

Mechanisms for Managing the Health Care System within the Conditions of the Coronavirus Pandemic (COVID-19)

Chorny Oleg, Iskiv Mariana, Zagurska-Antoniuk Viktoriia, Borysiuk Iryna, Volkova Yuliya, Terentieva Nataliia

PhD, Chef of the Department of Health of the Chernivtsi Regional State Administration, Chernivtsi, Ukraine, chornyioleg86@gmail.com

Master of Medicine, Young Scientists Researcher, Assistant Professor, Pediatrician, SI "Institute of hereditary pathology of national academy of medical sciences of Ukraine", Danylo Halytsky Lviv national medical university, Medicover Ukraine, Lviv, Ukraine, iskivmarjana20@gmail.com

PhD in Political Sciences, Associate Professor, Zhytomyr Polytechnic State University, Faculty of Public Administration and Law, Department of Economic Security, Public Administration and Management, Zhytomyr, Ukraine, kgn.zvf@gmail.com

Doctor of Pharmacy, Head of department Odessa National Medical University, Faculty of Pharmacy, Department of Drug Technology, Odessa, Ukraine

Doctor of medical sciences, professor, Department chief in Kharkiv National Medical University, the VII Faculty for International Students of KhNMU Education and Research Institute for Foreign Nationals, Department of Critical Care Medicine, Anesthesiology and Intensive Care, Kharkiv, Ukraine

Doctor of Pedagogic sciences, Professor, T. H. Shevchenko National University "Chernihiv Colehium", Faculty of Physical Education, Department of Pedagogics, Psychology and Methodic of Physical Education, Chernihiv, Ukraine, nataterentyeva@gmail.com

ABSTRACT

The purpose of the academic paper is to study the most effective mechanisms for managing the health care system in the crisis caused by the spread of COVID-19.

Methodology. The qualitative research methods (content analysis of strategic leadership) and a strategic approach to the formation of a mechanism for managing the health care system within the conditions of the coronavirus pandemic have been used in the academic paper. The study is based on the concept of strategic management within the conditions of crisis based on data from the World Health Organization, which contains information on the response of health care systems to the coronavirus pandemic, management policy in terms of basic governance criteria. In order to analyze and assess the differences, advantages and disadvantages of governance, four countries with different levels of social-economic development and geographical location have been selected, namely: Germany, Georgia, Italy, and Ukraine.

The results show the dependence of the effectiveness of health care management mechanisms within the conditions of the crisis on the level of centralization, social-economic development of the country. Advanced countries rely on their own governance apparatus with a greater level of regional independence in decision-making, in particular on legal regulation. Countries with economies in transition are dependent on the governance and coordination recommendations of international organizations due to the weakness of legal regulation, institutions, research organizations and the level of development of civil society institutions. The level of centralization of management mechanisms determines the level of effectiveness of legal regulation and institutional support. In terms of advanced countries, this causes some shortcomings in the management of the health care system, however in countries with economies in transition it leads to inefficient management due to excessive centralization.

The practical significance lies in the possibility of transition economies to use the experience of advanced countries in the management of the health care system.

Keywords: mechanism for managing the health care system, coronavirus pandemic, infection control, centralized health care management.

Correspondence:

Chorny Oleg

PhD, Chef of the Department of Health of the Chernivtsi Regional State Administration, Chernivtsi, Ukraine,
Email: chornyioleg86@gmail.com

INTRODUCTION

The spread of SARS-CoV-2 (COVID-19, coronavirus) has caused a global crisis in the management of health care facilities in various management subsystems, namely: supply of equipment, materials, medicines; provision of human resources; management of medical staff training processes; strategic governance, etc. The pandemic has caused the crisis in all types of healthcare resources (Cohen *et al.*, 2020) and overcrowding of health care facilities (Liu *et al.*, 2020). As a result, the health care system around the world has not been able to overcome the negative effects of the virus on human health and life (Small *et al.*, 2017; Saloner *et al.* 2018); its management has turned out to be ineffective, and, therefore, requires reorganization (Economou *et al.* 2015) and elimination of resource shortages (Solomon, Wynia & Gostin, 2020). The urgent need has arisen to develop and integrate effective health care management mechanisms in the context of the pandemic. In times of crisis, management should include

strategic training, adaptation, replacement, redistribution of all types of resources (Hick *et al.*, 2020), development and implementation of policies, management procedures (Spinelli & Pellino, 2020).

