

# MERE PREVENCIJE I KONTROLE KOVID-19 INFEKCIJE: URGENTNI CENTAR UNIVERZITETSKOG KLINIČKOG CENTRA SRBIJE

ORIGINALNI RAD

ORIGINAL ARTICLE

## COVID-19 PREVENTION AND CONTROL MEASURES: EMERGENCY CENTER OF THE UNIVERSITY CLINICAL CENTER OF SERBIA

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### SAŽETAK

Čovečanstvo je za manje od godinu dana uspešno započelo dugi i tešku borbu sa virusom, moćnim oružjem – vakcinom. Pored vakcinacije, koja je nesumnjivo najvažnija mera prevencije nastanka KOVID-19 infekcije, naše odgovorno ponašanje (nošenje maski, higijena ruku, poštovanje fizičke distance), posebno u ovom periodu povećanja broja obolelih i pojave novih sojeva, takođe predstavlja važnu meru prevencije i kontrole KOVID-19 infekcije. U ovom radu, dat je pregled stručnih preporuka i instrukcija za epidemiološki nadzor zdravstvenih ustanova. Korišćena je deskriptivna analiza za opisivanje Uputstva za racionalnu upotrebu lične zaštitne opreme u zdravstvenim ustanovama u zavisnosti od aktivnosti koje se izvode, kao i Preporuka američkih Centara za prevenciju i kontrolu bolesti (Atlanta, SAD). Cilj rada je da se prikaže način organizovanja epidemiološkog nadzora Službe za epidemiologiju Univerzitetskog kliničkog centra Srbije (UKCS) u Urgentnom centru UKCS-a (UC-UKCS) kao i primena mera prevencije i kontrole KOVID-19 infekcije. S tim u vezi, opisan je način trijaže pacijenata sa sumnjom na KOVID-19 u UC-UKCS-u. Formiran je Algoritam za postupke sa pacijentima sa sumnjom i dokazanom infekcijom KOVID-19 za pacijente Urgentnog centra Srbije. Ovaj Algoritam primenjuje se od 01. 03. 2020. godine u Trijažnoj službi Prijemne ambulante UC-UKCS-a. Osim ovog Algoritma primenjuje se i skrining medicinskog osoblja na SaRS-KoV-2 uzorkovanjem briseva nazofarinksa i gušve (za PCR analizu i antigenske testove) i krvi (za serološke analize).

**Ključne reči:** KOVID-19, epidemiološki nadzor, prevencija, Srbija

### ABSTRACT

In less than a year, humanity has managed to start a long and difficult battle against a virus, with a powerful weapon - the vaccine. In addition to vaccination, which is undoubtedly the most important measure in preventing COVID-19, our responsible behavior (wearing masks, hand hygiene, observing physical distance), especially in this period of an increase in the number of patients and the emergence of new strains, also remains an important measure in preventing and controlling the spread of COVID-19. In this paper, an overview of professional recommendations and instructions for the epidemiological surveillance of health care institutions is given. The study objective is to present the manner of organizing the epidemiological surveillance of the Epidemiology Department of the University Clinical Center of Serbia (UCCS) at the Emergency Center of the UCCS (EC-UCCS) as well as the application of measures to prevent and control COVID-19. To this end the method of the triage of patients with suspected COVID-19 in the Emergency Center of the UCCS has been shown. The Guidelines for the Rational Use of Personal Protective Equipment in Healthcare Facilities Depending on the Activities Performed, as well as the Recommendations of the Centers for Disease Prevention and Control (Atlanta, USA) have been presented. The Algorithm for the Procedures with Patients with Suspected and Proven COVID-19 Infection for Patients of the EC-UCCS has been formed. This Algorithm has been in use since March 1, 2020, in the EC-UCCS Admissions Service Triage Facility. In addition to this Algorithm, the screening of medical staff for SARS-CoV-2 has been performed by sampling nasopharyngeal and throat swabs (for PCR analysis and antigen tests) and blood (for serological analyses).

**Key words:** COVID-19, epidemiological surveillance, prevention, Serbia

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## UVOD

Ako se postavi pitanje u vezi sa tim šta je unazad godinu dana bila glavna a ponekad i jedina tema o kojoj se govorilo na svim jezicima sveta, nije teško dati tačan odgovor i reći samo jednu reč: KOVID-19. Pandemija uzrokovana novim korona virusom nazvanim SARS-CoV-2, promenila je živote ljudi i njihove navike, uvela ograničenja u svakodnevni život, i čitavom čovečanstvu u 21. veku donela neizvesnost i novu dimenziju poimanja stvarnosti i brige o sopstvenom zdravlju.

