TRIJAŽA U NE-KOVID USTANOVI ZA VREME KOVID-19 PANDEMIJE

ORIGINALNI RAD

ORIGINAL ARTICLE

TRIAGE AT A NON-COVID HOSPITAL DURING THE COVID-19 PANDEMIC

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SAŽETAK

U vreme KOVID-19 pandemije, Urgentni centar Univerzitetskog kliničkog centra Srbije (UC-UKCS), iako ne-kovid ustanova, morao je da se prilagodi zbrinjavanju velikog broja kritično obolelih i potencijalno zaraznih bolesnika. U ovom radu prikazujemo prilagođavanje UC-UKCS-a uslovima pandemije, u situaciji prethodno nedovoljno definisanih protokola za postupanje u ovakvim situacijama. U martu 2019. godine, formirano je Prijemno trijažno odeljenje urgentne medicine (PTOUM). Osnovni zadatak ovog odeljenja je jasno razdvajanje bolesnika sa epidemiološkim rizikom (ER) od onih koji taj rizik nemaju, te njihovo dalje izolovano zbrinjavanje. Procena epidemiološkog rizika podrazumeva popunjavanje epidemiološkog upitnika, ciljanu kratku anamnezu, merenje temperature i procenu respiratornog statusa bolesnika. Kompletan proces trijaže, inicijalne dijagnostike i lečenja bolesnika sa ER-om je domen rada i odgovornosti specijalista urgentne medicine. Od 15. marta 2020. godine do 15. marta 2021. godine je kroz trijažu obrađeno 155.000 bolesnika, od toga 9.519 sa ER-om, koji su zbrinuti u PTOUM-u. Ovakvom trijažom je minimalizovano širenje infekcije uz istovremeno zbrinjavanje svih kritično obolelih, bez obzira na ER. Međutim, na istom mestu su zbrinjavani bolesnici sa manjim, ali i oni sa visokim rizikom za KOVID-19, zbog deficita prostora. Takođe, trijaža se odnosi samo na „kovid trijažu" a ne i na trijažu po stepenu hitnosti obolelih, što je osnova rada svakog savremenog urgentnog centra.

Ključne reći: KOVID-19, epidemiološki rizik, trijaža, Urgentni centar

ABSTRACT

At the time of the COVID-19 pandemic, the Emergency Center of the University Clinical Center of Serbia (EC-UCCS), although a non-covid hospital, had to adapt to taking care of a large number of critically ill and, at the same time, potentially contagious patients. In this paper, we present the ways that the EC-UCCS has adjusted to the conditions of the pandemic, where no precise protocols had previously been established for acting in these types of situations. In March 2019, the Admissions Triage Facility of Emergency Medicine (ATFEM) was established. The main task of this facility was to separate patients with epidemiological risk (ER) from patients without risk and to carry out their further isolated care. ER assessment involves completing an epidemiological questionnaire, a targeted brief history, body temperature measurement, and assessment of the patient's respiratory status. The complete triage process, initial diagnosis, and treatment of patients with ER is the task and responsibility of emergency medicine specialists. Between March 15, 2020 and March 15, 2021, about 155,000 patients were examined in triage, of whom 9,519 had ER and were taken care of in the ATFEM. This triage method minimizes the spread of infection while taking care of all critically ill patients, regardless of ER. However, both patients with low and high risk of COVID-19, were all admitted to the same facility, due to the shortage of available space. Also, triage relates only to "covid triage" and not to triage according to the degree of urgency of the patients, which is the primary task of every modern emergency center.

Key words: COVID-19, epidemiological risk, triage Emergency Center

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Primljeno • *Received*: June 30, 2021; **Revidirano • *Revised*:** July 10, 2021; **Prihvaćeno • *Accepted*:** July 14, 2021; ***Online first*:** September 30, 2021.

DOI: 10.5937/smclk2-32963

UVOD

Pandemija KOVID-19 infekcije je okupirala svetsku zdravstvenu zajednicu. Bolest se analizira sa stanovišta epidemiologije, etiologije, patogeneze, kliničkih manifestacija bolesti, najboljih dijagnostičkih kriterijuma, i protokola lečenja. Istovremeno, pojavila se potreba za potpunom reorganizacijom zdravstvenog sistema.

