Impact of the COVID-19 Pandemic on Chronic Pain Management

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Abstract

Introduction: The COVID-19 pandemic has generated considerable turmoil in the interventional pain management (IPM) community. Due to IPM being classified as ‘elective’, numerous pain practices across the United States were forced to close during the pandemic, leaving chronic pain patients untreated for indefinite periods, and IPM physicians with increased stress and burnout.

Results: In response to these detrimental effects, various re-opening tools and techniques have been created to facilitate a cautious resumption of in-person interventional pain practice. Due to their ability to minimize person-to-person contact, telehealth and pharmacotherapy played a more significant role in IPM during the pandemic, but their increased utilization has also led to the exacerbation of substance abuse and the opioid epidemic. The interplay between steroid use and its immunosuppressive effects, in relation to the COVID-19 infection and the COVID-19 vaccine, has also arisen as an issue of concern.

Conclusion: As practices begin to safely re-open throughout the United States, the effects felt by chronic pain patients during the pandemic must be emphasized and not ignored. This review emphasizes the struggles pain patients have had to face during the pandemic and the need to update and redefine regulations regarding interventional and chronic pain management.

Keywords: chronic pain, interventional pain management, COVID-19, telemedicine, opioids, steroids, vaccines

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SAŽETAK

Uvod: Pandemija KOVID-19 oboljenja izazvala je velike potrese među svima koji su uključeni u intervencnu terapiju bola (ITB). Kako je ITB kategorisana kao „neobavezna”, brojne ordinacije za terapiju bola širom Sjedinjenih Američkih Država bile su prinuđene da zatvore svoja vrata tokom pandemije, ostavljajući pacijente sa hroničnim bolom bez terapije na neodređeno vreme, a lekare koji se bave ovom terapijom pod pojačanim stresom i sa sindromom „sagorevanja”.

Rezultati: Kao odgovor na ove štetne posledice, stvoreni su različiti mehanizmi i tehnike za ponovno otvaranje, kako bi se, uz oprez, ponovo nastavila praksa interventne terapije bola uživo. Kako imaju mogućnost da neposredni lični kontakt svedu na minimum, telemedicina i farmakoterapija dobile su značajniju ulogu u interventnoj terapiji bola tokom pandemije, ali njihova povećana primena je takođe dovela do pogoršanja situacije, kada su u pitanju zloupotreba narkotika i epidemija upotrebe opioida. Sadejstvo upotrebe steroida i njihovog imunosupresivnog efekta u odnosu na KOVID-19 infekciju i KOVID-19 vakcinu se takođe nametnulo kao važno pitanje.

Zaključak: Kako ordnacije počinju, u bezbednim uslovima, da se ponovo otvaraju, širom Sjedinjenih Američkih Država, posledice koje su osetili pacijenti sa hroničnim bolom tokom pandemije moraju se naglasiti i sa sindromom „sagorevanja”. Međutim, kao i potrebu da se ažuriraju i redefinišu propisi koji se tiče interventne i terapije hroničnog bola.

Ključne reči: hronični bol, interventna terapija bola, KOVID-19, telemedicina, opioidi, steroidi, vakcine

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UVOD

Tokom proteklih osamnaest meseci, pandemija bolesti izazvane koronavirusom 2019 (KOVID-19) prouzrokovala je dramatične društvene, ekonomske, kao i poremećaje u sistem u zdravstvene zaštite širom sveta. Zaključno sa 20. junom 2021. godine, samo u Sjedinjenim Američkim Državama, prijavljeno je ukupno 33.368.860 slučajeva KOVID-19 oboljenja, kao i 599.354 smrtnih slučajeva uzrokovanih oboljenjem KOVID-19 [1] (Tabela 1, Slika 1). Svi koji su uključeni u interventnu terapiju bola (ITB) posebno su osetili restrikcije koje nameće KOVID-19, a koje kategorijušu interventne tehnike kao „neobavezne“, čime je njihova primena, de facto, ukinuta tokom pandemije. Kao posledica ove situacije, pacijenti sa hroničnim bolom ostali su bez terapije na neodređeni vremenski period, što je pogoršalo njihove ishode i dovelo do toga da neki od njih potencijalno pribegnu neodgovarajućim alternativnim terapijskim rešenjima. Kada su u pitanju lekari koji se bave interventnom terapijom bola, pojačani stres i sindrom „sagorevanja“, nastali usled pandemije, dovodi do toga da većina lekara iz ove oblasti medicinskih praksi odluči da se odustane od izvođenja ITB, čime se u potpunosti osumnjiči potencijalno ugrožavanje pacijenata sa hroničnim bolom. Budući da je ukoliko lekari nečine, pacijenti sa hroničnim bolom neće biti u stanju da dožive rezultate lečenja.

Tabela 1. Podaci američkog Centra za kontrolu bolesti (engl. Centers for Disease Control - CDC) o slučajevima oboljenja od KOVID-19 infekcije i smrtnim slučajevima od ove bolesti, na mesečnom nivou, u periodu mart 2020 – maj 2021.

| Mesec / Month | Broj slučajeva na mesečnom nivou / Monthly cases | Broj smrti na mesečnom nivou / Monthly deaths |
|---------------|-------------------------------------------------|---------------------------------------------|
| January 2020  | 51                                              | 0                                           |
| February 2020 | 1,020                                           | 214                                         |
| March 2020    | 227,048                                         | 5,019                                       |
| April 2020    | 882,003                                         | 60,702                                      |
| May 2020      | 754,332                                         | 42,008                                      |
| June 2020     | 920,641                                         | 22,691                                      |
| July 2020     | 1,969,268                                       | 29,703                                      |
| August 2020   | 1,425,924                                       | 29,912                                      |
| September 2020| 1,222,948                                       | 21,982                                      |
| October 2020  | 1,947,482                                       | 24,667                                      |
| November 2020 | 4,569,319                                       | 44,340                                      |
| December 2020 | 6,480,794                                       | 88,316                                      |
| January 2021  | 5,966,253                                       | 100,646                                     |
| February 2021 | 2,281,405                                       | 60,194                                      |
| March 2021    | 1,765,200                                       | 28,726                                      |
| April 2021    | 1,819,244                                       | 18,991                                      |
| May 2021      | 880,395                                         | 14,898                                      |