Taking into consideration the trends identified above, the purpose of the academic paper is to examine the most effective mechanisms for managing the health care system in the context of the crisis caused by the spread of COVID-19.

LITERATURE REVIEW

The concept of health care management mechanism remains poorly investigated in the scientific literature. Meanwhile, recent publications include an assessment of management strategies (Hick *et al.*, 2020), resource allocation plans (Economou *et al.* 2015), health crisis management policies, and innovative methods of coping with the crisis (Correia, Dussault & Pontes, 2015), tools for managing medical services in the context of the crisis

(Crisis Resolution Teams (CRTs), regional management models and methods, quality of training, training of medical personnel (Wheeler *et al.*, 2015). In general, it is possible to state the focus of research on the study of individual elements of the management mechanism: goals and objectives, subjects and objects, methods, tools, approaches, consequences. This leads to the fragmentation and limitedness of scientific publications, the lack of an integrated and holistic approach to considering the issues of health care system management. "The COVID-19 pandemic has forced health systems to rapidly change priorities in medical care" (Fasano *et al.*, 2020). Telemedicine prior the pandemic was underdeveloped, even in the United States, China and EU countries. The spread of the coronavirus has forced medical institutions to introduce innovative methods of working medical staff with patients through various information and communication tools (Fasano *et al.*, 2020). Thus, the crisis causes health care facilities to optimize the management mechanism and develop subsystems within the conditions of high pressure. The mechanism of management of medical institutions should take into consideration the following variables: "clinical considerations, regional health conditions, government and hospital directives, resource availability, and the welfare of health care providers" (Cohen *et al.*, 2020). The crisis situation leads to the emergence of new working conditions, increasing stress on staff (Wu, Connors & Everly Jr, 2020). Consequently, management methods should include solving the problem of emotional burnout and social psychological support. "Health-care providers were challenged by working in a totally new context, exhaustion due to heavy workloads and protective gear, the fear of becoming infected and infecting others, feeling powerless to handle patients' conditions, and managing relationships in this stressful situation" (Liu *et al.*, 2020). Therefore, the management mechanism should be characterized by stability, adaptability, flexibility in overcoming the negative consequences of the crisis. The basic principles of medical institutions' activities in the context of the crisis are as follows: 1) sustainability-oriented leadership according to a realistic action plan and open communication with medical staff; 2) structured communication to increase the chances of overcoming the crisis in accordance with the strategic action plan; 3) continuous support of medical staff within the medical institution on possible problems, threats, risks, resources (Wu, Connors & Everly Jr, 2020).

DATA AND METHODS

Data approach

The qualitative research methods and a strategic approach to the formation of a mechanism for managing the health care system within the conditions of the coronavirus pandemic have been used in the academic paper. The study is based on the concept of strategic management in the context of the crisis, proposed in the investigations of Economou *et al.*, (2015) and Hick *et al.*, (2020). These publications have demonstrated the importance of strategy in the process of creating an effective mechanism and plan to counter the spread of the negative effects of the crisis.

Data and methods

The study has been conducted on the basis of data from the World Health Organization, which contains information on the response of health care systems to the coronavirus

pandemic, management policy in terms of basic governance criteria. The Health Systems and Policy Monitor (HSRM) contains information on strategic management in European countries, which served as a basis for qualitative comparison and content analysis of management. In order to analyze and assess the differences, advantages and disadvantages of management, four countries with different levels of social-economic development and geographical location have been selected, namely: Germany, Georgia, Italy, and Ukraine. The specified countries have been selected on the basis of the criteria of social-economic development, geographical remoteness and efficiency of public management.

Management systems and mechanisms will be compared according to the criteria outlined during the analysis:

1. Legal regulation.
2. Institutional support.
3. Strategic planning.
4. Participation of the private sector.
5. Participation of population.
6. Participation of scientific organizations.

Research limitation

Forasmuch as the study is based on a qualitative methodology, it is impossible to make a quantitative comparison of the effectiveness of health care management mechanisms within the conditions of a coronary virus pandemic. An additional limitation is the incompatibility of information on management systems in different countries. The information concerning management is based on country-specific governance measures, actions and policies; consequently, the data vary significantly. This made it impossible to conduct a full content analysis and formulate clear criteria for comparison.

