Abstract. The main purpose of the research is to analyse the financial provision of health care in public institutions on the example of the State Emergency Service and to develop proposals for improving the medical system of the SES, taking into account the challenges of COVID-19. The paper presents the results of an empirical analysis of the amount of funding for health care facilities outside the structure of the Ministry of Health, on the example of the medical system of the State Emergency Service of the Ministry of Internal Affairs of Ukraine during 2017-2022. At a separate stage of the study, the volume and target of additional funding for health care from the Fund for Combating COVID-19 in 2020 were analysed. The analysis showed a lower level of remuneration of specialists and a worse financial situation of health care facilities subordinated to the Department of Medical and Biological Protection and Occupational Safety of the SES of Ukraine. In order to improve the health protection system of the SES, a number of proposals have been developed, namely: formation of a subdivision for analysis of problematic issues of the SES and legislative work to eliminate the identified shortcomings; digitalization and automation of reporting within the medical system of the SES of Ukraine; coverage of the activities of health care institutions of the SES in the media and social networks; advising and conducting licensing and accreditation of health care institutions of the SES; justification for increasing funding for the medical sector of the SES and increasing the salaries of medical workers; expanding the provision of paid services to the population; search for funding outside the budget of the SES within the national budget and outside the state budget from sources not prohibited by law, involvement of humanitarian and charitable organizations, patrons; maintaining and improving the level of qualification of medical staff, improving information and communication work with staff; conducting training and preparation of medical and support specialists for emergency response activities, conducting interdepartmental and local training with the involvement of specialists from local and international humanitarian organizations. The results of the study can be useful in the development of regulations and legislation in the field of medical care of the SES of Ukraine.

Keywords: COVID-19, health care financing, health care system, State Emergency Service of Ukraine, state institutions.
medical system of the State Emergency Service of the Ministry of Internal Affairs of Ukraine. However, in practice, the financial provision of health care in such public institutions is much worse than in institutions directly subordinated to the Ministry of Health. Thus, the aim of the article is to analyse the financial provision of health care in public institutions on the example of the State Emergency Service and to develop proposals for improving the medical system of the SES, taking into account the challenges of COVID-19.

**Literature Review.** The catastrophic impact of the Covid-19 pandemic on the health care system of all countries and the sustainability of health care worldwide has led to a number of publications on the need to transform medical systems (King, 2020; Del Llano et al., 2022), assess their ability to withstand the pandemic (Haldane and Morgan, 2020; Haldane et al., 2021; Khetrapal and Bhatia, 2020), discuss financial capacity and seek sufficient funding health care systems (Lupu and Tiganasu, 2022; Moynihan et al, 2021). Researchers note that the COVID-19 pandemic has made clear the interdependence between human health, funding and social ties (King, 2020). Besides, the current health crisis may present three challenges to ensuring the sustainability of health systems: a lack of health advocacy, the difficulty of setting fair prices that are acceptable to all parties, and the rigidity of drug regulation (Del Llano et al., 2022). According to Haldane et al., 2021 the elements of resilient health systems are community engagement, governance and financing, health workforce, medical products and technologies, public health functions and health service delivery. Moreover, the authors emphasize that the results of financial expenditures on health and well-being are as good as the structures that support them.

However, even in the run-up to the COVID-19 crisis, the adequacy of health care funding has been an important topic of much research (Ivankova et al, 2019). Among Ukrainian researchers, these issues were raised in the works of Danylyshyn and Bohdan, 2020; Semchuk et al., 2020; Yurinen and Petrukh, 2018, etc. The pandemic had consequences not only for the sustainability of the medical sector, but also for the national economies. Such negative manifestations as reduction in aggregate supply, the outflow of capital from emerging markets and others require adjustment of fiscal and monetary policy at the macroeconomic level (Danylyshyn and Bohdan, 2020).

While a significant number of publications are devoted to the general picture of the COVID-19 impact on medical systems and the macroeconomic situation, health care facilities that operate in slightly different conditions are often overlooked. For example, the medical system of the SES has been practically not studied in the scientific literature in terms of its financial security and comparison with health care facilities in the structure of the Ministry of Health of Ukraine.