Zahvaljujući savremenim naučnim i tehničkim dostignućima, koja su našla svoju primenu i u medicini, omogućena je brza dijagnostika kao i brzo lečenje KOVID-19 oboljenja. Dijagnostika KOVID-19 infekcije je brza, primenjuju se najbolji protokoli lečenja, ali i pored toga, više od godinu dana od početka KOVID-19 pandemije, čitav svet se i dalje suočava sa velikim brojem obolelih i teškom kliničkom slikom ove bolesti.

Korona virus je pokazao da nema sezonski karakter, da se veoma lako širi sa jedne na drugu osobu, ukoliko se mere prevencije ne primenjuju, kao i to da nas može iznenaditi kada se tome najmanje nadamo [1,2]. U svetu je, do 14. 06. 2021. godine, zaraženo 175.541.600, a preminulo oko 3.798.360 ljudi, dok je u Srbiji, do 14. 06. 2021. godine, zaraženo 715.604 a preminulo 6.990 ljudi [3].

## CILJEVI RADA

1. Prikaz načina organizovanja epidemiološkog nadzora Službe za epidemiologiju UKCS-a i Urgentnog centra UKCS-a, kao i prikaz primene mera prevencije i kontrole KOVID-19 infekcije.
2. Prikaz načina trijaže pacijenata sa sumnjom na KOVID-19 infekciju u Urgentnom centru UKCS-a.

## METODE

U ovom radu dat je pregled stručnih preporuka i instrukcija za epidemiološki nadzor zdravstvenih ustanova. Korišćena je deskriptivna analiza za opisivanje Uputstva za racionalnu upotrebu lične zaštitne opreme u zdravstvenim ustanovama u zavisnosti od aktivnosti koje se izvode [4], kao i Preporuke američkih Centara za prevenciju i kontrolu bolesti (Atlanta, SAD) [5].

## REZULTATI

U periodu od 01. 03. 2020. godine do 31. 05. 2021. godine, kroz Prijemno-trijažnu ambulantu UKCS-a prošlo je više od 490 hiljada pacijenata. Lekari i medicinske sestre Klinike za urgentnu hirurgiju UC-UKCS-a zbrinuli su i pregledali više od 330 hiljada pacijenata, dok je kroz ambulante Klinike za zbrinjavanje urgentnih internističkih stanja prošlo više od 160 hiljada pacijenta.

## INTRODUCTION

It is fairly easy to answer the question as to what has been the main, and often only topic of discussion, in all the languages of the world, in the past year, with only one word - COVID-19. The pandemic caused by the new corona virus SARS-CoV-2 has changed people's lives as well as their habits; it has introduced limitations into everyday life, and has brought with it an uncertainty leading to a new dimension in the comprehension of reality and the understanding of what caring for one's own health entails.

Owing to contemporary scientific and technical achievements, which have also found their application in medicine, quick diagnostics and timely treatment of COVID-19 has become possible. The diagnosis of COVID-19 is swift, the best treatment protocols are being applied, however, more than a year after the start of the COVID-19 pandemic, the entire world is still faced with a large number of those afflicted with the infection and with the severe clinical presentation of the disease.

The corona virus has shown that it is not seasonal in its nature, that it spreads very easily from person to person, if preventive measures are not applied, and that it can surprise us when we least expect it [1,2]. Worldwide, as of June 14, 2021, 175,541,600 people have been infected, and 3,798,360 people have died, while, in Serbia, as of June 14, 2021, 715,604 people have been infected, and 6,990 people have died [3].

## STUDY OBJECTIVES

1. The presentation of the method of organizing epidemiological surveillance of the Epidemiology Department of the UCCS and the Emergency Center of the UCCS, as well the presentation of the application of COVID-19 prevention and control measures.
2. The presentation of the triage method for patients suspected of having COVID-19 at the Emergency Center of the UCCS.

## METHODS

This paper presents an overview of professional recommendations and instructions for the epidemiological surveillance of healthcare facilities. Descriptive analysis has been applied for describing the Guidelines for the Rational Use of Personal Protective Equipment in Healthcare Facilities Depending on the Activities Performed [4], as well as the Recommendations of the Centers for Disease Prevention and Control (Atlanta, USA) [5].

