Low share of public funding: only 14% of medicine consumption is covered by the state, while the remaining costs are borne directly by patients
Well-developed pharmacovigilance system: more than 100,000 medicine safety reports were processed in 2025	Insufficient funding of centralized procurement programs: UAH 11.8 billion covers only 59.4% of the actual demand
Market resilience even under martial law conditions (medicine consumption in monetary terms increased by 13% in 2025)	Human resource challenges: the system is not yet adequately prepared for the implementation of pharmaceutical care services in terms of workforce capacity and regulatory support
Active European integration process: establishment of the Ukrainian Pharmaceutical Agency (from 2027 onward)	Discrepancy between declared and actual prices: prices listed in the National Price Catalogue are 27% higher than the weighted average retail price
Experience in operating under crisis conditions (martial law and the COVID-19 pandemic)	Absence of a dedicated Law on Pharmacy Practice
O (Opportunities)	T (Threats)
The establishment of a single regulatory authority (the Ukrainian Pharmaceutical Agency, UPA) will increase confidence in Ukrainian medicines and facilitate access to international markets	Martial law and the associated risks affecting the production, logistics, and storage of medicines
Integration into the European pharmaceutical area: leveraging the opportunities provided by the European Critical Medicines Act	Chronic underfunding of the sector, which may jeopardize the establishment and effective operation of the new regulatory authority
Introduction of pharmaceutical care services and the Pharmacists’ Register (planned from 2027)	Further contraction of the market in terms of unit sales (–3% in 2025) amid rising medicine prices
Expansion of the Affordable Medicines Program and the identification of new sources of financing	Demographic decline and population migration, which reduce effective consumer demand and place additional pressure on the pharmaceutical market
Expansion of export potential through harmonization with European Union standards	Uncertainty regarding the future regulation of marketing services under Law No. 4239-IX
Potential introduction of pharmacist prescribing and prescription renewal services (currently under discussion)	Risks of inappropriate use of medicines amid stricter control over prescription-only medications
Technological modernization of pharmaceutical manufacturing facilities	Continued prevalence of informal relationships among market participants, which reduces the transparency and manageability of the system

The SWOT analysis of the current state and development prospects of pharmaceutical care in Ukraine was conducted based on information obtained from the previous review and additional sources, in accordance with the methodology described in Chapter 2. The analysis was based on the following sources: state statistics and regulatory reports, including data from the Ministry of Health of Ukraine and the National Health Service of Ukraine regarding the implementation of the “Affordable Medicines” program in 2024–2025; analytical reviews of the pharmaceutical market, including indicators of medicine consumption, price dynamics, and domestic production volumes (according to ProPharma and pharmaceutical market research systems); strategic and regulatory documents, including the Ukraine Recovery Plan, European integration roadmaps, and documents related to the establishment of the Ukrainian Pharmaceutical Agency (UPA); and expert assessments, including opinions and publications of industry specialists regarding workforce capacity and the readiness of pharmacy networks to implement new pharmaceutical services.

Internal factors (strengths and weaknesses) and external factors (opportunities and threats) that directly affect the quality and accessibility of medicines for the population were systematized. This approach makes it possible not only to assess the current state of the system but also to identify critical areas where innovative solutions can have the greatest impact. For pharmaceutical care in Ukraine, this method allows the identification of key development priorities and risk areas (Table 9).

Table 9

Tows Matrix (Cross-Analysis) and Development Strategies

Factors	Strengs (S)	Weaknesses (W)
Opportunities (O)	S–O Strategies (Priorities): S1 + O2 = expansion of exports to the European Union. S4 + O3 = development of an effective pharmaceutical care model under wartime conditions. S2 + O4 = expansion of the reimbursement program	W–O Strategies: W1 + O1 = establishment of the UPA to overcome regulatory fragmentation. W4 + O3 = workforce training and capacity building for the implementation of pharmaceutical care services
Threats (T)	S–T Strategies: S4 + T1 = leveraging wartime experience to enhance adaptation and resilience. S1 + T5 = diversification of export markets	W–T Strategies (Critical Risks): W1 + W2 + T2 = risk of ineffective functioning of the UPA. W2 + W5 + T4 = risk of reduced access to medicines. W4 + T1 = inability to implement pharmaceutical care services

Strategic Priorities (S–O) (leveraging strengths to capitalize on opportunities):

- Strong manufacturing capacity (S) + European integration (O) = expansion of Ukrainian pharmaceutical exports to EU countries;
- Experience in operating under crisis conditions (S) + introduction of pharmaceutical care services (O) = development of an effective pharmaceutical care model under martial law conditions;
- Affordable Medicines Program (S) + program expansion (O) = broadening the list of reimbursed medicines and covered patient categories.