INTRODUCTION

Over the past eighteen months, the coronavirus disease 2019 (COVID-19) pandemic has caused dramatic societal, economic, and healthcare disruptions across the world. As of June 20th, 2021, in the United States alone, a total of 33,368,860 cases of COVID-19 have been reported, along with 599,354 COVID-19 deaths [1] (Table 1, Figure 1). The interventional pain management (IPM) community has been especially impacted by COVID-19 restrictions, which classify interventional techniques as ‘elective’, effectively excluding their use during the pandemic. This has led to chronic pain patients being left untreated for indefinite periods of time, worsening their outcomes and causing some to potentially pursue inappropriate alternatives to treatment. As for interventional pain physicians, increased stress and burnout, derived from the pandemic, has led a majority of practitioners to develop a negative outlook of the future.

In order to safely resume in-person interventional pain practice, various screening, risk stratification, triaging, and resource utilization protocols were created, allowing practitioners to prioritize their most urgent cases while simultaneously limiting the spread of COVID-19. A significant shift towards telemedicine was also observed, as telehealth visits were utilized more...
frequently due to their ability to minimize contact between individuals. For that same reason, an emphasis was also placed on pharmacotherapy modalities to replace the treatment gap left by interventional techniques. However, a greater reliance on pharmacotherapy has subsequently led to the exacerbation of substance abuse and the opioid epidemic as well. Concerns over a potential link between steroid use and its immunosuppressive effects on COVID-19 infection and the COVID-19 vaccine have also surfaced due to uncertain outcomes and interactions.

**COVID-19 IMPACT ON CHRONIC PAIN PATIENTS**

**Effect on patient outcomes**

The implementation of COVID-19 restrictions, associated with social distancing, has resulted in the closure of adjuvant physical therapy centers, chiropractic clinics, and other healthcare services, severely limiting a patient's access to various modalities for managing their chronic pain [2]. Moreover, maintaining pharmacological regimens with patients has proven challenging for pain physicians, as many have been forced to restrict their practices, both due to state-guided restrictions, as well as to the lack of support staff.

Individuals working virtually from home have also developed repetitive strain injuries, as a result of the
sa pacijentima postalo otežano za lekare koji se bave terapijom bola, pošto su mnogi bili prinuđeni da ograniče rad svojih ordinacija, i zbog restrikcija nametnutih od strane države, ali i zbog nedostatka pomoćnog osoblja.

Kod ljudi koji su obavljali rad od kuće, takođe je došlo do razvoja povreda nastalih usled ponavljanjih naprezanja, što je bio rezultat loše ergonomičnosti među za rad, koja nisu zadovoljavala optimalne standarde [2]. Sa povećanjem količine vremena koje su porodice provodile zajedno kod kuće i povećanjem aktivnosti u prirodi, povezanim sa pandemijom, došlo je i do pojava novih povreda i akutnih pogoršanja hroničnih oboženja, kičme, nastalih usled aktivnosti kao što su po-pravke u kući, popravke na automobilu, pojačana rekreacija, ili igranje sa decom. Oni, kod kojih je došlo do ovih novih povreda ili do pogoršanja postojećih stanja u toku pandemije, prepušteni su da, uz minimalnu medicinsku pomoć, sami rešavaju svoje simptome, zato što nisu mogli da zakažu pregled kod svojih izabranih lekara ili fizioterapeuta, a nije im bilo ni omogućeno da se jave hitnim službama ili urgentnim centrima.

I mada je farmakološka terapija postala važna opcija, s obzirom da su ordinacije za terapiju bola bile ograničene u svom radu, u smislu opsega usluga koje su mogle da ponude, pandemija je, nažalost, usled ovog prelaza na farmakoterapiju, za posledicu imala porast ubrojavanja lične poseta lekaru i fizioterapeuta, a nije im bilo ni omogućeno da predoziranja opioi-
dima i ne-opioidima [3].

Posledice odlaganja ITB-a

Pacijenti sa hroničnim bolom su često pod visokim rizikom od KOVID-19 infekcije, pošto je veliki broj njih, po pravilu, starijeg životnog doba i ili ima neku hroničnu osnovnu bolest [4]. Ovi rizici se dalje usložnjavaju za one kojima je ograničen pristup zdravstvenoj zaštiti. Ovi faktori čine da su pacijenti sa hroničnim bolom skloni da izbegavaju lične posete lekaru kao i da odlažu interventne procedure za terapiju bola. Na primer, pacijenti su ugrađeni intratekalnom pumpom za kontinuirano ubrizgavanje leka mogu da dožive bolne, teške, ili životno ugrožavajuće simptome apstinentske krize, koji nastaju ukoliko im se pumpa ne može napuniti na vreme ili ukoliko se baterije na pumpi ispraznile pre nego što se izvriši zamena [5]. Slično tome, pacijenti se mogu okrenuti drugim, škodljivijim tretmanima, kao što su povećane doze nesteroidnih antiinfalmatornih lekova (NSAIDs), nelegalne supstance ili opioidi [4].

