

Logistical challenges with an emphasis on organizing specialized triage in the conditions of a newly emerging, epidemiologically significant infectious pathogen for humans – SARS-CoV2

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Abstract

Background: UMHATEM „N.I. Pirogov“ Sofia, is one of the largest and busiest hospitals for emergency medical care in Bulgaria. It is the legal successor of the former Institute of Emergency Medicine „N.I. Pirogov“, and it can be said that at the moment it is the only diagnostic-therapeutic, prophylactic and scientific-educational structure of this type within the Bulgarian healthcare system. The concept of adequate functioning and development of this type of hospital does not consider structuring an Infectious Diseases diagnostic-treatment unit. This reality makes necessary the formation of a radically different organization for the admission and treatment of patients in the hospital, both for those with symptoms of Covid 19 and for all other emergency patients. The organization created in this way must absolutely guarantee safety for both streams of patients.

In the conditions of a pandemic, in case of a real threat to public health, the main task of triage in the Emergency Department is to establish indications for urgent hospitalization, or to refuse it in the absence of indications. The characteristic course of the disease, the prolonged treatment, the manifestations within the so-called „post-Covid syndrome“, require serious planning not only of the diagnostic-treatment and rehabilitation period, but also adequate monitoring in the first months after the patient's discharge.

Within the national reorganization measures, during the determined periods, the main changes concerning the MED (Multi-profile emergency department) of Pirogov are implemented, with an emphasis on the formation of a specialized triage for the diagnosis

and clinical evaluation of patients with a coronavirus infection. The main goal is the adequate diagnosis, treatment and follow-up of patients with coronavirus infection who have passed through the organized Covid-triage in a period of extreme pressure on the emergency structures and on the hospital system in the country as a whole.

Objective: For a MED, which at the time of declaring an epidemic situation does not have a concept for the diagnosis and treatment of infectious diseases, to systematize the main urgently implemented organizational and structural changes, which turned out to be absolutely necessary to meet a newly emerging epidemiologically significant infectious disease.

Aims: To systematize the organizational changes imposed by the situation and urgently implemented in the MED (multi-profile emergency department).

To systematize the structural changes imposed by the situation and urgently implemented in the work of the MED.

To analyze the organizational and structural changes carried out in this way and to differentiate the main difficulties caused by the regulations existing at the time of the announcement of the epidemic situation.

Keywords

triage, coronavirus infection, Covid 19, regulations, health law, emergency department, anti-shock room, SARS-CoV2

Introduction

In the end of 2019, a coronavirus called SARS-CoV-2 was identified in the city of Wuhan, Central China. Then, for no apparent reason, people developed pneumonia in December that was resistant to the known treatment methods. There is evidence of human-to-human transmission of the virus, with the virus spreading most rapidly in mid-January 2020. Several countries in Europe, North America, and most notably in the Asia-Pacific region have reported cases of 2019-nCoV. The incubation period of the virus is between 2 and 14 days, but there are suggestions that it is possible to transmit it from person to person even before the appearance of symptoms, as well as several days after recovery. Symptoms include fever, cough and difficulty breathing, and the outcome can be fatal (Li et al. 2020; Zhu et al. 2020; Pekar et al. 2021).

The first announcement of infected workers from the Wuhan seafood market was made on December 31, 2019, with symptoms described three weeks earlier on December 9, 2019. The market was closed on January 1, 2020, and those infected persons were put under quarantine. More than 700 people, including more than 400 health-care workers who were in contact with the infected people then, had been placed under observation (Li et al. 2020).

After the development of a special polymerase chain reaction diagnostic test to detect the infection, the presence of the virus was detected in 41 residents of Wuhan. It was later confirmed that in two of the cases entire families were affected, one of which did not visit the market. On January 9, 2020, the first death of a 61-year-old man was registered. On January 16, 2020, Chinese authorities announced the death of another 69-year-old man in Wuhan.

Epidemiological analysis gives reasons for fears of further spread of the contagious disease, especially in the period around the Chinese New Year. On January 20, China reported a large increase in the cases with almost 140 new

patients, including two people from Beijing and one from Shenzhen (Li et al. 2020).