## RESULTS

In the period between March 1, 2020, and May 31, 2021, more than 490 thousand patients have been processed at the UCCS Admissions Service Triage Facility.

Od početka KOVID-19 epidemije u Republici Srbiji, UC-UKCS je, u saradnji sa osobljem Službe za bolničku epidemiologiju UKCS-a, preduzeo sve mere prevencije i kontrole KOVID-19 infekcije u bolničkoj sredini, a na osnovu preporuka nadležnih gradskih i republičkih institucija, i u skladu sa svetskim i evropskim preporukama mera prevencije i kontrole KOVID-19 infekcije [4,5,6,7,8]. Epidemiološki nadzor nad KOVID-19 infekcijom u Urgentnom centru UKCS-a zasniva se na poštovanju preporuka za kontrolu i prevenciju KOVID-19 infekcije u zdravstvenim ustanovama, koje su se odnosile i na pacijente i na medicinsko osoblje.

Na osnovu preporuka nadležnih republičkih institucija Republike Srbije i Preporuka Centara za kontrolu i prevenciju bolesti iz Atlante (SAD), formiran je Algoritam za postupke sa pacijentima sa sumnjom i dokazanom infekcijom KOVID-19 za pacijente Urgentnog centra Srbije (Tabela 1). Ovaj Algoritam primenjuje se od 01. 03. 2021. godine u Trijažnoj službi Prijemne ambulante UC-UKCS-a.

S obzirom da je UC-UKCS otvoren za sve pacijente i da kontinuirano radi tokom pandemije, svaki hospitalizovani pacijent mora da se prethodno ispita na KOVID-19. Prema Algoritmu (Tabela 1), ako je na prijemnom šalteru UC-UKCS-a pacijent potvrdio sumnju na KOVID-19, takav pacijent se prevodi u dezinfikovanu Sobi za izolaciju gde se vrši hirurška opservacija i, shodno kliničkoj slici i dominantnim simptomima i znacima bolesti, pozivaju se dežurni lekar konsultant - za nastavak lečenja, kao i nadležni epidemiolog - da organizuje testiranje na KOVID-19. Pre ulaska u Sobi za izolaciju, dežurni lekar konsultant i epidemiolog oblače kompletnu LZO po propisnoj proceduri. U periodu od 17. 03. 2020. godine do 31. 05. 2021. godine, za pacijente UC-UKCS-a izvršeno je više od 1.500 uzorkovanja brisa guše i nazofarinksa za PCR na SARS-KoV-2 i skoro 2.000 antigenskih testova, kao i više od hiljadu seroloških analiza na prisustvo antitela IgG i IgM klase.

U Sobi za izolaciju postoji ultrazvučni aparat i pokretni rendgen aparat, te pacijent kod koga je postavljena sumnja na KOVID-19 ne napušta Sobi za izolaciju, osim kada mora da ide na neku dodatnu dijagnostičku proceduru koja se izvodi van Sobe za izolaciju (npr. skener abdomena ili grudnog koša). Tada se pacijentu stavlja hirurška maska i dolazak se najavljuje.

Pacijenti koji su bili u Sobi za hiruršku izolaciju, po dolasku pacijenta sa sumnjom na KOVID-19, prevode se u prostor internističke opservacije. Ukoliko je kapacitet ovih prostorija popunjen, pacijenti se privremeno prevode u prostor biblioteke Urgentnog centra ili drugi prostor namenjen u te svrhe. Na primer, prema kliničkoj proceni, hirurški pacijenti sa sumnjom na KOVID-19 se prevode iz Sobe za izolaciju na Hirurgiju 4 ili

The doctors and nurses at the Clinic for Emergency Surgery of the EC-UCCS have examined and taken care of more than 330 thousand patients, while more than 160 thousand patients were processed at the Internal Medicine Emergency Clinic.

Since the start of the COVID-19 epidemic in the Republic of Serbia, the EC-UCCS, through the support of the staff of the Department for Hospital Epidemiology of the UCCS, has been implementing all the measures for in-hospital prevention and control of COVID-19, based on the recommendations of the competent city and national institutions, and in keeping with the international and European recommendations related to measures for the prevention and control of COVID-19 [4,5,6,7,8]. Epidemiological surveillance of COVID-19 at the Emergency Center of the UCCS is based on the observance of recommendations for the control and prevention of COVID-19 in healthcare facilities, which relate both to patients but also to medical staff.