Urgentni centar Univerzitetskog kliničkog centra Srbije (UC-UKCS) je od početka pandemije ne-kovid ustanova. Međutim, 20-25% bolesnika sa KOVID-19 infekcijom zahteva neki vid intenzivnog lečenja [1,2], te je očekivano da će se neki od njih, kao bolesnici sa hitnim stanjima, javiti i u ne-kovid ustanove, posebno u UC. Dalje, kako je ovo ustanova sa velikim resursima, a pojedina urgentna stanja (oblast kadiohirurgije, vaskularne hirurgije, mikrohirurgije) na teritoriji Grada Beograda i okoline je jedino moguće zbrinuti tokom 24h u UC-u, jasno je bilo da će ova ustanova zbrinuti i onaj deo KOVID-19 pozitivnih bolesnika, koji se, zbog specifičnosti svog stanja, ne mogu zbrinuti na drugom mestu. Takođe, urgentna ne-kovid stanja mogu biti praćena blagom, neprepoznatom ili čak asimptomatskom kliničkom slikom KOVID-19 oboljenja, te je UC morao biti pripremljen za priliv i ovakvih bolesnika. Na kraju, tu su i sporadični bolesnici koji se, zbog svoje neinformisanosti, mogu javiti na pregled u UC sa jasnim kliničkim simptomima KOVID-19 infekcije. Priliv ovakvih bolesnika opterećuje bolničke kapacitete i povećava potencijal za intrahospitalni morbiditet i mortalitet [3], zbog čega se UC, iako ne-kovid ustanova, morao prilagoditi zbrinjavanju kritično obolelih pacijenata, koji mogu biti i visoko zarazni.

U ovom radu prikazujemo fleksibilnost i prilagodljivost UC-UKCS-a uslovima pandemije, u situaciji prethodno nedovoljno definisanih protokola za postupanje u ovakvim situacijama.

ORGANIZACIJA URGENTNOG CENTRA U PANDEMIJI

Srž izmene rada UC-a je u preciznom odvajanju bolesnika sa epidemiološkim rizikom (ER) za KOVID-19 ili potvrđenih KOVID-19 pozitivnih bolesnika od pacijenata koji nemaju rizik za KOVID-19, i u njihovoj daljoj odvojenoj dijagnostici i lečenju. Time je omogućeno zbrinjavanje svih kritično obolelih bolesnika, bez obzira na rizik za KOVID-19, racionalizacija upotrebe lične zaštitne opreme, kao i sprečavanje širenja infekcije na ostale bolesnike ili zdravstvene radnike.

Prvog dana uvođenja vanrednog stanja u Srbiji, 15. marta 2020. godine, formirano je Prijemno trijažno odeljenje urgentne medicine (PTOUM), koje je inicijalno brojalo 7 specijalista urgentne medicine (UM), 2

INTRODUCTION

The COVID-19 pandemic has completely engaged the entire community of health workers. The disease is being analyzed from the perspective of epidemiology, etiology, pathogenesis, clinical manifestations of the disease, best diagnostic criteria, and treatment protocols. At the same time, the need for a complete reorganization of the healthcare system has arisen.

The Emergency Center of the University Clinical Center of Serbia (EC-UCCS) has been a non-covid hospital since the beginning of the pandemic. However, 20-25% of patients suffering from the COVID-19 infection require some form of intensive care [1,2], which is why it is to be expected that some of them, as patients with an emergency condition, will come to non-covid healthcare facilities, especially to the EC. Furthermore, as this is a hospital with considerable resources, and certain emergency conditions (in the domain of cardiac surgery, vascular surgery, microsurgery) on the territory of the City of Belgrade and in the surrounding area can be treated 24/7 only at the UC, it was clear that this hospital would treat those COVID-19 positive patients, who, due to their particular condition, cannot be treated elsewhere. Also, urgent non-covid conditions may be accompanied by a mild, unrecognized or even asymptomatic clinical presentation of the COVID-19 disease, which is why the EC had to be prepared for the influx of such patients, as well. Finally, there are also sporadic arrivals of patients with clear clinical symptoms of the COVID-19 infection, who, nevertheless, mistakenly come to the EC due to their lack of information. The inflow of such patients lays an additional burden on hospital capacity and increases the potential for intrahospital morbidity and mortality [3], which is why the EC, although a non-covid hospital, had to adapt to dealing with critically ill patients, who may also be highly contagious.

In this paper, we present the ways that the EC-UCCS has shown flexibility and adaptability to the conditions of the pandemic, where no precise protocols had previously been established for acting in these types of situations.

ORGANIZATION OF THE EMERGENCY CENTER IN THE PANDEMIC

The essence of the shift in the operation of the EC is in the precise separation of the patients with epidemiological risk (ER) of COVID-19 or confirmed COVID-19 positive patients from patients without ER, and in their further isolated diagnostics and treatment. This enables the treatment of all critically ill patients regardless of the risk of COVID-19 disease, rationalization of the use of personal protective equipment, as well as the prevention of infection spread to other patients or to health workers.

specijalizanta, jednog doktora medicine i 20 medicinskih tehničara. Pomoć su činili specijalizanti hirurgije, interne medicine i anestezije, a od jula meseca, uključili su se i specijalisti urgentne medicine iz okolnih beogradskih opština. Na današnji dan, ovu službu čini 10 specijalista i jedan specijalizant urgentne medicine, kao i 20 medicinskih tehničara, dok pomoć čine 1 specijalista i 2 specijalizanta urgentne medicine iz okoline Beograda. Uloga PTOUM-a je precizna trijaža bolesnika sa ER-om za KOVID-19 i njihovo dalje izolovano i kompletno zbrinjavanje.