Dejstvo restrikcija uvedenih za neobavezne hirurške zahvate na ordinacije koje se bave interventnom terapijom hroničnog bala

Mnogi centri za ambulantno hirurško lečenje (engl. ambulatory surgery centers – ASCs) i uprave bolnica širom poor ergonomics of suboptimal workstations [2]. With increased indoor family time and outdoor activity, associated with the pandemic, new injuries and acute exacerbations of chronic spinal conditions have also emerged from activities such as fixing one’s house or car, increasing one’s exercise routine, or playing with one’s children. Those who developed these new inju-
ries or aggravated existing conditions mid-pandemic were left to manage their symptoms with minimal assistance, as they were unable to schedule appointments with their primary care physicians or physical therapists and prohibited from going to the emergency room or urgent care center.

While pharmacological therapy has become an important option, with pain practices being restricted, in terms of the breadth of services they can offer, the pandemic has seen an unfortunate rise in substance abuse, as well as opioid and non-opioid overdoses, accompanying this shift towards pharma-

cological therapy [3].

Consequences of delaying IPM

Chronic pain patients are often at high risk of COVID-19, as many are characteristically older patients and/or have a chronic underlying disease [4]. These risks are compounded for those who have limited access to healthcare. Ultimately, these factors make chronic pain patients more likely to avoid in-person clinical visits and postpone interventional pain procedures. For instance, patients with intrathecal drug infusion systems may suffer painful, distressing or life-threatening withdrawal symptoms if their pump cannot be refilled on time or their pump’s batteries die before replacement [5]. Consequently, patients may turn to other, more harmful treatments such as increased doses of non-steroidal anti-inflammatory drugs (NSAIDs), illicit drugs, or opioids [4].

Impact of elective surgery restrictions on interventional pain practices

Many ambulatory surgery centers (ASCs) and hospital administrators across the United States wrongly categorized most IPM services as ‘elective’ and closed their IPM services during the pandemic, as a result [2]. In these settings, interventional pain physicians or their representatives were often not consulted before these decisions were made. These actions were particularly deleterious for IPM practices, as only one-third of IPM physicians work in an office-based setting, thus leaving the larger proportion of IPM physicians, who rely on hospital suites or ASCs, without a facility to treat their patients [6]. Due to the unknown duration and severity of the COVID-19 pandemic and related societal
Sjedinnjenih Američkih Država su pogrešno kategorisale većinu usluga interventne terapije bola kao „neobavezne“, te su, sledstveno, svoje službe interventne terapije bola zatvorili tokom trajanja pandemije [2]. U ovim ustanovama, lekari koji se bave interventnom terapijom bola često nisu konsultovani pre donošenja ovakvih odluka. Ovi postupci su bili posebno štetni za ITB praksu, pošto svega jedna trećina lekara koja se bavi interventnom terapijom bola radi u nezavisnim ordinacijama. Na taj način je veći deo lekara koji se bavi ITB-om, a koji radi u okviru bolnica i centara za ambulantno hirurško lečenje, ostao bez prostorija gde bi mogao da leći svoje pacijente [6]. Usled toga što se nije moglo znati koliko će dugo trajati i koliko će ozbiljna biti pandemija KOVID-19 infekcije, a samim tim ni koliko će trajati zatvaranja, pacijenti sa bolom pripremili su se na to da će na neodređeno vreme morati da se nose sa nelečenim bolom, uz dodatnu brigu o dugoročnim posledicama koje će nelečeni bol ostaviti na njihovo zdravlje [2].

DEJSTVO KOVID-19 PANDEMIJE NA PRAKSU INTERVENTNOG LEČENJA BOLA
Pregled stanja i dejstvo na lekare koji se bave interventnom terapijom bola

Neobavezne procedure interventne terapije bola i posebne ordinacije za ITB stopirane su u Sjedinjenim Američkim Državama, usled pandemije KOVID-19 [2]. Kako je bol razlog za 45% poseta hitnim službama, odlaganje ITB-a je imalo značajan uticaj na praksu interventne terapije bola [7]. U anketi koju je sprovelo Američko društvo lekara koji se bave interventnom terapijom bola (engl. American Society of Interventional Pain Physicians - ASIPP), a koja se ticala dejstva KOVID-19 pandemije na sindrom „zagorevanja“ kod lekara koji se bave interventnom terapijom bola, 98% ispitanika izjavilo je da je na njihovu praksu uticala KOVID-19 pandemija, pri čemu je 91% ispitanika izjavilo da je pretrpelo finansijske posledice, 54% je prijavilo pojavu sindroma „zagorevanja“ naslagom usled KOVID-19 pandemije, 19,55% je prijavilo da nastoji da se povuče iz lekarske prakse, dok je 66% steklo negativan stav prema izgledima za budućnost [8].

Promene u radu lekarskih praksi koje se bave interventnom terapijom bola

1. Preporuke Centra za kontrolu bolesti (CDC)

CDC preporučuje da se osobe koje se leće u ambulantnim centrima ili drugim ustanovama za ambulantno lečenje kontaktiraju pre dolaska u ustanovu kako bi se izvršio skrining pacijenta na KOVID-19 infekciju putem telefona [9]. Ukoliko pacijent sa sumnjom na KOVID-19 oboljenje ili potvrđenom KOVID-19 infekcijom treba da bude tretiran u ambulanti, od pacijenta treba zaatražiti shutdowns, pain patients braced themselves for dealing with untreated pain for an indeterminate length of time, which was coupled with worries about long-term effects of untreated pain [2].