Based on the recommendations of the competent national institutions of the Republic of Serbia and the Recommendations of the Centers for Disease Prevention and Control (Atlanta, USA), the Algorithm for the Procedures with Patients with Suspected and Proven COVID-19 Infection for Patients of the EC-UCCS was formed (Table 1). This Algorithm has been in use since March 1, 2021 at the EC-UCCS Admissions Service Triage Facility.

Bearing in mind that the EC-UCCS is open to all patients and that it has been working continuously throughout the pandemic, each hospitalized patient must first be tested for COVID-19. According to the Algorithm (Table 1), if the patient has confirmed suspicion of COVID-19 at the reception desk of the EC-UCCS, he/she is moved to the disinfected Isolation Room where surgical observation is carried out and, depending on the clinical presentation and the dominant symptoms and signs of disease, the consultant physician on duty is called in - for the purpose of further treatment, while the epidemiologist in charge is called in - to organize COVID-19 testing. Before entering the Isolation Room, the consultant physician on duty and the epidemiologist put on full PPE, as per the required procedure. In the period between March 3, 2020, and May 31, 2021, more than 1,500 throat and nasopharyngeal swabs were taken for the purpose of PCR testing for SARS-CoV-2; almost 2,000 antigen tests were carried out, as well as more than a thousand serological tests for the presence of IgG and IgM antibodies.

The Isolation Room is equipped with an ultrasound machine and a mobile X-ray machine, which is why a patient with suspected COVID-19 does not leave the Isolation Room unless it is necessary for the patient to undergo an additional diagnostic procedure that must



**Tabela 1.** Algoritam za postupke sa pacijentima sa sumnjom i dokazanom infekcijom KOVID-19 za pacijente Urgentnog centra Srbije sadrži deset hijerarhijski povezanih postupaka:

1. Osoblje na trijaži postavlja pitanja pacijentu o tome: da li ima simptome i znake infekcije respiratornog trakta; da li ima temperaturu; da li ima bolove u mišićima; da li je putovao-la van zemlje u poslednjih 14 dana; kao i da li je bio-la u kontaktu sa osobom obolelom od KOVID-19 infekcije.
2. Ukoliko je samo jedan od ovih odgovora pozitivan, pacijent se prevodi u Sobu za izolaciju (hirurška opservacija) i poziva se nadležni epidemiolog Službe za epidemiologiju UC-UKCS-a, u cilju organizovanja testiranja na KOVID-19.
3. Pacijent sa sumnjom na KOVID-19 zbrinjava se u Sobi za izolaciju (hirurška opservacija).
4. U zavisnosti od kliničke slike, kao i simptoma i znakova bolesti, poziva se dežurni lekar konsultant (anesteziolog, hirurg, internista, neurolog, i sl.).
5. Dežurni lekar, konsultant, pre ulaska u Sobu za izolaciju, po propisanoj proceduri oblači ličnu zaštitnu opremu (LZO) koju čine: maska, mantil/ kombinizon, rukavice, zaštitne naočare/vizir.
6. U Sobi za izolaciju postoji ultrazvučni aparat i pokretni rendgen aparat. Pacijent ne napušta Sobu za izolaciju radi sprovođenja dijagnostike.
7. U slučaju potrebe da pacijent mora da ide na neku dodatnu dijagnostičku proceduru van Sobe za izolaciju (npr. skener), pacijentu se stavlja hirurška lična zaštita.
8. U slučaju potrebe da pacijent mora da ide na neku dodatnu dijagnostičku proceduru van Sobe za izolaciju (npr. skener), dolazak pacijenta se mora najaviti.
9. U zavisnosti od procene ordinirajućih lekara, kliničke slike, ali i potrebe za daljom dijagnostikom i lečenjem, pacijenti sa sumnjom na KOVID-19 se prevode na sledeća odeljenja:
  - A. Hirurški pacijenti iz Sobe za izolaciju se prevode u sobu broj 15 (odeljenje: Hirurgija 4) ili direktno u operacionu salu. Osoblje primenjuje sve mere lične zaštite u radu sa pacijentima sa sumnjom ili dokazanom infekcijom uzrokovanom SARS-KoV-2 virusom. (Videti stavku 5.)
  - B. Internistički i neurološki pacijenti prevode se u sobu određenu za izolaciju na Odeljenja opšte intenzivne nege (OIN). U takvim slučajevima, osoblje Opšte intenzivne nege primenjuje sve neophodne mere lične zaštite u radu sa pacijentima sa sumnjom ili dokazanom infekcijom uzrokovanom SARS-KoV-2 virusom. (Videti stavku 5.)
  - C. Operaciona sala - osoblje primenjuje sve potrebne mere lične zaštite u radu sa pacijentima sa sumnjom ili dokazanom infekcijom uzrokovanom SARS-KoV-2 virusom (Videti stavku 5.)
  - D. Ukoliko se pacijentu, koji je primljen u UC, PCR testom utvrdi da se ne radi o KOVID-19 infekciji, pacijent se prevodi na hirurško/internističko odeljenje u cilju daljeg lečenja.
  - E. Ukoliko se pacijentu, koji je primljen u UC, PCR/antigenskim testom potvrdi KOVID-19, pacijent se prevodi u neku od bolnica određenih za prijem KOVID-19 pacijenata.
10. Nakon što pacijent napusti Sobu za izolaciju, primenjuju se mere dezinfekcije prostora.