Učinjena je promena namene ambulante najbliže trijažnom prostoru (hirurška opservacija) u prijemno trijažnu ambulantu urgentne medicine (PTA), u kojoj može istovremeno da se zbrine 6 - 12 bolesnika. Obezbeđena su sva neophodna dijagnostička sredstva (EKG aparat i defibrilator, neinvazivni monitoring, portabilni ventilator, aspirator, pokretni RTG i ultrazvučni aparat, centralni kiseonički protok i prenosive kiseoničke boce), samo za potrebe zbrinjavanja bolesnika sa ER-om. Obezbeđen je jedan aparat za kompjuterizovanu tomografiju samo za ovaj profil bolesnika, a transport do njega je unapred definisan, epidemiološki bezbednim putem, bez kontakta sa drugim bolesnicima.

PROCENA EPIDEMIOLOŠKOG RIZIKA

Odvajanje bolesnika sa i bez ER-a se sprovodi od strane iskusnih medicinskih tehničara, odmah na prijemu u UC. U specifičnim situacijama, pomoć čine specijalizanti ili specijalisti urgentne medicine. Procena ER-a podrazumeva popunjavanje epidemiološkog upitnika, kratku ciljanu anamnezu, merenje temperature i procenu respiratornog statusa bolesnika.

Pitanja na epidemiološkom upitniku su se vremenom menjala i zavisila su od trenutne epidemiološke situacije. Tako je u prvim upitnicima postojalo pitanje o putovanjima u inostranstvo, posebno u visoko rizične zemlje i regije kao što su tada bile Italija, Španija i Francuska. Poslednja novouvedena pitanja se odnose na vakcinaciju i podatak o preležanom KOVID-19 oboljenju. Svaki odgovor koji ukazuje na ER kod bolesnika podrazumeva upućivanje i zbrinjavanje bolesnika u prijemno trijažnoj ambulanti.

Kratka, ciljana anamneza i/ili heteroanamneza je posebno značajna kod kritično obolelih pacijenata jer se brzo dobijaju podaci o mogućim simptomima KOVID-19 infekcije, što nadalje znači dijagnostiku i lečenje takvih bolesnika u prijemno trijažnoj ambulanti.

Temperatura se meri beskontaktnim toplomerom i proverava termovizijskom kamerom. Greške i odstupanja su moguća tokom toplih dana u letnjim mesecima, kao i kod pacijenata transportovanih sanitetskim vozilom, u dužem periodu, bez klimatizacije.

On the first day that the state of emergency was declared in Serbia, March 15, 2020, the Admissions Triage Facility of Emergency Medicine (ATFEM) was established. It was initially staffed with 7 emergency medicine (EM) specialists, 2 residents, one M.D. and 20 medical technicians. Surgery, internal medicine and anesthesiology residents acted as auxiliary staff, and, as of the month of July, they were joined by emergency medicine specialists from the surrounding Belgrade municipalities. At present, the staff of this facility includes 10 EM specialists, 1 EM resident, and 20 medical technicians, while the auxiliary staff includes 1 EM specialist and 2 EM residents from the Belgrade suburban area. The role of the ATFEM is in the precise triage of the patients with epidemiological risk (ER) of COVID-19 and in their further isolated complete diagnostics and treatment.

The examination room nearest to the triage space (surgical observation room) was reallocated to be used as the admissions triage examination room (ATER) for emergency care, where between 6 and 12 patients can be cared for at any given time. All necessary diagnostic equipment and resources (ECG machine and defibrillator, non-invasive monitoring, portable ventilator, aspirator, portable X-ray and ultrasound machine, central oxygen supply and portable oxygen tanks) were made available only for the care of patients with ER. A separate CT machine was designated only for these patients, while patient transportation to this machine was predefined so as to be performed via an epidemiologically safe route, without contact with other patients.

EPIDEMIOLOGICAL RISK ASSESSMENT

Separating patients with ER from patients without ER is carried out by experienced medical technicians, immediately at patient admission to the EC. In certain situations, assistance is given by specialists or residents of EM. ER assessment includes the epidemiological questionnaire, a short, targeted anamnesis, measurement of body temperature, and the assessment of the patient's respiratory status.

The questions in the epidemiological questionnaire have changed over time, depending on the current epidemiological situation at the time of their application. Thus, the first questionnaires contained a question related to travel abroad, especially high-risk regions and countries, such as, at the time, Italy, Spain and France. The latest newly introduced questions relate to patient vaccination status and to whether the patient had already had COVID-19 in the past. Any answer that indicates ER in a patient automatically means that the patient is taken to and cared for in the ATER.