Confirmed cases outside of China included two women in Thailand, one man in Japan and one woman in South Korea. Based on international travel statistics, on January 17, British scientists estimated that the approximate number of infected people was around 1,700. As of January 20, there were 222 laboratory-confirmed cases: 218 in China, two in Thailand, two in Japan and two in South Korea. The World Health Organization warns about the possibility of a wider spread of the disease around the world. This is the sixth such classification since the 2009 swine flu pandemic.

Chinese scientists succeeded in isolating the new 2019-nCoV coronavirus and found that it was genetically between 75% and 80% similar to the SARS-Cove that broke out in 2003.

Covid-19 has proven to be a serious challenge to the modern healthcare system worldwide. The epidemiologically significant infection, generated by a new strain of the Coronavirus family, also put the health care system of Bulgaria to the test. In March 2020, the first patient with Covid 19 was registered at „UMBALSM N.I. Pirogov“. Generally, there is no functioning infectious disease department in the medical facility. This fact imposes complete reorganization of the admission processes for emergency patients. Information arriving from all countries, having a vague and contradictory nature, regarding the development of the disease, sets conceptually new requirements regarding the preparedness and adequacy of hospital facilities, as well as the availability of qualified staff and epidemiologically adequate protective means. Bearing in mind the location of Pirogov Hospital, a large part of the population of Sofia and the surrounding area in case of any symptoms, is directed and/or self-directed precisely to the Emergency Department of „UMBALSM N.I. Pirogov“, looking for emergency help.

The main aim of any general hospital for active treatment is to adequately and qualitatively respond to the

health needs of each patient who seeks medical assistance, which means that each of them receives a high quality medical service in an optimal time range and as easily (convenient for the patient) as possible. Pirogov is exactly this type of hospital – multi-disciplinary for active treatment and „emergency medicine“, and this emphasis radically changes the standard of work at UMHATEM „N.I. Pirogov“ and leads to significant differences, both in terms of functions and of structuring and organization of work in the hospital itself, compared to almost all other hospitals in Bulgaria. In the context of a pandemic, it is understandable that the focus of the main efforts falls on the battle against the new viral infection.

It can be said that at the height of the pandemic, the main diagnostic and treatment structures in Bulgaria functioned under extreme pressure from the patient flow, which was increased significantly. The unclear and contradictory information coming „from all sources“ regarding the development of the epidemic, the course of the disease, the diagnostic and treatment measures, the effectiveness of these measures, further aggravated the work of the Bulgarian teams in the conditions of an emergency situation. The media frenzy has not only put our national health care, but also the entire society, to an unprecedented test of character and scale. This trial demonstrated that the attitude to forming well-trained staff, maintaining the adequacy of hospital facilities for this type of diagnostic and therapeutic activity, the selection and training of support personnel, as well as the provision of protective materials, must be fundamentally changed.

In a retrospective aspect, the implemented normative changes (amended normative documents) can be systematized in the following order:

1. Law on Health, Section V, Surveillance of Communicable Diseases (Title amended – SG No. 98 of 2010, in force from 01.01.2011).
2. Law on measures and actions during the state of emergency, announced by a decision of the National Assembly of March 13, 2020. Art. 1. and Art. 2.
3. Law on Medical Institutions Supplement, no. 28 of 24.03.2020, in force from 13.03.2020, amended. and supplement, no. 54 of 16.06.2020, in force from 16.06.2020, no. 71 of 11.08.2020, in force from 11.08.2020, amended, no. 85 of 2.10.2020, in force from 2.10.2020, supplement, no. 103 of 4.12.2020, in force from 4.12.2020, amended, no. 110 of 29.12.2020, in force from 31.12.2020, no. 11 of 9/02/2021, in force from 9/02/2021
4. Law on the ratification of the Agreement authorizing the European Commission to propose to the participating Member States and conclude on their behalf advance purchase agreements for vaccines („Advance Purchase Agreement“) with their manufacturers in order for the Member States to obtain vaccines in the fight against the COVID-19 pandemic.
5. ORDER No. H-2 of May 26, 2022 on the conditions and procedure for conducting diagnostics, prevention and control of COVID-19.
6. Ordinance amending and supplementing Ordinance No. 10 of 2011 on the conditions and procedures for treatment with medicinal products not authorized for use in the Republic of Bulgaria and medicinal products for compassionate use, as well as on the conditions and procedures for inclusion, changes, exclusion and delivery of medicinal products from the list under Art. 266a, para. 2 of the Law on Medicinal Products in Human Medicine.
7. Ordinance amending and supplementing Ordinance No. 42 of 2004 on the introduction of statistical classification systems for coding diseases and health-related problems and medical procedures.
8. Ordinance amending and supplementing Ordinance No. 10 of 2009 on the conditions, order, mechanism and criteria for payment by the National Health Insurance Fund of medicinal products, medical devices and dietary foods for special medical purposes, negotiation of discounts and reimbursement of the excess funds when implementing a mechanism guaranteeing the predictability and sustainability of the NHIF budget.
9. Ordinance amending and supplementing Ordinance No. 9 of 2019 on determining the package of health activities guaranteed by the budget of the National Health Insurance Fund.
10. Over 200 orders were issued for the period cited (www.Lex.bg).