**Table 1.** The Algorithm for the Procedures with Patients with Suspected and Proven COVID-19 Infection for Patients of the EC-UCCS comprises ten hierarchically linked procedures:

1. The triage staff asks the patient questions regarding the following: whether he/she is experiencing symptoms and signs of respiratory tract infection; whether he/she is running a fever; whether he/she is experiencing muscle pain; whether he/she has travelled abroad in the previous 14 days; whether he/she has been in contact with a person who has developed the COVID-19 infection.
2. If any of the answers to the questions listed above is affirmative, the patient is transferred to the Isolation Room (surgical observation) and the epidemiologist in charge is called in from the Epidemiology Department of the EC-UCCS, for the purpose of organizing testing for COVID-19.
3. A patient with suspected COVID-19 infection is taken care of in the Isolation Room (surgical observation).
4. Depending on the clinical presentation, as well as on the symptoms and signs of disease, a consultant physician on duty is also called in (anesthesiologist, surgeon, internal medicine specialist, neurologist, etc.).
5. In keeping with the mandatory procedure, before entering the Isolation Room, the consultant physician on duty puts on personal protective equipment (PPE), which comprises: a medical mask, gown/coverall, gloves, goggles/face shield.
6. The Isolation Room is equipped with an ultrasound machine and a mobile X-ray machine. The patient does not leave the Isolation Room for the purpose of diagnostic procedures.
7. In cases where it is necessary for the patient to undergo an additional diagnostic procedure that must be performed outside the Isolation Room (e.g., CT scan), the patient is equipped with surgical PPE.
8. In cases where it is necessary for the patient to undergo an additional diagnostic procedure that must be performed outside the Isolation Room (e.g., CT scan), the arrival of the patient must be announced in advance.
9. Depending on the assessment of the doctors on duty, the clinical presentation, but also depending on the need for further diagnostics and treatment, patients with suspected COVID-19 infection are further transferred to the following wards:
  - A. Surgical patients are moved from the Isolation Room to room 15 (department: Surgery 4) or directly to the operating theatre. The medical staff applies all personal protective measures when working with patients with suspected or proven infection caused by the SARS-CoV-2 virus. (See item 5.)
  - B. Internal medicine patients as well as neurological patients are moved to the room allocated for isolation on the General Intensive Care Ward (GIC). In such cases, the staff of the General Intensive Care Ward applies all necessary personal protective measures when working with patients with suspected or proven infection caused by the SARS-CoV-2 virus. (See item 5.)
  - C. Operating theatre – the staff applies all necessary personal protective measures when treating patients with suspected or proven infection caused by the SARS-CoV-2 virus. (See item 5.)
  - D. If a PCR test proves that there is no COVID-19 infection in a patient admitted to the Emergency Center, that patient is transferred to a surgical or internal medicine ward, for the purpose of further treatment.
  - E. If the PCR or antigen test confirms COVID-19 infection in a patient admitted to the EC, the patient is transferred to one of the hospitals designated for admitting COVID-19 patients.
10. After the patient leaves the Isolation Room, procedures for disinfecting the room are applied.

direktno u operacionu salu, ili u sobu određenu za izolaciju na Odeljenju intenzivne nege. Ukoliko pacijent sa sumnjom na KOVID-19 ima negativan rezultat PCR testa na KOVID-19, takav pacijent se prevodi na hirurško/internističko odeljenje u cilju daljeg lečenja, dok se pacijenti sa pozitivnim PCR testom prebacuju u neku od bolnica određenih za prijem KOVID-19 pacijenata.