**Methodology and research methods.** The article uses the following research methods: comparison and statistical method – in the analysis of funding for the SES and the Ministry of Internal Affairs of Ukraine, as well as the cost structure of the Fund to combat COVID-19; logical generalization, analysis, and synthesis – in the development of proposals for improving the medical system of the SES. The article analyses the dynamics of funding indicators of the Ministry of Internal Affairs and the State Emergency Service of Ukraine, as well as their ratio. The statistical basis of the study is the official data of the Ministry of Finance of Ukraine and the National Health Service of Ukraine for the period 2017-2022. Based on the Report on the allocation of budget funds provided in the state budget for 2020 as «Fund for the fight against acute respiratory disease COVID-19 caused by coronavirus SARS-CoV-2, and its consequences» in accordance with the resolutions of the Cabinet of Ministers of Ukraine, the structure of the Fund’s expenditures is studied. The main hypothesis of the investigation is that the health care system within the SES is underfunded compared to the institutions of the Ministry of Health of Ukraine and more vulnerable to COVID-19 challenges.

**Results.** The State Emergency Service (SES) of Ukraine was established through the reorganization of the Ministry of Emergencies (MOE of Ukraine) and the State Inspectorate for Technogenic Safety of Ukraine in 2012. Since April 25, 2014, the activities of the service are managed by the Cabinet of Ministers
of Ukraine (CMU) through the Ministry of Internal Affairs of Ukraine (MIA of Ukraine). According to the Civil Protection Code of Ukraine, the State Emergency Service of Ukraine is the central executive body that implements state policy in the field of civil protection, protection of the population and territories from emergencies and their prevention, emergency response, rescue, firefighting, fire and man-made safety, the activities of emergency services, prevention of non-productive injuries, as well as hydrometeorological activities.

The head of the SES of Ukraine is subordinated to the Minister of Internal Affairs of Ukraine. In other words, there is no representative of the SES in the Cabinet of Ministers, and all key issues are resolved through the Minister of Internal Affairs of Ukraine. And such issues as the financing of the SES are limited by the budget allocated within the Ministry of Internal Affairs, although reflected in the state budget of Ukraine. For 2022, the budget of the SES of Ukraine is 16.9 billion hryvnias, which is 16.9% of the funding of the Ministry of Internal Affairs of Ukraine. Analysis of the distribution of the State Budget of Ukraine to the Ministry of Internal Affairs and the SES for the last 6 years is presented in Table. 1.

Table 1. Financing of the Ministry of Internal Affairs and the State Emergency Service of Ukraine

<table>
<thead>
<tr>
<th>Indicator</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>Budget of the Ministry of Internal Affairs of Ukraine, UAH million</td>
<td>54835,3</td>
<td>68487,9</td>
<td>86150,4</td>
<td>94192,4</td>
<td>98862,8</td>
<td>99784,6</td>
</tr>
<tr>
<td>Budget of the SES of Ukraine, UAH million</td>
<td>8248,3</td>
<td>11234,0</td>
<td>13789,5</td>
<td>15454,0</td>
<td>16463,2</td>
<td>16866,8</td>
</tr>
<tr>
<td>Share of SES in the budget of the Ministry of Internal Affairs of Ukraine,%</td>
<td>15,0</td>
<td>16,4</td>
<td>16,0</td>
<td>16,4</td>
<td>16,7</td>
<td>16,9</td>
</tr>
</tbody>
</table>

Sources: developed by the authors on the basis of (Ministry of Finance of Ukraine, 2022).

The functioning of medical systems in any country is not without its shortcomings. The COVID-19 crisis has only highlighted these shortcomings and demonstrated the vulnerability of medical systems, even in developed countries. The pandemic has been a difficult test for Ukraine's medical system. From a financial point of view, it required the formation of a separate Covid-19 fund to finance targeted expenditures in connection with the dissemination of the pandemic. Part of this fund was also used to finance the needs of the Ministry of Internal Affairs and in particular the SES (Table 2).