UMHATEM „N.I. Pirogov“ Sofia, is a hospital for emergency medical care. The concept of adequate functioning and development of this type of hospital does not envisage the formation of an Infectious Diseases unit. This reality emphasizes on the formation of a radically different organization for the admission and treatment of patients in the hospital, both for those with symptoms of Covid 19 and for all emergency patients. The organization created in this way must absolutely guarantee safety for both streams of patients.

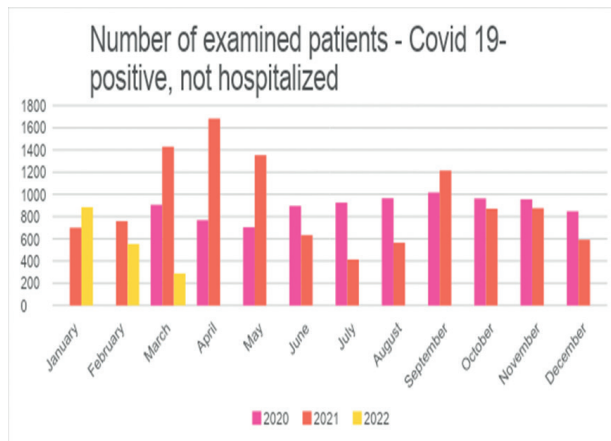
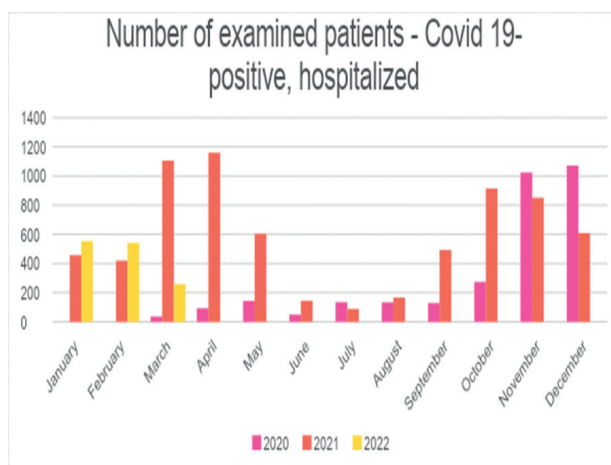
In the conditions of a pandemic, in case of a real threat to public health, the main task of triage in the Emergency Department is to establish indications for urgent hospitalization, or to refuse it in the absence of indications. The characteristic course of the disease, the prolonged treatment, the manifestations within the framework of the so-called „post-Covid syndrome“, require serious planning not only of the diagnostic-treatment and rehabilitation period, but also adequate monitoring in the first months after the patient's discharge. When working in conditions of an emergency situation, imposed by the pandemic course of the Coronavirus infection, the implementation of secondary triage, starting at the „front door“ of the hospital, can actually be discussed (Christian 2019).