COVID-19 IMPACT ON INTERVENTIONAL PAIN PRACTICE
Overview and impact on interventional pain physicians

Elective interventional pain management and office visits have been halted across the United States due to the COVID-19 pandemic [2]. With pain being the reason for 45% of visits to emergency departments, the postponement of IPM significantly impacted interventional pain practice [7]. In a survey conducted by the American Society of Interventional Pain Physicians (ASIPP) on the impact of COVID-19 on IPM physician burnout, 98% of respondents reported that their practices were affected by COVID-19, with 91% stating they were affected financially, 54% reporting new burnout secondary to COVID-19, 19.55% attempting to retire from medical practice, and 66% developing a negative outlook of the future [8].

Operational changes to interventional pain practices

1. Recommendations of the Centers for Disease Control (CDC)

The CDC recommends that individuals receiving treatment at an ambulatory care center or other outpatient institution be contacted prior to their visit and screened for COVID-19 risk over the phone [9]. If a patient with known or suspected COVID-19 needs to be treated in person, the patient should be requested to phone ahead of time so that personnel can be prepared (personal protective equipment - PPE, and infection control procedures) and the patient may be rapidly brought into the system and receive their care promptly. After surgical procedures, telephone follow-ups can be utilized to check on patients, confirm medication adherence, and answer any questions patients may have.

2. IPM resource utilization

A clinical team must evaluate a pain patient’s COVID-19 history via methods such as antigen or antibody testing and/or a chest X-ray when considering an interventional pain procedure [10]. Procedures must also be carried out in accordance with federal, state, and local regulations, and all individuals who are in close proximity to the patient must have access to adequate PPE. Equipment should also be kept to a minimum in the exam room, and what is left should be protected with disposable covers [11].
da se najavi unapred telefonom, kako bi se osoblje pripremilo za njegov dolazak (lična zaštitna oprema – LZO, sprovođenje procedura za kontrolu infekcije), kao i da bi se pacijent mogao brzo uvesti u postupak i bez odlaganja sprovelo njegovo/njeno lečenje. Nakon hirurških intervencija, telefonskim putem se nadalje može pratiti pacijentovo stanje, kontrolisati da li se pa-
cijent pridržava propisane terapije, kao i odgovarati na pitanja pacijenta.

2. Korišćenje resursa ITB-a

Kada razmatra proceduru za interventno lečenje bola, klinički tim mora da proceni istoriju KOVID-19 oboljenja kod pacijenta sa bolom, putem metoda kao što su testi-
ranje na antigene odnosno antitela i/ili rentgenski sni-
mak pluća [10]. Takođe, intervencije moraju da se spro-
vode u skladu sa propisima koji važe na federalnom, nju-
pojedinačne savezne države, ali i na lokalnom nivou.

3. Definicija medicinske hitnosti slučaja

Stratifikacija medicinske hitnosti pacijenata može se izvršiti na osnovu njihovog kliničkog stanja i od slučaja do slučaja [2]. Neki slučajevi se mogu, bez opasnosti po pacijenta, odložiti na izvesno vreme, dok se drugi mogu odložiti na neograničeni period, bez optimiznih posledi-
ca. Međutim, u mnogim situacijama je više rizika „u igri”, usled međudejstva različitih faktora. Odmeravanje rizi-
ka između virusne infekcije, nelećenog bola i povećane dobe lekova u odnosu u uobičajenu, jeste problem sa kojom se mnogi pacijenti sa hroničnim bolom suočavaju.

Vrsta bola od kojeg pacijent pati je takođe posebno važan činilac za utvrđivanje medicinske hitnosti. Aku-
tan bol može biti simptom osnovne bolesti i može se tretirati kao medicinski hitno stanje. Subakutna ili hroni-
čna bolna stanja mogu biti povezana sa potencijalno ozbiljnim pridruženim funkcionalnim ograničenjima. Neodgovarajući tretman subakutnog ili hroničnog bola može imati kao posledicu porast pridruženih obo-
jenja i može nauđiti pacijenta. U različitim studijama utvrđena je povezanost između nelećenog hroničnog

3. Definition of medical urgency of a case

The medical urgency of a patient can be stratified based on their clinical situation and by case [2]. Certain cases can be safely postponed for a limited period of time, while others can be postponed indefinitely without harming the patient. However, in many circum-
stances, risks compete, due to an interplay of factors. Assessing the risks between viral infection, untreated pain, and higher-than-usual drug doses is a common predicament many chronic pain patients face.

The type of pain a patient experiences is also a par-
ticularly important component for determining medici-
 urgency. Acute pain may be a symptom of under-
lying disease and may be addressed as an emergency. Subacute or chronic pain conditions can be associated with potentially severe concomitant functional limitations. Inadequate management of subacute or chronic pain may result in increased comorbidities and patient harm. Studies have linked untreated chronic pain with a myriad of medical issues such as memory loss, de-
mentia, depression, functional deficits, anxiety, insom-
nia, suicidality, and early mortality [12-18].

4. IPM acuity scale

Whether or not a procedure is urgently or emergently indicated cannot be determined purely on the basis of whether or not the operation is ‘elective’ [19]. An interventional pain specialist should be responsible for assessing if a procedure is medically necessary, taking into account a variety of factors such as the patient’s pain severity, physical incapacitation, underlying condi-
tions, comorbidities, disease progression, mental health status, response to alternative treatments, visits to other healthcare professionals, and pain management (including opioid use), and likely out-
comes, if a procedure is performed or delayed. The IPM environment is a dynamic one, as there are distinct dif-
ferences between the types of pain patients and their accompanying functional impairments, regionally which these pain patients come from, and regional regulations. Hence, blanket decisions regarding proce-
dures should be avoided.