Short, targeted anamnesis and/or heteroanamnesis is especially important in critically ill patients,

Procena respiratornog statusa podrazumeva merenje saturacije pulsnim oksimetrom, orijentacionu procenu broja respiracija, a kod pojedinih bolesnika i brzu auskultaciju od strane specijalizanta ili specijaliste urgentne medicine. Na taj način se odvajaju bolesnici koji su respiratorno insuficijentni usled edema pluća, hroničnog bronhitisa, KOVID-19 oboljenja, ili metaboličke acidoze ili bolesnici koji hiperventiliraju. Za sve bolesnike koji su respiratorno insuficijentni iz nejasnog razloga, smatra se da imaju ER.

Bolesnici bez ER-a se sa trijaže upućuju u odgovarajuću ambulantu i dalje se zbrinjavaju po standardnoj, od ranije definisanoj proceduri. U slučaju da se kod nekog od takvih bolesnika u toku pregleda ispostavi da ipak možda ima ER, biva vraćen u PTA radi ponovne procene. Bolesnici za koje se na trijaži proceni da imaju ER se nadalje dijagnostikuju i leče u prijemno trijažnoj ambulanti.

ZBRINJAVANJE BOLESNIKA SA EPIDEMIOLOŠKIM RIZIKOM (ER)

Ceo proces trijaže, pregleda, i procene u pogledu potrebe za odgovarajućom dijagnostikom, inicijalnim lečenjem i potrebom za drugim konsultativnim specijalističkim pregledima bolesnika sa ER-om, predstavlja domen rada i odgovornosti specijalista urgentne medicine. Nakon obrade bolesnika sa ER-om, specijalista urgentne medicine, u dogovoru sa konsultantima, donosi odluku o daljem bolničkom lečenju bolesnika ili se bolesnik, uz adekvatnu terapiju, može uputiti na dalje kućno lečenje. U slučaju potvrde virusa SARS-KoV-2 (antigenski test dostupan od novembra meseca 2020. godine) ili kliničke i laboratorijske prezentacije bolesnika koja jasno ukazuje na KOVID-19 infekciju, pacijenti se iz PTA upućuju u dostupne kovid bolnice. Ako je pak indikovano bolničko lečenje bolesnika kod kojeg postoji ER, ali ne i jasna potvrda o virusu SARS-KoV-2, tada se prijem realizuje u UC-u, u jednoj od dve jedinice predviđene za izolaciju - internističkoj jedinici za izolaciju (za prijem internističkih bolesnika) ili hirurškoj jedinici za izolaciju (za prijem hirurških bolesnika). U bolničkim jedinicama za izolaciju, kod bolesnika se nastavlja dijagnostika i lečenje sve do definitivne potvrde prisustva virusa SARS-KoV-2, u kom slučaju se pacijenti prevode u kovid bolnice, ili do dokazivanja da su bolesnici bez ER-a, kada se prevode na regularna odeljenja. Za potrebe operativnog lečenja bolesnika koji su pod ER-om, izdvojena je jedna operaciona sala samo za ovaj profil bolesnika.

Ovakva organizacija je omogućila racionalnu primenu lične zaštitne opreme (LZO). Svi zaposleni u PTOUM-u, bolničkim jedinicama za izolaciju, svi koji učestvuju u operativnom programu u izolovanoj

as it quickly provides data on possible symptoms of COVID-19 infection, which further necessitates diagnostics and treatment for these patients in the ATER.

Body temperature is measured with a non-contact thermometer and checked with a thermal imaging camera. Errors and deviations are possible on hot summer days and in patients who had spent a longer period of time in transport, in an ambulance without air-conditioning.

Respiratory status assessment involves measurement of the oxygen saturation level with a pulse oximeter, approximation of the respiration rate, and, in some patients, also quick auscultation by an EM resident or specialist. In this way, patients exhibiting respiratory insufficiency, due to pulmonary edema, chronic bronchitis, COVID-19, or metabolic acidosis, or hyperventilating patients, are separated from the rest of the patients. It is considered that all patients whose respiratory insufficiency is of unclear origin, carry an epidemiological risk.

Patients without ER are referred from triage to the appropriate examination room and are further cared for according to the standard preexisting procedure. In the event that, during the examination of such a patient, it transpires that ER may exist, after all, the patient is returned to the ATER for reevaluation. Patients who are assessed to have ER are further diagnosed and treated in the admissions triage examination room.