UMHATEM „N.I. Pirogov“ Sofia, turned out to be the hospital that was in the center of the pandemic events around the clock, without fail, not only as the medical facility, where the first patients with a coronavirus infection were hospitalized, but also, as it turned out later, as the hospital that diagnosed, admitted and treated the biggest number of patients, reported for Bulgaria as a whole.

Table 1. Results of the monitored patient flow during the period of the Coronavirus expansion.

	2020			2021			2022		
	CoV-19 positive not hospitalized	CoV 19 positive hospitalized	CoV 19 negative	CoV-19 positive not hospitalized	CoV 19 positive hospitalized	CoV 19 negative	CoV-19 positive not hospitalized	CoV 19 positive hospitalized	CoV 19 negative
January	0	0	21 801	699	456	12 183	885	553	14 506
February	0	0	19 762	758	419	14 068	553	541	13 739
March	906	35	9 731	1 430	1 105	15 572	287	258	17 162
April	767	92	7 313	1 681	1 158	13 513	0	0	0
May	703	143	10 564	1 354	603	19 881	0	0	0
June	895	48	14 799	632	144	20 237	0	0	0
July	925	134	15 296	413	88	19 252	0	0	0
August	964	133	15 135	564	166	17 662	0	0	0
September	1 015	127	16 329	1 213	492	17 371	0	0	0
October	962	273	14 501	870	914	13 639	0	0	0
November	955	1 024	10 984	875	851	11 417	0	0	0
December	847	1 070	10 069	591	608	13 937	0	0	0
TOTAL	8 939	3 079	166 284	11 080	7 004	188 732	1 725	1 352	45 407

Table 1 presents the results of the monitored patient flow during the period of the Coronavirus expansion. You can clearly see the „pressure“ not only on the MED, but also on the hospital as a whole. For the monitored two-year period, the triaged patients were 400,423, of which the positive patients were 33,179 (8.2% of all examined patients in the MED units), and the hospitalized due to moderate and severe forms of coronavirus infection were 11,435 (34.5% of the positive and 2.8% of all patients).

**Figure 1.** Number of not hospitalized positive Covid-19 patients.**Figure 2.** Number of hospitalized positive Covid-19 patients.

Figures 1, 2 show the proportion in the group of MED RT PCR+ (positive) patients by month for the monitored two-year period. There was a total of 21,744 Covid+ (positive) and non-hospitalized patients with a mild form of the Coronavirus infection. Of these, as indicated above, 11,435 were admitted due to a moderate and severe form of the Coronavirus infection.

The main and most effective reorganization of the territory of the emergency department took place within the so-called „medical triage“. Medical triage is an essential element and tool of the diagnostic- treatment process in which all emergency patients are grouped into categories. Triage is based on assessment of incoming subjective complaints and objective clinical and paraclinical criteria in a patient admitted to the emergency department. In the course of the triage activity, vital parameters and major symptoms are analyzed in order to determine the medical priority of the emergency patient depending on the severity of the emergency (degree of urgency), the need for resuscitation and the application of immediate life-saving measures. A preliminary assessment is made regarding the prognosis of the disease, as well as the possibilities for the modulation on the basis of available human and instrumental resources.

The announcement of an epidemic situation in Bulgaria posed a number of challenges for the country's healthcare system. The most difficult problems to be solved literally fell, as if suddenly, out of the blue, on the stationary diagnostic and treatment structures, and put a lot of them in a dead end. The unpreparedness of hospital medical care raises a number of questions, regarding the accuracy of the so-called „health reform“ in Bulgaria. These questions cannot be postponed, as the analysis of the past two years clearly shows that the coronavirus pandemic is the „small sign...“ that should be corrective in the upcoming reforms in the Bulgarian healthcare in general. In the specific „Pirgov“ case study, the main challenge for the emergency department was to isolate patients with symptoms of the coronavirus infection from the continuous flow of emergency patients without symptoms of the coronavirus. The realization of a „medical service“, the term as part of the philosophy of the carried out and still persistent „health

reform“, for the two incompatible patient flows, the duty to be fully medically cared for and of the highest quality in the emergency department, without additional exposure to risk to their health, really took the main part of the overall resource of Pirogov Hospital.

It is important to always consider the fact that triage is a dynamic process that requires a certain period of time. Within this process, the patient's condition is a variable, and the changes are very often dramatic.