Svaki put kada pacijent sa sumnjom ili potvrđenom KOVID-19 infekcijom napusti Sobu za izolaciju, npr. za skener dijagnostiku ili operacionu salu, vrši se mehaničko čišćenje prostorija i dezinfekcija površina i prostora [8]. Osim ove uobičajene procedure, prostor UC-UKCS-a dezinfikuje se i pomoću aparata za produkciju aerosola (aerosol generišića procedura ili dezinfekcija ultravioletnim zracima), čime se dodatno vrši dezinfekcija svih vertikalnih i horizontalnih površina u prostorijama UC-UKCS-a.

Osim poštovanja Algoritma za postupke sa pacijentima sa sumnjom i dokazanom infekcijom KOVID-19 za pacijente Urgentnog centra Srbije, primenjuje se i skrining medicinskog osoblja na SARS-KoV-2. Skrining medicinskog osoblja radi se uzorkovanjem briseva nazofarinksa i guše (za PCR analizu i antigenske testove), i krvi (za serološke analize). Ovaj skrining vrši se je prema Stručno metodološkom uputstvu za kontrolu novog korona virusa SARS-KoV-2 u Republici Srbiji [8]. U periodu od 01. 04. 2020. godine do 31. 05. 2021. godine, za osoblje UC-UKCS-a, izvršeno je više od 1.000 PCR testiranja, kao i više od 2.000 antigenskih testova i seroloških analiza.

## DISKUSIJA

Univerzitetski Klinički centar Srbije (UKCS) treća je po veličini zdravstvena institucija na svetu [6]. Urgentni centar UKCS-a (UC-UKCS) deo je ovog velikog sistema u kome se tokom 24 časa zbrine više od hiljadu pacijenata koji zahtevaju hitnu medicinsku pomoć. Pacijenti koji se pregledaju u ambulancama UC-UKCS-a uglavnom su sa područja Grada Beograda. S obzirom na opremljenost UC-UKCS-a i kadrovski potencijal ove zdravstvene ustanove, u UC-UKCS-u se zbrinjavaju najteži kritično oboleli i traumatizovani pacijenti iz čitave Republike Srbije i okruženja, i to pre svega u jedinicama intenzivnog lečenja.

Algoritam za postupke sa pacijentima sa sumnjom i dokazanom infekcijom KOVID-19 za pacijente Urgentnog centra Srbije primenjuje se od 01. 03. 2020. godine na dalje. Ovaj Algoritam, putem kratkih i jasnih objašnjenja, daje precizna uputstva osoblju UC-UKCS-a na koji način da postupaju u situacijama sumnje na KOVID-19.

Prema Stručno metodološkom uputstvu za prevenciju i kontrolu novog korona virusa SARS-KoV-2 u Republici Srbiji [8] i Algoritmu za postupke sa pacijentima sa sumnjom i dokazanom infekcijom KOVID-19

be performed outside the Isolation Room (e.g., CT scan of the abdomen or thorax). In such cases the patient is equipped with a medical mask and his/her arrival is announced in advance.

When a patient, with suspected COVID-19 is brought into the Room for Surgical Isolation, the patients who had previously been in that room are moved to the space for internist observation. If the capacity of this space is filled out, the patients are temporarily moved to the Emergency Center library or to some other space allocated for that purpose. For example, depending on the clinical assessment, surgical patients with suspected COVID-19 are moved from the Isolation Room to Surgery 4 or directly to an operating theater, or to a room designated for patient isolation on the Intensive Care Ward. If the PCR test for a patient with suspected COVID-19 is negative, this patient is transferred to a surgical or internal medicine ward for further treatment, while patients with positive PCR tests are transferred to one of the hospitals designated for admitting COVID-19 patients.