5. Reopening interventional pain practices

Throughout the months of June and July 2020, 195 Spine Intervention Society members were surveyed regarding the demographics of their practices, per-
ception of COVID-19 prevalence, financial impact of COVID-19 on their practices, and implementation of new re-opening tools and procedures [20]. Risk strat-
ification tools and scheduling pattern changes were used by most respondents (71%). Initial assessments and follow-ups were conducted via telehealth by al-
most 70% and 87%, respectively. Upon a patient's

的影响科維德-19 pandemic on chronic pain management
The COVID-19 pandemic has had a significant impact on the care of patients with chronic pain. Numerous organizations have released their respective guidelines for the care of non-COVID-19 patients during the pandemic. The ASIPP has developed the COVID-ASIPP Risk Mitigation and Stratification (COVID-ARMS) Return to Practice Task Force, to provide interventional pain practices with a framework for cautious and strategic reopening.

GUIDELINE METHODOLOGY

In-person entrance into a clinic or facility, over 80% performed symptom/temperature checks, and 63% screened patients over the phone. For office visits, patients were not tested for COVID-19 by more than half of the respondents (58%), but 38% did test patients, if they were symptomatic. Of the total number of respondents, 43% did not test patients for COVID-19 prior to epidural injections, intra-articular injections, and radiofrequency neurotomy procedures, but 36% did test patients, if they were symptomatic. Mask wearing was deemed a requirement for entering the clinic or facility by a majority of respondents (70%). Surgical masks (85%), gloves (35%), face shields/goggles (24%), N95 respirators (15%), and gowns (6%) were used for non-procedure encounters. A minority (26%) provided written information concerning unique COVID-19 risks and complications, while 66% discussed them verbally. Steroid dosage (67%) and peri-procedural anticoagulation management (97%) remained unchanged by most. A large majority (81%) estimated a moderate to severe financial impact on their practice due to COVID-19.

5. Ponovno otvaranje ordinacije za interventnu terapiju bola

Tokom juna i jula meseca 2020. godine, 195 članova Društva za spinalnu interventnu terapiju učestvovalo je u anketi o demografskoj strukturi njihovih lekarskih praksi, percepciji prevalencije KOVID-19 oboljenja, finansijskim posledicama KOVID-19 pandemije na njihove lekarske prakse/ordinacije, kao i o primeni novih alata i procedura za ponovno otvaranje ovih praksi/ordinacija [20]. Aleate za stratifikaciju rizika i izmene u obrascima zakazivanja pacijenata primenjivala je većina ispitnika (71%). Prve procene pacijenata putem telemedicine primenjivalo je skoro 70% ispitnika, dok je kontrole putem telemedicine primenjivao 87% njih. Prilikom lične posete pacijenta ordinaciji odnosno poseta ordinaciji pacijenta sa hroničnim bolom

In addition to risk stratification, the ASIPP has also provided guidance for triaging pain interventions as ‘emergent’, ‘urgent’, or ‘elective’ based on descriptive

Uzimajući u obzir niz činilaca kao što su: jačina bola koji trpi pacijent, fizička onesposobljenost, osnovne bolesti, pridružene bolesti, napredovanje bolesti, psihičko stanje pacijenata, reagovanje na druge vrste terapije, pregledi i terapije kod drugih zdravstvenih stručnjaka, stepen terapije analgeticima, (uključujući i primenu opioida), i mogući ishodi, u slučaju da se intervencija sprovede ili odloži. Kontekst interventne terapije bola je dinamičan, s obzirom da postoje jedinstvene višestruke rizike povezane sa KOVID-19 pacijentima.
METODOLOGIJA IZRADE SMERNICA

Brojne organizacije objavile su svoje smernice zdravstvene zaštite i nege ne-KOVID-19 pacijenata tokom pandemije. Američko društvo lekara koji se bave intervntnom terapijom bola (ASIPP) je oformilo KOVID-ASIPP radnu grupu za suzbijanje i stratifikaciju rizika sa ciljem povratka lekarske prakse (engl. COVID-ASIPP Risk Mitigation and Stratification (COVID-ARMS) Return to Practice Task Force), kako bi se ordinacijama/lekarskim praksama koje se bave intervntnom terapijom bola pružio okvir za ponovno oprezno i strateško otvaranje [10].

Ova radna grupa sačinila je bodovni sistem stratifikacije rizika u pogledu prezentacije pacijenata za postupke intervntne terapije bola, u cilju smanjenja KOVID-19 morbiditeta. Priđržene bolesti i faktori rizika, koji su značajni za sistem stratifikacije rizika, odabrani su na osnovu njihove povećane prevalencije među sveukupnim hospitalizacijama zbog KOVID-19 oboljenja. Ovi faktori i priđržene bolesti su: starost, smeštaj u domu za stara lica ili drugoj vrsti doma za dugotrajnu negu, plućno oboljenje, kardiovaskularna oboljenja, gojaznost, dijaabetes, burežna disfunkcija, hepatica disfunkcija, i stanje imunokompromitovanosti. Svakoj faktor rizika ili priđrženoj bolesti dodeljenu je bodovna vrednost koja zavisi od težine njihove manifestacije kod datog pacijenta. Što je veća uočena težina te manifestacije to se dodeljuje veća bodovna vrednost. Kada se svim faktorima rizika i priđrženim bolestima uočenim kod osobe dodeljuje ukupna vrednost, bodovi se sabiraju kako bi se dobila ukupna vrednost, koja se zatim može upotreti kako bi se sveukupni rizik za pacijenta mogao klasifikovati kao „nizak“, „umeren“ ili „visok“, u pogledu podvrgavanja intervntnoj terapiji bola.