RESULTS

Strategic management of the health care system through the dissemination of COVID-19 includes action plans and management in order to ensure the stability of the system. Management involves mechanisms for appropriate feedback activities and responses to emergencies (spread of infection, regulation of provision of healthcare services, training of healthcare personnel and support of human resources). In various countries, governance mechanisms are characterized by common characteristics and differences. In Germany, legal regulation covers both the strategic level of management and the local one. The Influenza Pandemic Preparedness Plan (2001) is updated on a regular basis and provides regional preparedness at the level of local communities. Federal lands support regional actions at the regional level in response to the spread of the pandemic in accordance with local preparedness Plans. Institutional support is based on cooperation between state government bodies and local authorities. The pandemic has necessitated the reorganization of government. Therefore, the Cabinet on issues related to coronavirus has been formed; it holds a weekly meeting and decides on projects to counter the negative consequences of the spread of the virus. All public administration bodies (for example, the Ministry of Agriculture) are involved in the process.

The Robert Koch Institute cooperates with the relevant competent federal authorities, authorized land bodies, national reference centers, other scientific institutions and professional societies, as well as with foreign and

international organizations and authorities and performs coordinating functions within the European Network of Epidemiological Surveillance and Control of Infectious Diseases. For instance, the Robert Koch Institute has updated the Coronavirus Pandemic Preparedness Plan on the basis of cooperation with the Ministry of Health and Care Services, the Ministry of Internal Affairs, Construction and Regional Development. The preparedness plan included the organization of an anti-crisis committee. For comparison, in Georgia, the management of the health care system within the conditions of coronavirus spreading is carried out on the basis of immediate response and the adoption of legal acts that provide measures and possible risks of infection. Whereas in Germany, the legal framework was in fact the basis for updating the Preparedness Plan. Thus, the legal framework in Germany is adaptive and flexible, while in Georgia the governance is situational.

In Georgia, in accordance with the Plan of Action in Emergency Situations Caused by COVID-19, a number of measures have been approved in cases of illness, namely: identification, confirmation and assessment of risks; laboratory testing; notification of relevant bodies; epidemiological surveillance and response measures; informing the public about the risks, eliminating or mitigating the consequences and possible scenarios. Georgia's strategic planning envisages measures:

- 1) to be prepared for possible threats;
- 2) prevention measures, reduction of morbidity;
- 3) support measures to comply with international rules on stopping, limiting and informing about the spread of infection;
- 4) mobilization of the health care system for the treatment of patients;
- 5) continuous provision of information to citizens and interaction with the media.

Compared to Germany, legal regulation in Georgia is carried out in accordance with the international standard, which is connected with the lack of national plans for the country's preparedness for such infections. Institutional

support in Georgia is entrusted to the Ministry of Health and Care Services as a centralized governing body, Emergency Situations Coordination and Urgent Assistance Center. These institutions are responsible for action plans, countermeasures in line with international standards, public information and coordination, testing and international accountability. Action plans are developed by sector. In Georgia, the potential of medical institutions has been assessed and strategic reserves have been identified, namely: the capacity of infectious disease clinics; beds' fund of emergency medical care for adults and children, availability of artificial lung ventilation apparatuses, insulated wards, PPE, medical masks, medical gloves, disinfectants for hands and surfaces, etc. The Incident Management Team has been established within the NCDC. In order to increase preparedness and identify gaps, NCDC has conducted simulation exercises with the involvement of interested parties from Tbilisi and Batumi.

Italy's health care system is shifting the focus of the management model in favor of medical facilities in the context of the spread of infections. Legal regulation is primarily focused on forecasting and planning to combat the spread of infection. Management of the situation involves both national authorities and experts and research institutions. In Italy, the governance mechanism involves local institutions, non-profit organizations and public associations to form projects on health care services, in particular at home. The Ministry of Health and Care Services oversees the coordination of health care programs implemented in the regions and measures, aimed at protecting the general population. At the same time, the Ministry of Health and Care Services smooths out the negative consequences for the national economy and guarantees compliance with ethical and legal aspects. The Ministry of Health and Care Services, together with the Ministry of Foreign Affairs and relevant international organizations, should promote international cooperation and humanitarian assistance (see table 1).