When the triage is carried out according to the protocol and with the relevant competence, the care that the patient receives leads to stabilization of his condition and taking the right decision regarding hospitalization. This reduces the risk of mistakes and complications. Improper triage always carries a high risk, both in terms of the timeliness of emergency diagnostic and treatment measures, and in terms of the decision to admit a patient or not. The main limitations of today's triage systems lie in the lack of sensitivity and specificity. The unification of the triage process within the Bulgarian healthcare system, especially with an avalanche-like increase in patient flow reaching critical quantitative values, should undoubtedly be among the first tasks to be solved within the Emergency Medicine standard. The analysis and conclusions regarding the practical consequences of the created epidemic situation, which also demonstrates a characteristic dynamic over time, correlating with the nature of the infectious disease, unequivocally support this opinion. That means that the single triage model for the whole country is an optimal solution. Such a decision will ensure proper distribution and efficient use of the entire healthcare resource in the conditions of crisis situations such as the present one. It is appropriate to keep in mind that the coronavirus pandemic has not subsided, but it is more important not to close our eyes to the increasingly realistic prediction that such natural phenomena are not excluded in the future and with far more virulent pathogens for man (Iserson and Moskop 2007; Moskop and Iserson 2007; Christian 2019)

Measures on a national scale during the declared epidemic situation can be described in four successive stages, the last one marking two peaks:

First stage from March 2020 until June 2020 Second stage October 2020 until January 2021 Third stage February 2021 until June 2021 Fourth stage with two peaks:

First peak September 2021 until November 2021 Second peak December 2021 and until today

Within the framework of the national reorganization measures, the main changes concerning Pirogov's MED are implemented during these determined periods. The main goal is the adequate diagnosis, treatment and follow-up of patients with a coronavirus infection who have passed through the so-called Covid-triage.

Materials and methods

A package of normative documents has been processed, including the law on health, the law on medical

institutions, including all administrative changes in the MED for the period 03.2020 to 04.2022.

On account of this, an analysis of the situation was made and relevant conclusions were formulated.

A total of 400,423 patients who were in the MED were followed by month for the target period.

All patients who passed the target period were differentiated according to the type of emergency, the frequency of hospitalization was determined according to the main diagnosis, including SARS-CoV2+ (positivity), and the indications for emergency hospitalization or its refusal were analyzed.

45,407 patients were monitored, per month for the target period, examined in the MED due to symptoms meeting the criteria for coronavirus infection, and the same were systematized by groups as follows: hospitalized SARS-CoV2+ (pol.); hospitalized SARS-CoV2- (negative), but meeting the clinical criteria for a moderate and severe form of coronavirus infection; referred for ambulatory treatment SARS-CoV2+ and referred for ambulatory treatment S-CoV2-, but meeting the clinical criteria for a mild form of coronavirus infection.

The normative base according to which and/or in spite of which all organizational and structural changes were carried out in the MED for the target period, was retrospectively analyzed.

Comparative analysis was used for statistical processing of the survey results.

First stage from March 2020 until June 2020

Organizational changes

- Launching an organized triage of all patients in order to separate the daily flow of patients with emergency conditions, including chronic decompensated diseases, from the flow of patients with proven coronavirus infection and/or patients with significant symptoms. Patients at potential risk are assessed for appropriate indications and hospitalized in appropriate buffer units, or referred for follow-up and treatment in outpatient settings.
- The need for urgent change imposed by the epidemic course of the disease led to a reorganization regarding a number of standard procedures for the admission of patients to the hospital with an emphasis on incoming control. This standard with patients, introduced during this period, increased the efficiency of the procedures for separating the three main streams of patients – patients with a coronavirus infection, patients suspected of having a coronavirus infection and patients who, at the time of hospitalization, had not „met“ the virus, that is, a risk group in terms of viral exposure. In the third group of patients, regular serological and genetic control was carried out for the presence of current (new) viral infection. In order to effectively implement the

above-mentioned activities, especially during the period of shortage of the relevant laboratory tests, this type of organization of work was created in the MED as a whole, and for the control of the activity and the systematization of the patients, a corresponding „check list“ was prepared (Appendix 1).