Uz stratifikaciju rizika, društvo ASIPP je takođe obezbjedio smernice za trijažu intervnta za tretiranje bola prema kategorijama „hitne“, „urgentne“ ili „neobavezne“, na osnovu deskriptivnih indikatora, lokalizacije terapije, primera specifičnih za određenu situaciju, primera intervnta, i vremenskih faktora [2]. COVID-ARMS radna grupa je takođe sačinila i dijagram toka za suzbijanje rizika od KOVID-19 morbiditeta tokom poseta pacijenata zbog intervntne terapije bola, koji je namenjen da se koristi zajedno sa stratifikacijom rizika i alatima za trijažu pacijenata [10].

Zakonski gledano, promene u smernicama i poslušanje različitih propisa omogućilo je pružaćima ovih usluga više fleksibilnosti u lečenju pacijenata, uz stavljanje poštovanja mera sprečavanja širenja KOVID-19 infekcije. Uvođenje telemedicine, pre svega, pomoglo je da se proširi pokrivenost pacijenata na one koji se, u uslovima van pandemije, ne bi kvalificovali za ovakvu vrstu usluge. Zakonske izmene, kao što su: Zakon [SAD] o dopunskim apropijacijama po pitanju pripremljenosti indications, the location of treatment, situation specific examples, intervention examples, and timing factors [2]. The COVID-ARMS Return to Practice Task Force has also produced a flow chart for mitigating the risks of COVID-19 morbidity during interventional pain encounters, to be used in conjunction with risk stratification and triaging tools [10].

Legislatively, guideline changes and the relaxation of various regulations allowed providers more flexibility to treat patients, while still maintaining COVID-19 precautions. The introduction of telehealth, in particular, has helped expand coverage to those who would not have qualified under non-pandemic circumstances. Legal changes, such as the Coronavirus Preparedness and Response Supplemental Appropriations Act and 1135 Waiver, have allowed Medicare and Medicaid services to expand the offerings of telehealth appointments to “office, hospital, and other visits furnished via telehealth across the country including in patients’ places of residence” [21]. Additionally, the United States Drug Enforcement Administration (DEA) also relaxed regulations, allowing DEA-registered physicians to “prescribe opioids via telehealth visits provided they are issued for a legitimate medical purpose by a practitioner acting in the usual course of his/her professional practice; the telemedicine communication is conducted using an audio-visual, real-time, two-way interactive communication system; and the practitioner is acting in accordance with applicable federal and state law” [21].

Efforts have also been made to combine classification systems from various organizations, such as the American Society of Regional Anesthesia and Pain Medicine (ASRA), European Society of Regional Anesthesia and Pain Therapy (ESRA), and American Society of Pain and Neuroscience (ASPN), to produce a new framework of guidelines aimed at providing a consensus and a streamlined reopening approach for interventional pain practices [22]. In the aforementioned combined classification system, the components of risk stratification, triaging, and PPE requirements continued to be emphasized.

TELEMEDICINE

An adaptation to the COVID-19 pandemic was the implementation of telehealth visits, in order to meet the needs of patient care, while limiting potential patient exposure to COVID-19. While, in theory, telehealth should be able to meet patient needs and demands related to care and pain management, subtleties in the patient-physician interaction related to communication and nonverbal cues, which are absent in telehealth visits, may affect treatment and the overall patient...
i mogućnosti za odgovor na pandemiju koronavirusa (engl. Coronavirus Preparedness and Response Supplemental Appropriations Act) i Oslobođenje od obaveze na osnovu člana 1135. Zakona [SAD] o socijalnoj zaštiti (engl. 1135 Waiver), omogućile su da se u okviru Medicaid i Medicare usluga proširi ponuda zakazanih termina za usluge telemedicinе na „posete u ordinaciji, bolnici, i druge posete zakazane putem usluga telemedicinе širokem zemљe, uključujući i domove pacijenata“ [21]. Uz to Američka uprava za borbu protiv droge (engl. United States Drug Enforcement Agency - DEA) je takođe izvršila popuštanje propisa, dozvolivši lekarima registrovanim kod DEA-e da „preписују опиоиде уз лекарске свеске“ [22]. Uz to američka uprava za borbu protiv droge (engl. United States Drug Enforcement Agency - DEA) je takođе izvršila popuštanje propisa, dozvolivši lekarima registrovanim kod DEA-e da „preписују опиоиде уз лекарске свеске“ [22].

Tакође су учињени напори да се комбинују системи класификације разлиčитих организација, као што су: Američка сударство за регионалну анестезију и медицину бола (engl. American Society of Regional Anesthesia and Pain Medicine - ASRA), Evropsко сударство за регионалну анестезију и терапију биол (engl. European Society of Regional Anesthesia and Pain Therapy - ESRA) и Američко сударство за бол и нервоновку (engl. American Society of Pain and Neuroscience - ASPN), како би се сачинило нови оквир за систем класификације, које се баве интервенционалним и реверзивним третманом болног стања [22].

У горе споменутом комбинованом систему класификације, компоненте стратификације ризика, тријаје и неопходних мера према LZO-a зadržавају свој сазначај.

TELEMEDICINA

Jedan од најчешћих прелагања јединства у њему обележено било је и премена телемедичких лекарских култова, као што су: Америчка сударство за регионалну анестезију и медицину бола (engl. American Society of Regional Anesthesia and Pain Medicine - ASRA), Европско сударство за регионалну анестезију и терапију биол (engl. European Society of Regional Anesthesia and Pain Therapy - ESRA) и Америчко сударство за бол и нервоновку (engl. American Society of Pain and Neuroscience - ASPN), како би се сачинило нови оквир за систем класификације, које се баве интервенционалним и реверзивним третманом болног стања [22].

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PHARMACOTHERAPY

Chronic pain had been severely affecting individuals and society alike, long before the COVID-19 pandemic emerged. However, it has been severely exacerbated in patients since the onset of the pandemic, due to the decimation of most conventional medical services, with the exception of virtual care and telehealth. In addition to worsening and untreated pain symptoms, many chronic pain patients have also been impacted in numerous other ways, with increases in cardiovascular disease, mental health problems, cognitive dysfunction, and early death [25].