Table 2. Allocation of budget funds of the Fund to combat COVID-19, in accordance with the adopted resolutions of the Cabinet of Ministers of Ukraine, in 2020

<table>
<thead>
<tr>
<th>Chief administrator of funds</th>
<th>Volume of allocated funds from the Fund in accordance with the adopted resolutions of the Cabinet of Ministers, UAH thousand</th>
<th>Share of allocated funds from the Fund in accordance with the adopted resolutions of the Cabinet of Ministers, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ministry of Social Policy</td>
<td>6 759 786,0</td>
<td>9,4</td>
</tr>
<tr>
<td>Ministry of Economic Development, Trade and Agriculture</td>
<td>10 681 590,3</td>
<td>14,8</td>
</tr>
<tr>
<td>Ministry of Health</td>
<td>20 468 596,6</td>
<td>28,4</td>
</tr>
<tr>
<td>Ministry of Community and Territorial Development</td>
<td>1 680 000,0</td>
<td>2,3</td>
</tr>
<tr>
<td>Public Administration</td>
<td>51 215,2</td>
<td>0,1</td>
</tr>
<tr>
<td>Department of Justice</td>
<td>126 680,1</td>
<td>0,2</td>
</tr>
<tr>
<td>Ministry of Internal Affairs</td>
<td>4 708 474,3</td>
<td>6,5</td>
</tr>
<tr>
<td>State Agency of Motor Roads of Ukraine</td>
<td>26 182 997,4</td>
<td>36,4</td>
</tr>
</tbody>
</table>
Continued Table 2

| Ministry of Culture and Information Policy | 777 778,0 | 1,1 |
| Ministry of Education and Science         | 52 450,0  | 0,1 |
| Ministry of Youth and Sports              | 475 799,9 | 0,7 |
| State Property Fund                       | 48 400,0  | 0,1 |
| **Total**                                 | **72 013 767,8** | **100,0** |

Sources: developed by the authors on the basis of (Ministry of Finance of Ukraine, 2022).

However, most of the funds of the Anti-Covid-19 Fund, which were sent to the Ministry of Internal Affairs, were spent on additional payments to police officers who provide livelihoods for the period of quarantine - about 90% of funds (4,228.9 million UAH). Less than 5% of the allocated funds were spent on the construction of a mobile hospital of the SES and additional payments to medical and other employees of health care institutions of the Ministry of Internal Affairs of Ukraine, who are directly involved in the elimination of acute respiratory disease COVID-19, namely UAH 28.3 million and UAH 193.3 million, respectively.

According to its structure, the medical system of the SES of Ukraine is represented by the Department of Medical and Biological Protection and Labor Protection of the SES of Ukraine, heads of sectors of the main departments of the SES in regions, medical institutions of central subdivisions and educational institutions (health centers and sanitary units) as well as health care points and medical units of district subdivisions, medical staff of rescue units (Figure 1). In case of complex emergencies, such units as mobile medical centers (full-time and part-time) and hospitals can be deployed. An example of such an event is the deployment of the Mobile Medical Hospital of the SES of Ukraine on October 25, 2021 in the city of Kakhovka, Kherson region during the COVID-19 outbreak.

It is the medical system of the SES that provides first aid in the event of significant sanitary losses among both rescuers and the population of the affected areas.

![Figure 1. The structure of the medical system of the SES of Ukraine](image)

Sources: developed by the authors.
SES health facilities, despite the «security» of funding, are often underfunded and out of planning and regularity. The Department of Medical and Biological Protection and Occupational Health of the SES has virtually no leverage over the financing of health care facilities under its authority.

The total amount of funding for health care facilities of the SES under protected budget items is only UAH 8,633,200 (according to the plan for 2022), or 0.05% of the funding of the SES of Ukraine. Protected budget items are medicines and medical equipment, sanatorium vouchers, rehabilitation, professional development, verification of medical equipment, annual medical examinations of members of the SES and senior staff, and workers with harmful and dangerous working conditions, payment for medical services in medical institutions outside the SES system. This list does not include salaries of specialists and utilities in those institutions that have their own legal status.

At the beginning of 2022, 74,000 people worked in the system of the State Emergency Service of Ukraine, so UAH 116.6 per year is spent on financing one person. According to the National Health Service, UAH 157 billion was allocated for free medical care for 41.2 million people living in Ukraine, which is UAH 3809.90 per person per year. The capitation rate of a general practitioner - family medicine per patient for 2022 is UAH 786.65. SES personnel often do not have the capacity and time to apply to medical institutions of the Ministry of Health of Ukraine. Thus, it is often the case that rescuers and civil protection workers turn to the SES health facilities, and it turns out that the SES spends 6.7 times less on its own staff than a family doctor receives per person. Accordingly, the quality of personnel services also suffers, despite the high class of specialists working in medical institutions of the SES.