CARING FOR PATIENTS WITH EPIDEMIOLOGICAL RISK (ER)

The whole process of triage, examination, and assessment of the need for appropriate diagnostics, initial treatment and other consultative specialist examinations of patients with ER, falls within the responsibilities of emergency medicine specialists. After the patient with ER is processed, the EM specialist, in consultation with the consultants, makes the decision on whether the patient is to receive further in-hospital treatment or whether they are discharged for at-home treatment. In case of confirmed SARS-CoV-2 viral infection (the antigen test has been available since November 2020) or clinical and laboratory presentation of the patient which clearly indicates COVID-19, the patient is transferred from the ATER to an available covid hospital. If, however, in-hospital treatment of a patient with ER is indicated, but clear confirmation of the SARS-CoV-2 viral infection is lacking, the patient is admitted to the EC, into one of the two units designated for isolation – the internal medicine isolation unit (for internal medicine patient admission) or the surgical isolation unit (for the admission of surgical patients). In the hospital isolation units, diagnostics and treatment of such patients is continued until there is definitive confirmation

operacionoj sali, svi konsultanti u PTA, koristili su kompletnu LZO (prema Uputstvu za korišćenje lične zaštitne opreme u pandemiji izdatim od strane Instituta za javno zdravlje Srbije „Dr Milan Jovanović Batut"), dok su ostali zdravstveni radnici koji su bili u kontaktu sa bolesnicima bez ER-a imali na raspolaganju LZO nižeg nivoa zaštite, u zavisnosti od vrste posla koju obavljaju.

REZULTATI

Od 15. marta 2020. godine do 15. marta 2021. godine je kroz trijažu obrađeno 155.000 bolesnika, od toga 9.519 sa ER-om, koji su zbrinuti u prijemno trijažnoj ambulanti. Najveći broj bolesnika sa ER-om registrovan je u periodu novembar - decembar 2020. godine (Slika 1), što odgovara i trećem talasu infekcije u Srbiji (Slika 2). Najveći broj dokazanih KOVID-19 pozitivnih bolesnika registrovan je od novembra 2020. godine do marta 2021. godine, što korelira sa obezbeđivanjem antigenskih testova na SARS-KoV-2 virus.

DISKUSIJA

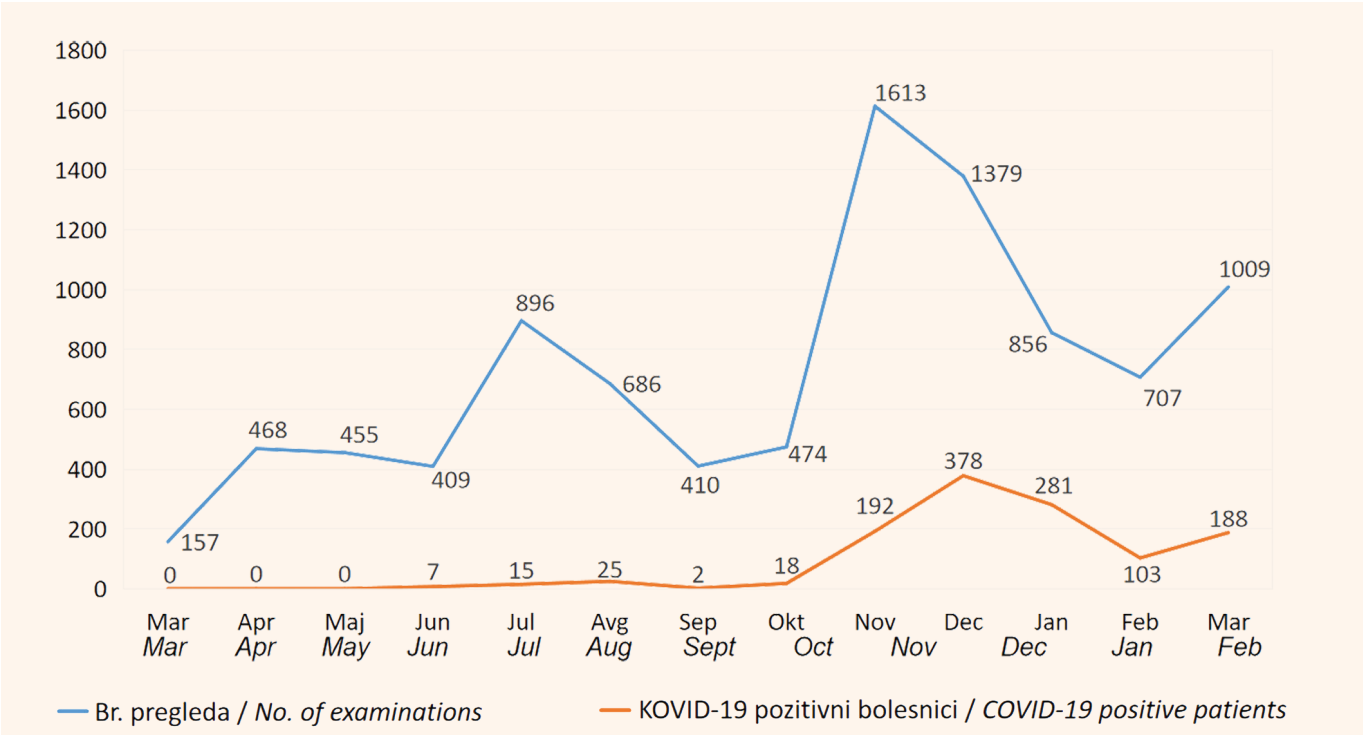
Urgentni centar UKCS-a je ustanova sa najvećim brojem zbrinutih bolesnika u Srbiji (170.000 - 185.000 godišnje, pre pandemije). Za razliku od drugih ustanova, koje mogu ograničiti priliv pacijenata, zakazivanjem pregleda ili odlaganjem elektivnih intervencija, urgentni centri