- Every patient who sought medical help in the MED of UMHATEM „N.I. Pirogov“ Sofia has been triaged as potentially infected with SARS-CoV2. This means that when the patient is admitted to the Triage Room, a correspondingly prescribed procedure is followed: a detailed history is taken and a thorough physical examination is conducted; registration is carried out based on the data from the primary examination; appropriate paraclinical tests are appointed, including conducting a rapid antigen test (RAT); in the absence of data confirming a coronavirus infection, the patient is referred to the relevant specialized units to continue the diagnostic and treatment process, to make a decision for hospitalization or not. In the absence of indications for urgent hospitalization, the patient is referred for outpatient treatment after appointment of primary treatment and follow-up by the general practitioner is recommended and/or a monitoring program is determined in the relevant specialized office.
- The process of organizing changes in this stage is dynamic, often inconsistent and seemingly chaotic, but oriented to the needs of patients and the aspiration to increase the effectiveness of the teams' work, according to the specific situation.
- The situation often requires making spontaneous decisions related to the specific problem – COVID-19, on the principle of „trial and error“. The main reason for this approach is lack of experience. The MED and Pirogov teams as a whole were placed in a real pandemic situation for the first time. Moreover, for the first time the work was reorganized to respond to a situation requiring the diagnosis and treatment of an infectious disease without irreparably affecting the diagnostic and therapeutic activity of emergency conditions. It should not be forgotten that ideologically, Pirogov is a university hospital for active treatment and emergency medicine. Pirogov is not an infectious disease hospital. In the Emergency Department, the measures taken, and decisions taken have always been aimed at the needs of each patient, both in specifics and with the aim of developing an overall correct approach with a view to protecting the health of all participants in the diagnostic and treatment process.
- In this period, the first recruitment of volunteers for regular disinfection of the territory of the emergency department was organized.
- The follow-up of patients to the specialized areas of the emergency department and the timely call of the triage were organized, after which the patient was hospitalized with an immediate subsequent procedure for disinfection of the area and the team, which worked in it.

- The formation of a specialized triage room for patients with observed or laboratory-proven coronavirus infection is one of the main changes in the process of diagnosis and conducting emergency treatment measures for patients who have passed through the MED. The reorganization created in this way makes it possible, right at the entrance to the medical facility, to separate the incoming patient flow as efficiently as possible.
- The specialized triage room is where patients with observed coronavirus infection are refined through a series of additional procedures and tests and are separated into the so-called buffer zone until virological confirmation of the diagnosis. The absolute goal is that patients with proven COVID-19 infection do not have epidemic-risk contact with other patients, including those in whom the disease has been observed. The main task is for each patient to receive adequate care according to their needs, without endangering the others.
- The specialized triage room is located next to the main entrance of the hospital. Already in the first days after its opening, the need to equip it as an anti-shock room emerged, due to the avalanche-like increase in the number of patients with urgent resuscitation needs.
- The suddenly increased flow of patients with observed and/or proven coronavirus infection in a mild form was moved to the specially equipped for the purpose mobile van-type rooms. Diagnostic refinement, decision-making for outpatient treatment and follow-up of patients was redirected to the thus organized temporary pavilion system for hospital care.
- In the period of greatest workload, the triage teams were additionally reinforced. The triage activity was realized by two doctors and a nurse, available for each 12-hour duty, and subsequently, in April 2020, the health care specialist was included in a regular schedule. Based on these processes, an analysis of the situation was carried out by the administration. The results of this analysis are the basis for structuring a number of optimal solutions for carrying out preventive preparation in order to meet the next stages of the epidemic.

Structural changes

Not any concluded.

Second stage from October 2020 until January 2021

Organizational changes

The process of organizational changes is arranged to follow the logical path of the patient. At this stage, the roles and responsibilities of each staff member at the admission of a new patient to the territory of the MED are scheduled

Orientation posters have been prepared with instructions and a description of the sequence of the processes of diagnosis and giving first aid to the patients. They are positioned in a prominent place within the key areas around the entrance, aiming for maximum patient convenience.