Every time a patient with suspected or confirmed COVID-19 infection leaves the Isolation Room, for instance for CT diagnostics, or when they are taken to an operating theater, mechanical cleaning of the space is performed, as well as the disinfection of the space and surfaces [8]. In addition to this routine procedure, the rooms of the EC-UCCS are also disinfected with aerosol generating equipment (aerosol generating procedure or UVC disinfection), which additionally disinfects all vertical and horizontal surfaces within the EC-UCCS.

In addition to observing the Algorithm for the Procedures with Patients with Suspected and Proven COVID-19 Infection for Patients of the EC-UCCS, screening of medical staff for SARS-CoV-2 is also being carried out. Medical staff screening is performed by testing nasopharyngeal and throat swab specimens (PCR analysis and antigen tests) and blood samples (serological analyses). This screening is performed in keeping with the Professional Methodological Instructions for the Control of the New Corona Virus SARS-CoV-2 in the Republic of Serbia [8]. In the period between April 1, 2020, and May 31, 2021, more than 1,000 PCR tests were performed on the staff of the EC-UCCS, as well as over 2,000 antigen tests and serological analyses.

## DISCUSSION

The University Clinical Center of Serbia (UCCS) is the third largest healthcare institution in the world [6]. The Emergency Center of the UCCS (EC-UCCS) is a part of this large system where, during a 24-hour period, more than 1,000 patients in need of emergency medical care, are treated. The patients examined in the examination rooms of the EC-UCCS are mostly from the territory of

za pacijente Urgentnog centra Srbije, vrši se skrining i pacijenata i medicinskog osoblja na SARS-KoV-2 uzorkovanjem briseva guše i nazofarinksa (za PCR analizu i antigenske testove) i krvi (za serološku analizu).

Kovid ambulanta Službe za epidemiologiju UC-UKCS-a organizuje i sprovodi brzi skrining osoblja sa simptomima i znacima infekcije suspektne na SARS-KoV-2. Služba za mikrobiologiju UKCS-a (laboratorija „Vatreno oko“) radi brzu dijagnostiku KOVID-19 infekcije. Saradnjom sa osobljem svih klinika i službi u UC-UKCS-u omogućena je primena i kontrola mera prevencije i kontrole KOVID-19 infekcije u UC-UKCS-u. Kao i u drugim granama medicine, multidisciplinarni pristup u prevenciji i kontroli KOVID-19 infekcije u UC-UKCS-u, uz kontinuirani epidemiološki nadzor nad pacijentima i osobljem, omogućili su da se i u toku KOVID-19 epidemije, u UC-UKCS-u kontinuirano vrši prijem, zbrinjavanje i lečenje kritično obolelih pacijenata.

KOVID-19 pandemija ujedinila je čovečanstvo u borbi protiv virusa, ali je izolovala i udaljila ljude. No, pored svega što nas je u vezi sa infekcijom novim korona virusom iznenadilo, čovečanstvo je, ipak, za manje od godinu dana, uspelo da se još jednom suprotstavi nepoznatom, i da, koristeći svoje znanje, započne dugu i tešku borbu sa virusom, koristeći moćno oružje – vakcinu.

Za kratak vremenski period, manje od godinu dana od početka KOVID-19 pandemije, ujedinjeni naučni timovi dali su nadu da se možemo na pravi način suprotstaviti KOVID-19 infekciji. Novi sojevi korona virusa nas upozoravaju da moramo da i dalje istrajemo u profesionalnim naporima protiv nevidljivog neprijatelja, čije su posledice na ljudski rod vidljive u svim aspektima života savremenog čoveka.

Pored vakcinacije, koja je nesumnjivo najvažnija mera prevencije nastanka KOVID-19 infekcije, naše odgovorno ponašanje (nošenje maski, higijena ruku, poštovanje fizičke distance), posebno u ovom periodu povećanja broja obolelih i pojave novih sojeva, takođe predstavlja važnu meru prevencije i kontrole KOVID-19 infekcije.

KOVID-19 pandemija je jedna od onih istorijskih i epskih priča kojih se nove generacije ljudi neće sećati iz ličnog iskustva, ali će se o njoj, kao i o mnogim drugim, za istoriju čovečanstva važnim temama, pričati kao o onim koje su promenile savremeni svet.