of the SARS-CoV-2 viral infection, in which case the patient is transferred to a covid hospital, or until confirmation that the patient is without epidemiological risk, in which case the patient is admitted to one of the standard hospital wards. In case there is a need for surgical treatment of patients with ER, an operating theater has been designated for only these patients.

Such organization has made possible the rational use of personal protective equipment (PPE), All ATFEM staff, all of the staff in the isolation units, everyone participating in the functioning of the isolation operating theater, and all of the ATER consultants have used the full PPE (in keeping with the Instructions on the Use of Personal Protective Equipment in the Pandemic issued by the Institute of Public Health *Dr Milan Jovanović Batut*), while the remaining healthcare staff in contact with patients without ER have had at their disposal more basic PPE, depending on the work that they perform.

RESULTS

Between March 15, 2020 and March 15, 2021, a total of 155,000 patients were processed in triage. Of this number, 9,519 patients were with ER and were taken care of in the admissions triage examination room. The greatest number of patients with ER was registered in the period November – December 2020 (Figure 1), which

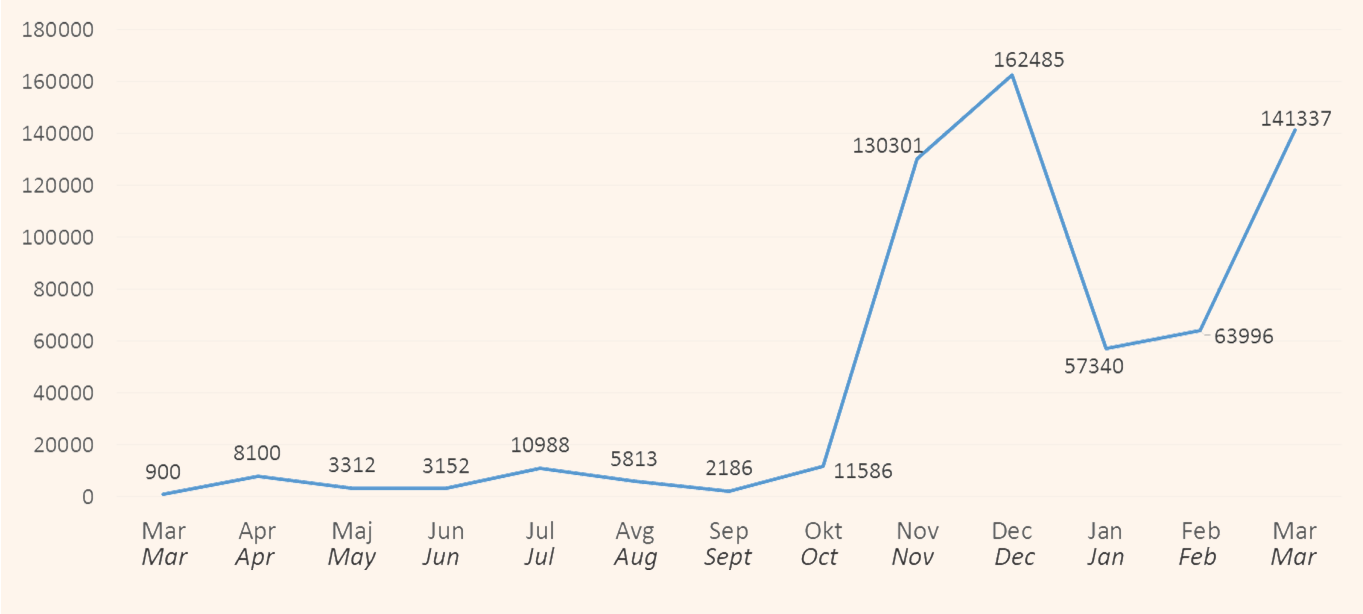


Slika 1. Broj bolesnika sa epidemiološkim rizikom i broj dokazanih KOVID-19 pozitivnih bolesnika zbrinutih u prijemno trijažnoj ambulanti u periodu mart 2020 - mart 2021.

Legenda: ER - epidemiološki rizik; PTA - prijemno trijažna ambulanta

Figure 1. The number of patients with epidemiological risk and the number of confirmed COVID-19 positive patients cared for at the admissions triage examination room between March 2020 and March 2021

Legend: ER – epidemiological risk; ATER - admissions triage examination room



Grafikon 2. Broj KOVID-19 pozitivnih bolesnika u Srbiji u periodu mart 2020 - mart 2021.