Strict control over the patient flow around the two pavilion structures has been established. The two entrances – the one for patients without covid symptoms, and the other for those with COVID symptoms – were physically separated for securing the division of the patient flows. One of the PT-Scans is separated for COVID patients only.

A separate hall is structured in accordance with the anti-epidemic requirements for imaging to work only with the target group of patients. Tests were taken on everyone entering the medical facility, as well as everyone with symptoms, as well as those at own will. Reinforcement of the triage teams has been implemented – a schedule for three physicians and two assistants has been optimized. The functions and triage and the pavilion system are distributed by their specifics.

Structural changes

A second registration room was created to work only with patient with proved or observed coronavirus infection.

Third stage from February 2021 until June 2021

Organizational changes

As a main deficiency in this stage of the pandemic is considered to be the lack of specialized anti- shock room for the patients with coronavirus infection. CPR for the indicated in the first stage was given in the triage room for COVID patients, which was also adapted for holding anti-shock and life-saving measures. In order to optimize the diagnostic-treatment process from the territory of the existing anti- shock hall was separated an independent part, which was specialized in accommodation of patients with unstable vital parameters and in need of prolonged manual and/or permanent hardware maintenance of ventilation, oxygenation and hemodynamics.

Structural changes

Not any concluded.

Fourth stage with two peaks

First peak September 2021. until November 2021

Second peak December 2021. until April 2022

Organizational changes

In this period, one of the main changes concerning the diagnostic and treatment process, was the differentiation of

non-immunized patients from the vaccinated group (specifically the patients with a proven generated immune response) during hospitalization. The aim is the timely application of etiologically targeted therapy with anti-SARS-CoV2- MAB (monoclonal antibodies for intravenous administration).

All proven non-immunized patients, in strong compliance with the indications for MAB application, are hospitalized for urgent initiation of the etiological treatment. This group also includes all contacts, but assessed as risky in relation with their underlying comorbidities (conducting passive immunization).

The patients with or without completed immunization process and with correct control of the immune response, depending on the indications, are referred for hospitalization, or for outpatient treatment with active follow-up.

Structural changes

Not any concluded.

Discussion

The heavy and often completely unknown, one could say new activities, realized in a period of an emergency situation, are related to organizing all diagnostic- therapeutic and prophylactic procedures, the training of the teams, the coordination of the medical specialists, according to the possibilities and available resources. The path taken definitely mediates the achievement of the highest quality, in an optimally short time, absolutely safe and with the highest professional morality in the service of patients in the Multi-Profile Emergency Department at UMHATEM „N.I. Pirogov“ Sofia city. In the condition of a severe epidemic situation, overloading to the maximum the national health care system, a number of processes have been mastered, and effective working practices have been created and a number of new methods have been implemented that ensure quality health service for patients through minimal costs. All this was achieved through reducing resources time, energy and effort.

In summary, the structural changes conducted in the periods thus marked concern: Change in the license for medical activity of the medical institution -revealing an infectious structure that to the announcement of the pandemic does not exist in the current authorization for medical activity of the hospital. With the announcement of the pandemic by Order of the Minister of health care, Covid structures (departments) in the hospital are revealed. Change in the number of beds in the departments.

Creating beds for patients with coronavirus infection.

Restructuring beds in other departments and creating whole new wards for admission of patients with coronavirus infection.

Disclosure of registration room for the needs only of COVID patients. Disclosure of specialized X-ray room for only patients with coronavirus infection. Disclosure of specialized PT-Scan room for only patients with coronavirus infection. Specific structural changes in the triage room, imposed by the epidemic situation.

Designation of premises for storage of consumables, transport equipment and mobile machinery, protective clothing, etc. for work only in the epidemiologically dangerous zones thus structured. Designation of rooms for undressing and dressing of the staff in an epidemiologically dangerous environment. Changes in Central ICU.

All other changes concern the organization of the activities of the departments and the hospital as a whole and are of an organizational type, including staff training, its redistribution and preparation of new work schedules.