## ZAKLJUČAK

Za proteklih 15 meseci, kroz Prijemno-trijažnu ambulantu Klinike za urgentnu medicinu UKCS-a prošlo je više od 490 hiljada pacijenata. Poštujući zvanična uputstva i preporuke za primenu mera prevencije i kontrole KOVID-19 infekcije, u ambulantama Klinike za zbrinjavanje urgentnih internističkih stanja, zbrinuto je više od 160 hiljada pacijenta, a na drugim odeljenjima,

the City of Belgrade. Due to the level of medical equipment and the medical staff potential of this healthcare facility, patients with the most severe medical conditions and states of trauma from the entire territory of the Republic of Serbia, as well as from the region, are treated at the EC-UCCS, primarily in intensive care units.

The Algorithm for the Procedures with Patients with Suspected and Proven COVID-19 Infection for Patients of the EC-UCCS has been in use as of March 1, 2020, onwards. The concise and clear explanations of this Algorithm provide precise instructions for the staff of the EC-UCCS regarding the correct procedures to be carried out in cases where there is a suspicion of COVID-19.

According to the Professional Methodological Instructions for the Control of the New Corona Virus SARS-CoV-2 in the Republic of Serbia [8] and the Algorithm for the Procedures with Patients with Suspected and Proven COVID-19 Infection for Patients of the EC-UCCS, screening for SARS-CoV-2, for both patients and staff, is performed by sampling throat and nasopharyngeal swabs (for PCR analysis and antigen tests) and blood (for serological analysis).

The Covid Clinic of the EC-UCCS Epidemiology Department has been organizing and carrying out rapid screening of staff exhibiting signs and symptoms of infection indicative of SARS-CoV-2. The UCCS Microbiology Department (the “Fire Eye” laboratory) has been performing rapid diagnostics of COVID-19. Cooperation with the staff of all clinics and departments of the EC-UCCS has enabled the application and monitoring of preventive and control measures related to COVID-19 in the EC-UCCS. As in other branches of medicine, the multidisciplinary approach in the prevention and control of COVID-19 at the EC-UCCS, together with continued epidemiological surveillance of patients and staff, has made it possible for the EC-UCCS to continue admitting, processing and treating critically ill patients throughout the COVID-19 epidemic.

The COVID-19 pandemic has united humanity in the battle against the virus itself, but has, on the other hand, isolated and distanced people. However, despite all that has surprised us regarding the new corona virus infection, the human race has managed, yet again, to fight back against the unknown, and to start a long and difficult battle against the virus, using knowledge to create a mighty weapon – the vaccine.

Within a short time period, less than a year since the start of the COVID-19 pandemic, united scientific teams have given hope, providing a true way to fight COVID-19. New virus strains are warning us that professional efforts need to continue in our fight against the invisible enemy, whose effects on the human race are visible in all the aspects of modern life.



lekari i medicinske sestre UC-UKCS-a pregledali su i lečili više od 330 hiljada pacijenata.

Pored vakcinacije, koja je nesumnjivo najvažnija mera prevencije KOVID-19 infekcije, naše svakodnevno odgovorno ponašanje ostaje važna mera prevencije i kontrole KOVID-19 infekcije u cilju smanjenja broja obolelih i borbe sa novim sojevima.

**Sukob interesa:** Nije prijavljen.

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In addition to vaccination, which is undoubtedly the most important measure of COVID-19 prevention, our responsible behavior (wearing masks, hand hygiene, observing physical distance), especially in this period, when the number of infected people is rising and new strains of the virus are emerging, also remains an important measure of COVID-19 prevention and control.

The COVID-19 pandemic is one of those historical and epic tales which the next generations will not remember from personal experience; however, just as is the case with many other events of critical importance to humanity, COVID-19 will be spoken of as one of those that has changed the modern world.

## CONCLUSION

In the past 15 months, more than 490 thousand patients have been processed at the Admissions Service Triage Facility of the Clinic for Emergency Medicine of the EC-UCCS. Observing the official guidelines and recommendations for the application of measures for preventing and controlling COVID-19, more than 160 thousand patients were processed at the Internal Medicine Emergency Clinic, while the doctors and nurses of the other departments examined and treated more than 330 thousand patients.

In addition to vaccination, which is undoubtedly the most important measure of COVID-19 prevention, our daily responsible behavior also remains an important measure of COVID-19 prevention and control, aimed at decreasing the number of infected persons and fighting against the new strains of the virus.

**Conflict of interest:** None declared.