Figure 2. The number of COVID-19 positive patients in Serbia between March 2020 and March 2021

moraju odgovoriti na svaki priliv kritično obolelih i moraju imati efikasan i pouzdan način rada u svim situacijama, posebno u pandemiji u kojoj se svet trenutno nalazi.

Trijaža je osnova valjanog funkcionisanja svakog savremenog urgentnog centra [4]. Kao proces razvrstavanja pacijenata u različite prioritetne grupe, u zavisnosti od stepena težine njihovog oboljenja ili povrede [5], trijaža se u UC-u, pre pandemije, odvijala odvojeno ispred svake ambulante. Prelazak sa takve trijaže na trijažu u pandemiji je suštinska promena rada UC-a. Stručna javnost savetuje da trijažu u masovnim nesrećama (i pandemiji) vrše lekari sa velikim kliničkim iskustvom [6], stariji doktori, posebno intenzivisti i specijalisti urgentne medicine [7]. Upravo je ovo primenjeno kada je formirano Prijemno trijažno odeljenje urgentne medicine i kada su specijalisti urgentne medicine stavljeni na prvu liniju.

Velike nepoznanice i dalje postoje u vezi sa SARS-KoV-2 virusom i KOVID-19 oboljenjem, ali se veoma brzo došlo do zaključka o jedinom delotvornom načinu borbe, koji podrazumeva: strogu izolaciju suspektnih i zaraženih pacijenata, zaštitne mere i masovno testiranje [8]. Imunizacija, kao vid ograničavanja širenja infekcije, postala je dostupna nakon godinu dana od pojave infekcije. Kako nije bilo moguće testirati svakog pacijenta koji dolazi u UC, i kako se na rezultate PCR testiranja, kao najvalidnijeg dijagnostičkog testa, čeka određeno vreme, jasno je da je izolacija suspektnih pacijenata najbolji vid ograničavanja širenja infekcije. To i jeste bio cilj reorganizacije rada Urgentnog centra, i zato je i formirana posebna, prijemno trijažna ambulanta. Pacijenti sa dokazanom KOVID-19 infekcijom su se upućivali u kovid bolnice, bez dužeg zadržavanja.

coincides with the third wave of the infection in Serbia (Figure 2). The largest number of confirmed COVID-19 positive patients was registered between November 2020 and March 2021, which correlates with the availability of the antigen tests for the SARS-CoV-2 virus.

DISCUSSION

The Emergency Center of the UCCS is the hospital with the largest number of treated patients in Serbia (170,000 – 185,000 a year, prior to the pandemic). As opposed to other hospitals, which can limit the influx of patients, by scheduling doctor's appointments or by postponing scheduled elective surgical procedures, emergency centers must respond to every arrival of critically ill patients and must have an efficient and reliable method of operation in place, for all situations, especially in the pandemic that the entire world is now facing.

Triage is the basis of the proper functioning of every modern emergency center [4]. As a process of categorizing patients into groups of different priority, depending on the degree of severity of their condition or injury [5], triage was, prior to the pandemic, performed in front of each examination room. Switching from such triage to triage in the pandemic is an essential change in the operation of the EC. The professional medical community recommends that triage in mass disasters (including a pandemic) should be performed by doctors with considerable clinical experience [6], senior physicians, particularly intensive care and emergency medicine specialists [7]. This was, in fact, applied when the Admissions Triage Facility of Emergency Medicine was formed, placing emergency medicine specialists in the front line.

Ono što je bilo i ostalo presudno za samu ustanovu jeste ublažavanje širenja infekcije unutar ustanove, pogotovo sprečavanje prodora SAR-KoV-2 virusa na odeljenja intenzivne nege.

Na ovaj način je bilo moguće prihvatiti sve kritično obolele pacijente u UC-u bez rizika (ili sa malim rizikom) za transmisiju KOVID-19 infekcije.

Naravno, ni u idealnim uslovima, a ponajmanje u situaciji u kakvoj se sad nalazimo, ne postoji trijaža bez mana. Osnovni nedostatak ovakvog razvrstavanja pacijenata jeste prvenstveno oslanjanje na kliničku sliku i simptome bolesnika, koji su, kod KOVID-19 oboljenja, veoma raznovrsni i nespecifični. Povišena temperatura, dispneja, bol u grlu i malaksalost nisu vezani samo za KOVID-19 oboljenje, pa se često dešavalo da se u ambulanti zbrinjavaju pacijenti kod kojih se naposletku dijagnostikuje srčano popuštanje, pogoršanje HOBP-a ili astme, bakterijska pneumonija, plućna embolija, sepsa, itd. Zbog same prostorne ograničenosti nisu razdvajani febrilni ili respiratorno insuficijentni pacijenti manje suspektni na KOVID-19 infekciju od visoko suspektnih pacijenata. Površina ambulante od 50m^2 i raspoloživost od 6 - 12 kreveta sa 6 kiseoničkih mesta, pokazali su se nedovoljnim za zbrinjavanje velikog broja pacijenata koji su se istovremeno javljali u UC. Sličan problem imali su i drugi urgentni centri, što su Levi i saradnici pokazali u svom radu, iz 2020. godine, koji se bavi organizacijom trijaže na urgentnom prijemu Šiba (*Sheba*) medicinskog centra [9]. Prostorna ograničenost je postojala i u delu za oblačenje i uklanjanje LZO-a, što je često zahtevalo improvizaciju.