With the launch of the so-called „Health Reform“, the imposed restructuring of medical facilities, their declaration as commercial companies and a sharp transition to funding only by the NHIF, the principle of payment for activity performed forced most former regional hospitals and larger municipal ones to close or to reduce their departments of infectious diseases to a state of *vita minima* (and not only them). This is a logical process in the conditions of accumulation of financial obligations at preservation of this type of diagnostic and treatment structures in the conditions of absolute underfunding of the relevant clinical pathways and the absurdity of the relevant ones standards that are prepared as if by expert councils that have nothing to do with the relevant diagnostic-therapeutic domain. The depersonalization of the specialty „Infectious diseases“ also led to a serious outflow of specialists, many of whom reoriented to the „General Practitioner“ activity. Demotivation among young doctors, posed a serious staffing problem that had a detrimental effect on the conditions of pandemic situation. In fact, the pandemic has shown that a number of diagnostic and therapeutic structures „with damping“ supposedly functions, should be maintained in full structural and functional readiness to ensure the protection of public health,

and that accurately in this type of hospital units, self-sufficiency should not be sought at any cost.

In case of immediate danger to the life and health of citizens and with a purpose their effective preservation in the epidemic course of any contagious disease, as happened in this pandemic situation, emergency changes in the regulatory framework are required. These legal changes mediate the declaration of an emergency epidemic situation.

The changes made in the Law of Health form the necessary legal basis, enabling an emergency epidemic situation to be declared in the conditions of which to be carried out adequate medical activity, both in the diagnosis and treatment of the specific disease, as well as effective anti-epidemic activity limiting the spread of the disease itself. An emergency epidemic situation is declared for a certain period of time by decision of the Council of Ministers and at the proposal of the Minister of Health, on the basis of a report by the Chief State Health Officer inspector assessment of the existing epidemic risk. Immediate danger to the life and health of citizens is present when, during the assessment, is found that the infectious disease was caused by a pathogen with high epidemic potential. Treat-

ment and health facilities, regardless of their ownership, are obliged to implement the introduced measures. State and municipal bodies create the necessary conditions for the implementation of the measures, and the means for their implementation are provided from the state budget, respectively from the municipal budgets. With the change in the regulatory framework, additional powers are given to the Minister of Health to introduce by order, as appropriate, extraordinary anti-epidemic measures. These additional measures are adopted at the suggestion of the chief state health inspector for the territory of the country or for a separate district, for a certain period of time. Additional powers, anti-epidemic, are given measures to be introduced by order of the director of the relevant regional health center inspection agreed with the chief state health inspector for the territory of a separate region, municipality or settlement, for a certain period of time. In terms of current situation, additional changes have been made in The Administrative Procedure Code in order to enable the publication of all additional measures on the website of the Ministry of healthcare, respectively on the websites of the regional health inspectorates for the purpose of prior announcement and execution. In the event of a crisis situation, including a mass influx of foreigners, seeking protection on the territory of the Republic of Bulgaria and in the event of a risk for public health, the Minister of Health may order measures and public health protection activities other than measures and regulations currently in effect.

For the targeted two-year period, the reactions of the Ministry of Health, NHIF and RHI in many cases they are untimely, inconsistent and unfortunately even inadequate. As a striking example, the so-called „anti-epidemic measures“ taken can be cited during the two caretaker governments that ruled successively in the period 12.05.21 – 16.09.21 and 16.09.21 – 13.12.21 This type of administration not only discredits canons in Epidemiology, but also generates disorganization in the work of diagnostic-treatment units in the country.

The amendments made to a number of by-laws create adequate conditions to fight the epidemic, for example the changes in the ordinance on immunizations in the Republic of Bulgaria. The additional national planning introduced, one of which for vaccination against COVID-19 in the Republic of Bulgaria, was adopted by Decision No. 896 of the Council of Ministers of December 7, 2020 and is a new moment in the Immunization state calendar.

In summary, the reached conclusion is what that a number of political and administrative entities worldwide turn a blind eye to. It absolutely must state that in the conditions of actively accelerating urbanization and escalating migration processes, the assimilation of new and new territories, the intensifying social everyday contact of man with a number of new biological species..., epidemics (pandemics) like the current one, there are none to be a precedent. It is logical to be prepared in advance to meet these processes instead of catching up with them.

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