Table 1. Criteria for strategic management of the health care system in the context of European countries: legal, institutional and strategic support

Country	Legal regulation	Institutional support	Strategic planning
Germany	Prevention with adoption of "Law on Protection against Infections", "Law on the Protection of the Population in the Situation of an Epidemic of National Importance". Influenza Pandemic Preparedness Plan (2001)	Ministry of Health and Care Services as a centralized governing body. Federal lands as local authorities (provision of drugs, diagnostics, prevention and control of functions in accordance with regional preparedness plans). Reorganization of the executive body of the Federal Cabinet of Ministers and the Chancellor into the Cabinet on Coronavirus Issues.	Influenza Pandemic Preparedness Plan. Strategic planning at the national and regional levels.
Georgia	Multisectoral response in line with WHO International Health Regulations and Recommendations and European Center for Disease Prevention and Control. Resolution of the Board as of January 28, 2020 "On approval of measures to prevent the possible spread of a	Ministry of Health and Care Services as a centralized governing body. Emergency Situations Coordination and Urgent Assistance Center.	Strategic planning in accordance with international standards, taking into account sectoral characteristics at the national level. Management is centralized.

	new coronavirus in Georgia". Plan of actions in emergency situations caused by COVID-19.		
Italy	<p>Strategy for the resumption of production activities.</p> <p>Decree on the resumption as of March 19, 2020 on the coordination of activities of the Ministry of Health and Care Services for the integration of medical and social services.</p> <p>Strategies to minimize the spread of infection among family members, protection of social and health workers and the most vulnerable segments of the population.</p> <p>Recommendations for optimizing the use of diagnostic tools.</p> <p>Workplace safety protocols.</p> <p>National Pandemic Influenza Preparedness and Response Plan (2006)</p> <p>WHO recommendations, national directives and action plans.</p>	<p>Ministry of Health and Care Services.</p> <p>The National Health Observatory of Italy predicts the spread of the pandemic by region according to the Department of Civil Defense.</p> <p>Structures for improving the health of the most vulnerable groups, their rehabilitation and medical examination.</p> <p>The National Health Care Fund as a subject of the organization of general practitioners' training.</p>	<p>There is no single approach to management.</p> <p>The management strategy also includes the renewal of production activities and the work of various sectors of the economy.</p>
Ukraine	<p>Economic stimulus program to overcome the effects of the pandemic for implementing initiatives in the areas of financing, exit, deregulation, development and modernization.</p> <p>Amendments to the law regarding the treatment of patients with coronavirus.</p> <p>Increasing the level of administrative responsibility of owners of organizations and public institutions.</p> <p>Law on Penalties for Individuals and Legal Entities.</p> <p>Law on Amendments to Certain Legislation Aimed at Preventing the Spread of Coronavirus Disease.</p>	<p>WHO Office and Ministry of Health and Care Services (monitoring, coordination of central and regional authorities).</p> <p>Expanding the network of medical institutions working with infectious diseases.</p> <p>Establishment of an operational anti-crisis headquarters for technical recommendations.</p> <p>Intersectoral working group on coordination and response, full analysis of the situation.</p>	<p>There is no strategic plan prior the spread of the virus. Development of the National Plan to Prevent the Spread of COVID-19 in Ukraine</p>

Source: it has been composed by the author

The management mechanism of the health care system in Italy, compared to Germany, is more advanced, because it takes into account regional specifics in more detail, and includes the development of 92 prognostic models designed by the Scientific and Technical Committee with the involvement of experts, civil society institutions. Due to the greater level of criticism and threats, the

management mechanism included the development and emergence of a significant number of laws, decrees, regulations, administrative acts. On the one hand, the development of legal regulation has reduced the risks of negative consequences of the spread of the virus, on the other hand, it has caused controversy (see table 2).

Table 2. Criteria for strategic management of the health care system by European countries: participation of the private sector, research organizations and the public

Country	Participation of the private sector	Participation of population	Participation of scientific organizations
Germany	The private sector provides protection for employees in accordance with the legislation.	There are no examples of public participation in governance. Passive participation is observed through compliance with security measures.	Consultations of state authorities of the Robert Koch Institute on the spread of infections and the development of response measures.
Georgia	There are no examples of public participation in governance	There are no examples of public participation in governance. Passive participation is observed through compliance with security measures.	NA

Italy	Application of screening to monitor the situation and high-tech technologies to track cases. Development of digital healthcare and telemedicine services. Ensuring compliance with safety protocols in the workplaces.	Participation of experts in the discussion of strategies to overcome the negative consequences of the spread of the virus. Active participation of local institutions, non-profit organizations and public associations.	Consultations and discussions with the Scientific and Technical Committee for crisis management planning.
Ukraine	Active participation of the private sector through the imposition of fines by the state, charity and funding of medical institutions.	Active participation of citizens due to the need for self-sufficiency in means of protection, charity.	NA

Source: it has been composed by the author.