Takođe, nedostatak ovakve trijaže predstavlja i to što se ona odnosi samo na razvrstavanje bolesnika u odnosu na ER a ne i na stepen hitnosti bolesti ili povreda. Stepen hitnosti se i dalje određuje zasebno u okviru svake ambulante, pa i u PTA. Razlog toga je već opisan deficit prostora za trijažu kao i deficit kadra. Međutim, Prijemno trijažno odeljenje urgentne medicine, nastalo zbog potreba pandemije i afirmisano u poslednjih godinu dana, već radi na implementaciji novih trijažnih protokola za kategorizaciju bolesnika po stepenu hitnosti (SRTS protokol) što će uslediti nakon proširenja kadrovskih i prostornih kapaciteta.

ZAKLJUČAK

Delotvorna trijaža je najvažnija tokom bilo koje situacije masovnih nesreća, u koju spada i pandemija, jer veliki broj pacijenata može brzo nadvladati ograničene raspoložive resurse. Zato su jasni protokoli (zakonski uokvireni) urgentnog zbrinjavanja u svim situacijama, itekako potrebni, kao i prateća infrastruktura.

Sukob interesa: Nije prijavljen.

There are still many unknowns related to the SARS-CoV-2 virus and the COVID-19 disease, but it was very quickly established what the only effective course of action in the fight against the disease entails, this being: strict isolation of suspected or confirmed COVID-19 patients, protective measures, and mass testing [8]. Immunization, as a way of limiting infection spread, became available a year after the infection emerged. As it was not possible to test every patient coming to the EC, and since the result of the PCR test, as the most reliable diagnostic test, takes time, it is clear that isolation of patients suspected of the infection was the best way to limit infection spread. This was, in fact, the aim of Emergency Center reorganization, which is why a separate, admissions triage examination room was established. Patients with confirmed COVID-19 infection were referred to covid hospitals, without further delay. What was, and still is, of the utmost importance for the hospital itself, was reducing the spread of the infection within its walls, especially preventing the SARS-CoV-2 virus from entering the intensive care units.

In this way, it was possible to admit all critically ill patients to the EC with no or very little risk of further COVID-19 transmission.

Of course, even in ideal conditions, let alone in the situation that we have found ourselves, flawless triage does not exist. The main drawback of this patient triage system is relying on the clinical presentation and symptoms exhibited by the patient, which, in COVID-19, tend to be very varied and nonspecific. Elevated body temperature, dyspnea, a sore throat, and malaise are not symptoms connected only to the COVID-19 disease, which is why it has often occurred that some of the patients initially cared for in the ATER were eventually diagnosed with heart failure, COPD or asthma exacerbation, bacterial pneumonia, pulmonary embolism, sepsis, etc. Due to constraints in available space, febrile or patients with respiratory insufficiency, who were less suspicious of COVID-19, were not separated from patients with a high suspicion of the infection. The floor area of 50 square meters and the availability of 6 - 12 beds with 6 spots for oxygen supply have proven to be insufficient for treating a large number of patients arriving at the EC at the same time. Other emergency centers have faced a similar problem, as reported by Levy et al., in their study from 2020, which describes the organization of triage at the Sheba Medical Center [9]. Space was limited in the changing and PPE disposal area, as well, which often necessitated improvisation.

Another disadvantage of this type of triage is that it applies only to grouping patients according to ER and not also according to the degree of emergency of the illness or injury. The degree of emergency is still

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determined separately within each examination room, including the ATER. This is due to the already described lack of space for triage as well as the deficit in staff. However, the Admissions Triage Facility of Emergency Medicine, which was formed to meet the needs arising in the pandemic, and which has been developing and establishing itself over the past year, is already working on implementing new triage protocols for categorizing patients by degree of emergency (the SRTS protocol), which will be implemented immediately after capacities in both staff and space are increased.

CONCLUSION

Effective triage is of the utmost importance in any situation where there are mass casualties, which includes pandemics, since a great number of patients can very quickly overwhelm the limited available staff and resources. This is why clearly outlined protocols (defined by law) for emergency care in all situations are absolutely necessary, as is supporting infrastructure.

Conflict of interest: None declared.