Due to the decline in interventional techniques and elective surgical procedures during the pandemic, treatment has been focused on commonly used pharmacological agents, including opioids, NSAIDs, local anesthetics, and steroids [26,27]. The use of these pharmacological agents, however, generates concern due to their immunosuppressive effects and...
nedostaju u telemedicinskim konsultacijama, mogu uticati na terapiju, kao i na celokupno iskustvo pacijenta. U anketi koju su sprovedli Bervik i saradnici, istraživači su retrospektivno ocenjivali usluge ambulante za praćenje bolesnika udaljenim telemedicinskim putem, po pitanju tema kao što su komunikacija, saveti za samo-pomoć i razumevanje [23]. Od 30 pacijenata uključenih u anketu, 25 njih je bilo na dugoročno praćenje. Etologija boda uključivala je muskulo-skeletni, neuropatski, hronični primarni bol, i hronični posthirurški bol. Atomski gledano, bol kod pacijenata je bio: bol u leđima, ramenu, nozi, ruci, i generalizovan bol. Na osnovu ove anketne, istraživači su utvrdili da je 19 od 30 pacijenata izjavilo da je konsultacija zadovoljila njihove potrebe, te da je 21 od 30 pacijenata smatralo da su imali priliku da kažu sve što je bilo potrebno. Međutim, uprkos ovakvim rezultatima anketne, 25 od 30 pacijenata je izjavilo da bi se ipak radjio opredelili za posetu lekaru uživo, dok je 17 od 30 pacijenata reklo da bi im više odgovarala video-konferencijska konsultacija od telemedicinske [23].

Ovi rezultati govore da će se pacijenti, ako im se pruži deo-konferencijska konsultacija od telemedicinske, 17 od 30 pacijenata reklo da bi im više odgovarala video-konferencijska konsultacija od telemedicinske [23]. Od 30 pacijenata uključenih u anketu, 25 njih je bilo na dugoročno praćenje. Etologija boda uključivala je muskulo-skeletni, neuropatski, hronični primarni bol, i hronični posthirurški bol. Atomski gledano, bol kod pacijenata je bio: bol u leđima, ramenu, nozi, ruci, i generalizovan bol. Na osnovu ove anketne, istraživači su utvrdili da je 19 od 30 pacijenata izjavilo da je konsultacija zadovoljila njihove potrebe, te da je 21 od 30 pacijenata smatralo da su imali priliku da kažu sve što je bilo potrebno. Međutim, uprkos ovakvim rezultatima anketne, 25 od 30 pacijenata je izjavilo da bi se ipak radjio opredelili za posetu lekaru uživo, dok je 17 od 30 pacijenata reklo da bi im više odgovarala video-konferencijska konsultacija od telemedicinske [23]. Od 30 pacijenata uključenih u anketu, 25 njih je bilo na dugoročno praćenje. Etologija boda uključivala je muskulo-skeletni, neuropatski, hronični primarni bol, i hronični posthirurški bol. Atomski gledano, bol kod pacijenata je bio: bol u leđima, ramenu, nozi, ruci, i generalizovan bol. Na osnovu ove anketne, istraživači su utvrdili da je 19 od 30 pacijenata izjavilo da je konsultacija zadovoljila njihove potrebe, te da je 21 od 30 pacijenata smatralo da su imali priliku da kažu sve što je bilo potrebno. Međutim, uprkos ovakvim rezultatima anketne, 25 od 30 pacijenata je izjavilo da bi se ipak radjio opredelili za posetu lekaru uživo, dok je 17 od 30 pacijenata reklo da bi im više odgovarala video-konferencijska konsultacija od telemedicinske [23]. Ovi rezultati govore da će se pacijenti, ako im se pruži deo-konferencijska konsultacija od telemedicinske, 17 od 30 pacijenata reklo da bi im više odgovarala video-konferencijska konsultacija od telemedicinske [23]. Od 30 pacijenata uključenih u anketu, 25 njih je bilo na dugoročno praćenje. Etologija boda uključivala je muskulo-skeletni, neuropatski, hronični primarni bol, i hronični posthirurški bol. Atomski gledano, bol kod pacijenata je bio: bol u leđima, ramenu, nozi, ruci, i generalizovan bol. Na osnovu ove anketne, istraživači su utvrdili da je 19 od 30 pacijenata izjavilo da je konsultacija zadovoljila njihove potrebe, te da je 21 od 30 pacijenata smatralo da su imali priliku da kažu sve što je bilo potrebno. Međutim, uprkos ovakvim rezultatima anketne, 25 od 30 pacijenata je izjavilo da bi se ipak radjio opredelili za posetu lekaru uživo, dok je 17 od 30 pacijenata reklo da bi im više odgovarala video-konferencijska konsultacija od telemedicinske [23]. Ovi rezultati govore da će se pacijenti, ako im se pruži deo-konferencijska konsultacija od telemedicinske, 17 od 30 pacijenata reklo da bi im više odgovarala video-konferencijska konsultacija od telemedicinske [23]. Od 30 pacijenata uključenih u anketu, 25 njih je bilo na dugoročno praćenje. Etologija boda uključivala je muskulo-skeletni, neuropatski, hronični primarni bol, i hronični posthirurški bol. Atomski gledano, bol kod pacijenata je bio: bol u leđima, ramenu, nozi, ruci, i generalizovan bol. Na osnovu ove anketne, istraživači su utvrdili da je 19 od 30 pacijenata izjavilo da je konsultacija zadovoljila njihove potrebe, te da je 21 od 30 pacijenata smatralo da su imali priliku da kažu sve što je bilo potrebno. Međutim, uprkos ovakvim rezultatima anketne, 25 od 30 pacijenata je izjavilo da bi se ipak radjio opredelili za posetu lekaru uživo, dok je 17 od 30 pacijenata reklo da bi im više odgovarala video-konferencijska konsultacija od telemedicinske [23]. Ovi rezultati govore da će se pacijenti, ako im se pruži deo-konferencijska konsultacija od telemedicinske, 17 od 30 pacijenata reklo da bi im više odgovarala video-konferencijska konsultacija od telemedicinske [23].
opioids, nesteroidal antiinflamatorne lekove (NSAIL), lokalne anestetike i steroide [26,27]. Upotreba ovih farmakoloških sredstava, međutim, izaziva brigu, usled njuhovih imunosupresivnih efekata, a sledstveno tome i podložnosti KOVID-19 infekciji, pošto hronični bol, sam po sebi, može biti faktor rizika, usled imunosupresije.