Critical Risks (W–T) Requiring Immediate Action:

- Fragmented regulation (W) + chronic underfunding (T) = risk of ineffective functioning of the newly established Ukrainian Pharmaceutical Agency;
- Low level of public funding (W) + demographic crisis (T) = further reduction in public access to medicines;
- Workforce shortages (W) + wartime risks (T) = inability to implement pharmaceutical care services in a timely manner.

By applying the cross-impact analysis methodology (TOWS matrix) described in the methodological section of this study, it became possible to transform theoretical findings into concrete strategic recommendations.

Strategic Actions:

- Ensure adequate funding for the establishment and operation of the Ukrainian Pharmaceutical Agency, avoiding the risk of “chronic underfunding.”;
- Develop and adopt a Law on Pharmacy Practice to establish and regulate the fundamental principles of the pharmacy sector;
- Initiate workforce training and capacity-building activities for the implementation of pharmaceutical care services, including the establishment of a Pharmacists’ Register;
- Ensure the transparent and efficient use of funds allocated under the Affordable Medicines Program;
- Continue the harmonization of national pharmaceutical legislation with European Union standards.

Analysis of the Current State of Pharmaceutical Care Delivery Using Drones. As of 2026, various types of drones are used in Ukraine for the delivery of medicines and medical supplies. These can be broadly classified into three categories:

Light civilian delivery drones. This category includes systems such as Zipline drones, which are capable of transporting up to 2 kg of cargo over distances of up to 100 km, with delivery performed by parachute drop. They are primarily used for humanitarian missions and civilian logistics.

Heavy military and specialized medical drones. Examples include Canadian-made Draganfly drones equipped with Coldchain Delivery Systems thermal

containers, enabling the transportation of up to 16 kg of temperature-sensitive cargo (blood products, insulin, vaccines). Heavy hexacopter platforms such as Vampire (“Baba Yaga”) can carry payloads of up to 15 kg over distances of up to 10 km.

Low-cost disposable solutions. A notable example is the Australian-made SYPAQ cardboard drone, which is used for delivering medicines, food, and ammunition to frontline areas and is designed for single-use operations.

A key technological requirement for medical drones is the presence of a temperature-controlled cargo compartment. Blood products must be maintained at temperatures between +2 °C and +8 °C; insulin requires storage between +2 °C and +8 °C without freezing; and vaccines must be transported according to the specific temperature requirements of each product. Modern medical drone thermal containers are equipped with active power systems and real-time temperature monitoring sensors.

An important technological challenge is ensuring resistance to electronic warfare (EW). Under conditions of intensive electronic interference, drones may lose GPS signals or communication with the operator. One solution is the implementation of hybrid navigation systems that combine GPS, inertial sensors, and optical navigation technologies.

A summary of the characteristics of the main UAV types involved in pharmaceutical logistics in Ukraine is presented in Table 10.

Table 10

Comparative Characteristics of Delivery Drones in Ukraine

Drone type	Load capacity	Flight range	Application features
Zipline	< 2 kg	< 100 km	Parachute drop, civilian humanitarian mission
Vampire	< 15 kg	< 10 km	Heavy hexacopter for frontline (“zero line”) logistics
Draganfly Medical	< 16 kg	< 30 km	Thermal container, blood, insulin, vaccines
Heavy UAVs of the Achilles Regiment	< 15–20 kg	< 15 km	Military logistics, electronic warfare (EW) resistance

Source: compiled by the authors based on 37–38.

Despite its successes, drone logistics faces a number of challenges, perhaps the most significant of which is electronic warfare (EW). In combat zones, drones are frequently jammed or lose communication with their operators. During flight, satellite communication may disappear completely, requiring operators to wait several minutes until the connection is restored. Other challenges include:

- Weather conditions – strong winds or heavy rain may make flights impossible;
- Delivery accuracy – cargo may land in a “grey zone” or on mined territory;
- Cost – despite reductions in component costs (partly due to 3D printing technologies), a single heavy drone still costs several thousand dollars.