In order to improve the health protection system of the SES, the following proposals have been developed.

1) Allocation of personnel within the Department of Medical and Biological Protection of the SES (due to increase in the number or redistribution) to analyse problematic issues, «white spots» and shortcomings of the legal framework of the SES, MIA, MOH and other bodies regarding the activities of medical staff, health facilities, Department of Medical and Biological Protection and all medical direction of the SES and the creation of ways to correct them.

The presence of such a department with a small number of staff of 4-5 people will create opportunities for a systematic approach to the analysis of legislation, collecting analytical information on this topic, identifying problems in it, legislative activities to correct these shortcomings both within the SES and at higher levels, and their support until the moment of approval and entry into force, with analysis of the consequences. Such a step will not incur particularly large financial costs, as it requires only the redistribution of positions within the Department of Medical and Biological Protection, or the creation and granting of such rights to this department on the basis of the Institute of Public Administration and Civil Protection Research.

2) Legislative work of the Department of Medical and Biological Protection to eliminate the above shortcomings in the legislation.

In the case of the start of the department, which will ensure this activity from the moment of detection of deficiencies, inaccuracies, errors or white spots in legislation to the moment of their elimination and further analysis, will have a much better effect than when each legislative shortcoming will be dealt with by specialists with a huge number of more urgent tasks.

3) Digitization and automation of reporting within the medical system of the SES of Ukraine.

The trend towards digitalization and significant acceleration of data exchange leads to a massive increase in the burden not only on administrative positions but also on medical positions (increased reporting, reduced time for processing and submitting information). Thus, active digitalization and automation of reporting processes will free medical staff for continuous professional development, treatment and prevention activities, and administrative staff – to improve the organization of work and capacity building of health care facilities.
4) Constant active work on covering the activities of both individual health care institutions and the Department of Medical and Biological Protection of SES of Ukraine on all available platforms (social networks, press, public events).

The modern world requires not only activity, but also its reflection in the media space. Moreover, this activity should be really interesting, not trivial, and evoking empathy in the viewer, that is, a formalized approach to such activities is not suitable and harmful. Thus, interesting coverage of the work of the Department of Medical and Biological Protection and each health care institution of the SES with maximum coverage of the population due to multiplatform coverage, creates conditions (high level of empathy and trust among the masses) in which the promotion of medical interests is simplified, not only even within the Ministry of Internal Affairs. Active work can help level the idea of disbanding the Department of Medical and Biological Protection or reducing and eliminating some SES health facilities after the end of the COVID-19 pandemic, or to «optimize service».

5) Active and constant consulting of health care institutions of the SES by the Department of Medical and Biological Protection to resolve medical and legal issues, including issues related to the extension of licenses, accreditation, and the provision of paid medical services, the conclusion of agreements with the National Health Service.

Awareness of the staff and management of health care institutions on medical, legal and other issues, plays an important role in the effectiveness of field work. With the availability of experienced consultants and the possibility of ongoing consultation online via the Internet (workshops, meetings, correspondence through online groups on social networks) and more classic telephone communication provides an opportunity to speed up the resolution of legally complex or unknown to staff specific issues.

6) Development and implementation of a methodology and measures for the provision of paid services to the population by health care institutions of the SES, and the signing of a financing agreement between health care institutions of the SES and the National Health Service of Ukraine.

An acute and problematic issue in the field of SES medical care is the possibility of providing paid services and signing funding agreements with the National Health Service because, despite the Ministry of Health licensing, the only health care institution in the SES of Ukraine that can provide paid services officially and receive funds from the National Health Service so far is only the Medical Center of the SES of Ukraine, located in Kyiv. By developing a centralized approach to the methodology of action for other medical institutions of the SES, in general, it will be possible to significantly solve the financial problems of these medical institutions and reduce the burden of by the Department of Medical and Biological Protection of SES to seek additional funding.