Only at the first stage of the exit from quarantine, the central authorities have developed about 200 legislative documents, while at the regional level 593 regulatory acts have been drawn up. An analysis of the legal framework bears evidence to the fact that this has improved national health policy. However, in some cases, the documents did not fully comply with the decisions at the national level, which led to legal conflicts in the fight against the spread of the virus. Thus, the experience of Germany, Georgia and Italy shows that the mechanisms of health care management differ in different levels of centralization. Whilst Germany is characterized by an average level of centralization, in Italy the intensification of legal regulation at the local level has led to the formation of more decentralized governance, the involvement of civil society institutions in the governance process. Despite the growing role of the central government, the regions still make their own decisions on the organization and provision of health care services, in particular on the feasibility of testing the entire local population on COVID-19. Regions are trying to follow different pandemic response strategies. However, in Georgia, the management mechanism is almost completely centralized due to insufficient development of the legal framework for infection control and integration of international standards.

It should be noted that the government of Italy, with such a decentralized health care system, was able to quickly adjust the system's management mechanism to counter the national threat posed by the COVID-19 outbreak. The epidemic, unprecedented in its scale, actually has become the reason for the legitimate state intervention in the situation, the involvement of the Civil Defense Department in helping the regions with the procurement of medicines, medical products, increasing the number of human resources and strengthening the infrastructure. Under normal situation, regional and local authorities are endowed with a wide range of powers to maneuver in decision-making, however, they cannot fail to submit to the Central Government, especially through national legislation, except in cases of the introduction of more stringent restrictions. Currently, it seems that the regional authorities and the central government are holding preliminary consultations and exchanging information prior the country's government or the Ministry of Health and Care Services approves new decrees.

Legal regulation and institutional support were not sufficient due to the lack of strategic regulations to respond to the spread of the virus. At the beginning of 2020, an operational anti-crisis headquarter was

established in order to formulate technical recommendations to the Ministry of Health and Care Services, and a "National Plan to Prevent the Spread of COVID-19 in Ukraine" (hereinafter referred to as the Plan) was approved to organize the work of this headquarter. An inter-sectoral working group headed by the Ministry of Health and Care Services has been created to coordinate and analyze the situation, which includes the Ministry of Finance, the Ministry of Internal Affairs, the Ministry of Digital Transformation, the State Border Guard Service, the President's Office, the National Security and Defense Council, the State Penitentiary Service. The action plan provides the involvement of various government agencies and regional authorities to combat the spread of infection, the creation of regional response plans, the definition of a network of medical institutions for the treatment of patients, recommendations for supervision, treatment, etc. Legal regulation of Ukraine also provides the use of unregistered drugs for treatment, the application of other drugs in case of their effectiveness in treatment, rapid clinical researches related to medical devices and their registration. It has been legislatively approved to increase the salaries for medical workers from 50% to 100% of medical salary, to carry out mandatory testing of potential patients, to develop instructions and treatment protocols, as well as other measures.

In fact, legal regulation in the context of a pandemic in Ukraine applies in general to restrictive measures of individuals and legal entities, in particular through the introduction of fines for violating security measures. Fines for violations range from 17 thousand UAH up to 34 thousand UAH for individuals, from 34 thousand UAH up to 170 thousand UAH for legal entities. At the same time, tax relaxations have been introduced to relieve the financial burden on organizations and enterprises. Strategic documents focus on coordination, monitoring of the situation and analysis of the current situation. The management mechanism does not include forecasting, planning scenarios for the development of the situation and overcoming the crisis. Such a legal mechanism is ineffective due to the lack of long-term infection control plans. In reality, public authorities have shifted responsibility to the private sector and individuals, which is not in line with any example of international practice to combat the spread of the epidemic.