The Ukrainian model of drone logistics is unique on a global scale. No other country (with the exception of Israel) has tested medical drones under conditions of such intense electronic suppression. During 2025–2026, Ukraine incorporated advanced technologies from around the world, including Canadian-made Draganfly drones, the American Coldchain Delivery Systems platform, and numerous locally developed solutions and technologies that remain classified at the present stage.

For comparison:

- Rwanda (Zipline) – routine delivery of blood products and vaccines under civilian healthcare conditions;
- United States (Amazon, Walmart) – commercial delivery of prescription medicines in urban areas;
- Israel (IDF) – delivery of whole blood to the battlefield using soft-landing technology.

Ukraine combines all three approaches while adding a unique dimension: extensive operational experience under conditions of active enemy electronic warfare (EW) and artillery threats⁴⁴.

Thus, pharmaceutical care in Ukraine is undergoing a profound systemic transformation driven by the challenges of wartime conditions and the country's European integration process. Despite significant challenges – including fragmented regulation, chronic underfunding, and workforce shortages – the sector demonstrates resilience and a strong capacity for innovation, particularly in the field of drone-based medicine delivery. Future success will depend on coordinated efforts by the government, businesses, and the professional community, as well as on adequate financial and human resource support for the planned reforms. Key prerequisites for success include the establishment of the Ukrainian Pharmaceutical Agency, the implementation of pharmaceutical care services, the adoption of a Law on Pharmacy Practice, and the scaling-up of innovative logistics solutions.

⁴⁴ More DraganFly Drones Deployed to Ukraine to Deliver Medical Supplies & Conduct Thermal Search. *Aerocontact*. 2026. 30 March. URL: <https://aerocontact.com/videos/105800-5-more-draganfly-drones-deployed-to-ukraine-to-deliver-medical-supplies-and-conduct-thermal-search> (дата звернення: 28.04.2026).

CONCLUSIONS

The conducted study, devoted to the analysis of the current state and development prospects of pharmaceutical care in Ukraine under conditions of martial law and European integration processes, makes it possible to draw the following conclusions

1. The strategic analysis of healthcare system development documents in Ukraine demonstrated a significant evolution of state policy. While the Strategy 2025 was primarily focused on overcoming the consequences of the COVID-19 pandemic and transforming the healthcare network, the Strategy 2030 is a wartime policy document that addresses infrastructure destruction, workforce shortages, and the needs of veterans, internally displaced persons, and residents of de-occupied territories. At the same time, both documents preserve the fundamental principles of the 2017 healthcare reform: people-centered care, the “money follows the patient” principle, digitalization, and prevention. The new Strategy 2030 introduces areas that were previously considered supportive but have become critical under wartime conditions. These include infrastructure recovery, strengthening workforce policies, civil-military cooperation, expansion of the Affordable Medicines Program, and the implementation of health technology assessment. An important feature of Strategy 2030 is its flexibility and adaptability, as it is implemented through three-year action plans that can be promptly adjusted in response to changes in the security environment.

2. The SWOT analysis of pharmaceutical care in Ukraine identified the key factors influencing its development. The main strengths include strong manufacturing capacity (128 Ukrainian pharmaceutical companies export their products to more than 70 countries worldwide), the existence of an effective reimbursement program, Affordable Medicines (with expenditures of UAH 7.17 billion in 2025), a well-developed pharmacovigilance system, market resilience under martial law conditions, active European integration efforts, and extensive experience in operating under crisis conditions. The main weaknesses include fragmented regulation, a low level of public financing (only 14% of medicine consumption is covered by the state), insufficient funding of centralized procurement programs, workforce shortages, a discrepancy between declared and actual medicine prices, and the absence of a dedicated Law on Pharmacy Practice.

3. Among the opportunities for the development of pharmaceutical care, the most promising are the establishment of a single regulatory authority—the Ukrainian Pharmaceutical Agency (from 2027 onward), integration into the European pharmaceutical area, the introduction of pharmaceutical care services and the Pharmacists’ Register, expansion of the Affordable Medicines Program, enhancement of export potential, and technological modernization of

pharmaceutical manufacturing facilities. The principal threats remain martial law and its associated risks, chronic underfunding of the sector, contraction of the pharmaceutical market in terms of unit sales, the demographic crisis and population migration, as well as uncertainty regarding the regulation of marketing services.