7) Obtaining accreditation of health care institutions and expanding licenses for medical practice from the Ministry of Health.

The extension of licenses allows medical institutions to receive additional opportunities to examine not only their own staff, but also the opportunity to serve the population on a paid basis and obtain additional funding from the National Health Service in the presence of a contract. Accreditation of a health care institution is an official recognition of its status as having all the conditions for a quality, timely and reasonable level of medical care and compliance with the relevant standards of health care, compliance with staff qualification requirements. This procedure is voluntary for all medical institutions, regardless of ownership. After accreditation, health care facilities actually receive a quality mark in the provision of health care that can be used to attract more people to health care, which will increase financial flow for the balance and development of health care facilities from both the population and the National Health Service (in the case of availability of the contract) and creates attractiveness for raising funds from humanitarian and charitable organizations.

8) Maintaining and improving the level of qualification of medical staff of health care institutions by assisting in the organization of continuous professional development.
Due to the growing workload on SES health professionals due to both COVID-19 and other factors, an important component of continuing professional development assistance could be centralized work to provide courses for physicians, as agreed with certain training providers, medical institutions of the Ministry of Health and the Ministry of Education and Science of Ukraine.

9) Improving the information of health care staff on medical, legal and administrative issues through conferences, workshops and consultations (both online and offline).

Holding meetings, conferences and online consultations significantly improves the awareness of staff in general in the medical system, and clarifies specific medical, legal and other work issues. This in turn improves the work of institutions as a whole, reduces the number of problematic issues, reduces the risk of unqualified actions in matters relating to paperwork and disputes concerning patients. It also provides an opportunity for the Department of Medical and Biological Protection to receive direct feedback from health care facilities, to identify legal conflicts and errors in the health care system of the SES of Ukraine.

The main criterion for such online and offline meetings is that they do not take place too often (not more than once a month) and do not take more than two hours, so that it will not disrupt the work of medical institutions.

10) Justification for increasing funding for the medical sector of the SES, presenting this justification to the leadership of the SES, MIA and CMU.

Funding for the medical system of the SES is only UAH 8,633,200, which is 0.05% of the total funding of the SES of Ukraine. This amount does not apply to the salaries of specialists involved in it. Theoretical calculations of the necessary funding for the medical field in such specific services are either absent or not widely publicized, and therefore they must be conducted directly in the SES of Ukraine. In researching the real needs of this area, justifying them to the governing bodies, and obtaining funding, in the future there are prerequisites for providing a relatively autonomous, prepared, provided with specialists and equipment medical system that can operate under any adverse conditions. Creating a clear rationale and obtaining research-confirmed estimates of these much-needed costs must be proven both at the level of the SES and the Ministry of Internal Affairs and at the level of the Cabinet of Ministers and possibly even the presidential branch.

11) Justification for raising the salaries of medical workers, presentation of justifications for the leadership of the SES of Ukraine.

According to statistics for Ukraine in mid-2021, the average salary of a doctor was 8477 hryvnias, the salary of a general practitioner of family medicine was 11591 hryvnias, the average salary of a nurse, paradoxically, is 8567 hryvnias. The salary of a doctor in the system of SES is 14,000 hryvnias on average, and nurses 11,500 hryvnias, which is better, if you do not take into account the shadow economic component, because in the departmental structure shadow incomes of doctors are casuistry, because of high risk and low profit. Thus, the justification for increasing benefits is vital for the functioning of the SES medical system, and the salaries of medical staff should be higher than those of health workers and physicians, as there will be a gradual outflow of medical staff to civilian and foreign medicine.

12) Finding funding for the SES sector outside the budget of the SES / MIA within the national budget, by finding and including in targeted programs of other ministries and agencies, such as the Ministry of Economic Development, the Ministry of Health, the Ministry of Education and Science and others.

The development and search for such programs, reporting them to the SES management, is an important part of reducing the cost of the service, and thus redistributing funding to urgent funding issues, including the medical field of the SES.

13) Search for funding outside the state budget, from sources not prohibited by law. Involvement of humanitarian and charitable organizations (International Society of the Red Cross, Sovereign Order of Malta, others), patrons at both local and interregional levels.