DISCUSSION

Content analysis of health care management mechanisms in Germany, Georgia, Italy and Ukraine proves the existence of common and different elements of response

to the spread of coronavirus. The legal regulation of Germany and Italy differs from the legislation of Ukraine and Georgia due to previously developed strategic documents for response to the spread of infections (2001-2006). In contrast, the legal mechanism of Ukraine and Georgia is based primarily on WHO recommendations, characterized by a lack or low level of strategic legislative planning and response to the crisis. This has led to a greater level of centralization of management systems, while in Germany and Italy management is decentralized, consistent with the regional specifics of the spread of coronavirus. Therefore, the governance is more effective, when it takes into account more potential risks and threats, involves the private sector, research organizations and civil society institutions. The problem of centralization can be solved through technology and integration into management of "The Crisis Management Platform... to dramatically streamline patient intake, triage, monitoring, referral, and delivery of nonhospital services" (Krausz *et al.*, 2020). Under such conditions, the operational anti-crisis headquarters, formed in Ukraine, may be completely ineffective, as the technologies will fully provide technical support and will perform the functions of situation data analysis. "Monitoring infection rates and effective reproduction numbers continuously may effectively allow for quality improvement methods to be used to evaluate public health policies, provided data can be drawn continuously from different sources" (Hartley & Perencevich, 2020).

Institutional support of Germany and Italy is based on the management of the national level through the Ministry of Health and Care Services, regional authorities, the involvement of experts, research institutes to more effectively overcome the negative consequences. Therefore, strategic documents contain long-term action plans. In contrast, the institutional support of Georgia and Ukraine is entrusted to WHO, as the coordinating body that provides recommendations in management; the private sector and civil society are involved through charity and own initiatives to help healthcare facilities. Actually, this leads to a greater degree of centralization and a crucial role of government in counteracting the negative effects of the pandemic. In Ukraine, public authorities have shifted responsibility to the private sector and individuals through a number of restrictive legal measures. Whereas in Italy and Germany, the private sector and citizens have received state support. In Ukraine and Georgia, it is advisable to use the experience of other countries in involving citizens through social networks (Chen *et al.*, 2020) to form effective communication and crisis management policies. Herewith, the governments of Germany, Italy and Ukraine have ensured the participation of various ministries and agencies to prevent the impact of the negative effects of the virus on various sectors of the economy.

The strategic planning of Germany and Italy provided the consideration of the legislative aspects of the existing strategic documents for overcoming the consequences of the pandemic, developed in 2001 and 2006. The strategic plans were updated by these countries, which provided flexibility and adaptability of the management mechanism, rapid response to the spread of the virus and the crisis. Georgia and Ukraine have carried out strategic planning within the conditions of the crisis in accordance with WHO recommendations. Forasmuch as the study Liu, Lee & Lee (2020) also notes "the importance of resilience, strategic

agility, and entrepreneurship in the context of the fight against COVID-19", it is important for transition economies to ensure the development of strategic preparedness plans and ensure their flexibility, adaptability to external shock. The different scales of the coronavirus have affected response and management systems; "citizens and their leaders need to think carefully, weigh risks in context, and pursue policies commensurate with the magnitude of the threat" (Jones, 2020). This means that there is a close interconnection between the level of infection and the extent of the infection and the control mechanism. The experience of the considered countries testifies to similar dependence.

CONCLUSION

The conducted study proves the dependence of health care management mechanisms on the level of coordination efficiency, the level of centralization and the ability of regional public authorities to guide and participate in combating the spread of coronavirus. Social-economic development and geographical remoteness of countries affect the effectiveness of management of health care system within the conditions of the crisis. Advanced countries rely on their own governance apparatus with a greater level of regional independence in decision-making activities, in particular, on legal regulation. Countries with economies in transition are dependent on the governance and coordination recommendations of international organizations due to the weakness of legal regulation, institutions, research organizations and the level of development of civil society institutions. The level of centralization of management mechanisms determines the level of effectiveness of legal regulation and institutional support. Advanced countries with a more decentralized level of government provide rapid legal, institutional response to the spread of infections and the crisis of the health care system. Economies in transition lag significantly behind the level of decentralization, and, therefore, the level of development of legal, institutional, organizational mechanisms for managing health care systems. If this causes minor shortcomings in the management of the health care system in advanced countries, it causes inefficient management due to excessive centralization economies in transition.

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