4. Based on the TOWS matrix, the following strategic priorities were identified: leveraging Ukraine's strong pharmaceutical manufacturing capacity to expand exports to European Union countries; developing an effective pharmaceutical care model under martial law conditions by building on experience gained in crisis situations; and broadening the range of reimbursed medicines and covered patient groups through the expansion of the Affordable Medicines Program. The analysis also identified several critical risks requiring immediate attention: the risk of ineffective functioning of the newly established Ukrainian Pharmaceutical Agency due to fragmented regulation and chronic underfunding; further deterioration in public access to medicines resulting from low levels of public financing and the demographic crisis; and the inability to implement pharmaceutical care services in a timely manner due to workforce shortages and wartime-related risks.

5. The study of contemporary medicine delivery models under wartime conditions demonstrated that Ukraine has developed a unique three-tier drone logistics ecosystem combining humanitarian missions (the Pharmacy 9-1-1 network in partnership with Zipline and the Liki24 platform), military logistics (the 429th Separate Unmanned Systems Regiment "Achilles" and heavy Vampire hexacopters), and international technological assistance (Canadian-made Draganfly drones equipped with Coldchain Delivery Systems thermal containers). The Ukrainian experience is unique on a global scale, as no other country has tested medical drone operations under conditions of such intensive electronic warfare interference and artillery threats.

6. In the field of legal and regulatory governance of drone-based medicine delivery in Ukraine, certain progress has been achieved. In particular, the registration procedures for UAVs and flight requirements during the period of martial law have been simplified (Order of the Ministry of Defence of Ukraine No. 225 of 23 May 2024), while medical drones and their components have been temporarily exempted from import duties and value-added tax (VAT). However, several important issues remain unresolved, including the allocation of responsibility for maintaining medicine quality during transportation, the absence of dedicated legislation regulating drone-based medicine delivery as a pharmaceutical service, and the need to adapt pharmaceutical licensing requirements to accommodate the use of drone technologies.

7. Based on the findings of this study, the following strategic recommendations have been developed to improve pharmaceutical care in Ukraine: ensure adequate funding for the establishment and operation of the Ukrainian Pharmaceutical Agency, thereby avoiding the risk of chronic underfunding; develop and adopt a Law on Pharmacy Practice to regulate the fundamental principles of the sector; initiate workforce training for the implementation of pharmaceutical care services, including the establishment of a Pharmacists' Register; ensure the transparent and efficient use of resources allocated under the Affordable Medicines Program; continue the harmonization of national pharmaceutical legislation with European Union standards; scale up pilot projects involving drone-based medicine delivery to regions lacking pharmacy outlets; and establish a centralized nationwide platform for coordinating drone-based medicine delivery services.

SUMMARY

The chapter entitled “Pharmaceutical Care in Ukraine under Martial Law: Features of Development and Directions for Improvement” examines the theoretical and practical aspects of pharmaceutical care in Ukraine and identifies strategic directions for its development in the context of martial law and European integration processes. The chapter consists of three sections.

The first section, “Theoretical and Organizational Foundations of Pharmaceutical Care,” analyzes the scientific literature concerning the definitions and roles of pharmaceutical care and pharmaceutical services in emergency situations. The second section, “Methodological and Practical Aspects of the Transformation of Medicine Delivery Systems,” examines the legal and regulatory framework governing the use of drones for medicine delivery. The experience of Ukraine, which has actively integrated drone logistics into its pharmaceutical supply system since 2022, is particularly relevant and demonstrates potential for broader application in peacetime settings. The third section, “Strategic Analysis and Development Prospects of the Pharmaceutical Care System in Ukraine,” presents a comparative analysis of strategic documents related to the development of Ukraine’s healthcare system.

The chapter includes an analysis of regulatory acts and strategic documents governing the pharmaceutical component of Ukraine’s healthcare system; a SWOT analysis of the current state and development prospects of pharmaceutical care in Ukraine; an examination of contemporary medicine delivery models under wartime conditions; an assessment of the legal and regulatory aspects of drone-based medicine delivery in Ukraine; and the development of recommendations aimed at improving the pharmaceutical care system in Ukraine

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