Working with international and local charities, humanitarian organizations, foundations and individual
patrons is also a significant and important way to find resources, both financial and material. Such sponsorship greatly expands the capabilities of both the SES as a whole and its health services. The search for such humanitarian philanthropists and investors will be able to provide significant development in the provision of medical care on the basis of the SES of Ukraine.

14) Strengthening the work on training of medical and auxiliary specialists in emergency situations. Conducting interdepartmental and local trainings with the participation of specialists from local and international humanitarian organizations (International Red Cross Society, Sovereign Order of Malta, The Halo-trust, Doctors Without Borders, DDG and others).

Training at any level, such as local, interagency, interregional and international, enables all structures, departments and services to raise their professional level, identify and address shortcomings, share experiences, identify, justify and close new equipment needs. An example of such exercises is the training of the SES of Ukraine and the International Red Cross, which took place on May 14-15, 2016 (Ministry of Internal Affairs,2016). Such trainings are fundamental, including for the medical sphere of the SES, so the work on their planning, implementation and analysis of results is an important and necessary part of the work of all structures of the SES.

Conclusions. At the current stage, Ukraine's medical system is in the process of reform. Insurance medicine is not yet sufficiently developed, while the financing of the health care system from the state budget is limited by low revenues and significant budget deficits. The COVID-9 pandemic has exacerbated existing problems and increased the importance of financing the health care system. The analysis showed that, in contrast to health care facilities directly under the Ministry of Health of Ukraine, health care facilities in other central executive bodies are in an even worse financial position. Their funding from additional sources, such as the Fund to combat COVID-19, was relatively small. The proposed ways to improve the work of the SES and in particular health care institutions in its structure, aimed at improving their efficiency and increasing the financial support for medical institutions. The suggested proposals can be useful in the development of regulations and legislation in the field of medical care of the SES of Ukraine.

Author Contributions: conceptualization, O. P. and V. K.; methodology, O. P.; software, V. K.; validation, O. P. and V. K.; formal analysis, V. K.; investigation, V. K.; resources, O. P.; data curation, V. K.; writing-original draft preparation, V. K.; writing-review and editing, O. P.; visualization, O. P.; supervision, O. P.; project administration, O. P.; funding acquisition, O. P.

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References


Забезпечення охорони здоров'я в державних установах в умовах COVID-19

Основною метою дослідження є аналіз фінансового забезпечення охорони здоров'я в державних інститутів на прикладі Державної служби надзвичайних ситуацій та розробка пропозицій щодо удосконалення медичної системи ДСНС з урахуванням впливу COVID-19. У статті представлено результати вмірюваного аналізу обсягів фінансування закладів охорони здоров'я, що знаходяться поза структурою Міністерства охорони здоров'я, на прикладі медичної системи Державної служби з надзвичайних ситуацій МВС України протягом 2017-2022 років. Окремим етапом дослідження пронаналізовано обсяги та цільове спрямування додаткового фінансування охорони здоров'я за рахунок коштів Фонду боротьби із COVID-19 у 2020 році. Проведений аналіз засвідчив низький рівень оплати праці спеціалістів та гірше фінансове становище закладів охорони здоров'я, підпорядкованих Управлінню медико-біологічного захисту та охорони праці ДСНС України. З метою удосконалення системи медичної захисту ДСНС розроблено ряд пропозицій, основними серед яких є: виокремлення підрозділу для аналізу проблемних питань ДСНС та законодавча робота щодо усунення виявлених недоліків; цифровізація та автоматизація звітності в рамках медичної системи ДСНС України; висвітлення діяльності закладів охорони здоров'я ДСНС у ЗМІ та соцмережах; консультування та проведення навчань та підготовки медичних та допоміжних спеціалістів для діяльності в умовах надзвичайних ситуацій, проведення міжвідомчих та внутрівідомчих, локальних навчань з участиєм спеціалістів з місцевих та міжнародних гуманітарних організацій. Результати проведеного дослідження можуть бути корисними при розробці адміністративних та законодавчих актів у сфері медичного забезпечення ДСНС України.

Ключові слова: державні інституції, Державна служба України з надзвичайних ситуацій, система охорони здоров'я, фінансування охорони здоров'я, COVID-19.