Postoje brojni dokazi da opioidi vrše supresiju imunog sistema [28]. Zabrinutost u vezi sa deštvom NSAIL-a pojavila se nakon pojave prvih nerecenziranih prikaza slučajeva o pogoršanju stanja kod nekoliko mladih pacijenata zaraženih KOVID-19 infekcijom nakon uzimanja ibuprofena. Međutim, ni Američka uprava za hrantu i lekove (engl. United States Food and Drug Administration - FDA) niti Evropska agencija za lekove (engl. European Medicines Agency - EMA) ne raspolažu podacima koji dokazuju vezu između primene ibuprofena ili drugih NSAIL-a i pogoršanja stanja kod KOVID-19 oboljenja, mada su ovaj deštaži agencije upozoravaju da „farmakološka aktivnost NSAIL-a u ublažavanju zapaljenog procesa, a možda i povišene temperature, može umanjiti korisnost dijagnostičkih znakova u otkrivanju infekcija“ [29]. Acetaminofen je alternativa za NSAIL-e, ali je u kliničkim probama pokazao slabije antipiretičko i analgetsko dejstvo [30]. Nociceptivni selektivni blok lokalnih anestetika je značajan kod infekcija za terapiju hroničnog bola, naročito u održavanju respiratorne depresije [27]. Najzad, zbog pandemije, brojna neželjene efekta je, periferne nervne blokade i intraartikularne injekcije, ograničene doze steroida [31,32]. Zapravo, sistematski pregled lokalnih anestetika i steroide koji se koriste u interventnoj terapiji bolova za epiduralne injekcije, periferne nervne blokade i intraartikularne injekcije, pokazao je da se steroide mogu izostaviti u određenim intervencijama, ukoliko postoji bojazan od imunosupresije. Takođe, iako su u prošlosti steroide povezivani sa infekcijama uzrokovanim imunosupresijom, u jednom dokumentu o stavu koji je izdala Komisija za bezbodnost pacijenata (engl. Patient Safety Committee) Društva za spinalnu interventnu terapiju (engl. Spine Intervention Society), zaključeno je da „ne postoje jasni dokazi o uzročno-posledičnom odnosu između spinalnih injekcija i periproceduralnih infekcija i komplikacija kod imunosuprimiranih pacijenata“ [35]. Većina infekcija se povezuje sa kontaminiranim rastvorima ili lošim praksom sprečavanja infekcije.

Kako pandemija nastavlja da pogađa nacije širom sveta, ona istovremeno produbljuje jednu javno-zdravstvenu severe restrictions in non-opioid therapy. According to health tracker data, there was a near 88% decline in elective surgeries and 15.1% in pain-related prescrip -tions [25]. As a result, many chronic pain patients are seeking out alternate and potentially harmful remedies to alleviate their symptoms, such as elevated doses of NSAIDs, illicit drugs, or opioids [4]. Drug deaths, which decreased for the first time in 25 years, in 2018, rose to record numbers in 2019 and are continuing to climb, worsened by the pandemic. Although the opioid epidemic was “already resurfacing with a 5% increase in overall deaths from 2018, the preliminary data show that prescription opioid deaths continued to decline, while at the same time deaths due to fentanyl, methamphetamine, and cocaine climbed, with some reductions in heroin deaths“ [25]. It is crucial to develop appropriate regulations that will provide proper opioid therapy while containing the opioid epidemic, without limiting access to therapeutic opioids for chronic pain patients.

CHRONIC PAIN MANAGEMENT AND THE COVID-19 VACCINE

As the development and approval of vaccines for the COVID-19 pandemic progress worldwide, questions regarding the potential effects of pain treatments utilizing steroids on vaccine efficacy have started to arise. Corticosteroid injections often have systemic effects, two of which are systemic immune depression and hypothalamic-pituitary-adrenal (HPA) axis depression [36]. According to studies, the humoral immune response may be disrupted in immunocompromised people, resulting in a reduced immune response to vaccination. For example, in a large retrospective study, influenza-vaccinated patients who had undergone joint corticosteroid injections were 52% more likely to develop influenza than non-injection control patients, with women younger than 65 years being at the highest risk [37]. As a result, guidelines developed at the Institute for Pain Medicine, Tel Aviv state that patients are warned of the immunosuppression risks and are advised not to receive steroid injections during the 5-week period beginning one week prior to the first dose of the vaccine and ending one week after the second dose. However, if the patient insists on receiving an injection, dexamethasone is used due to a shorter duration of systemic effects [38].

The primary concern regarding COVID-19 vaccines in the setting of steroid use is efficacy, given the immunosuppressive hallmarks of corticosteroids. Regarding the clinical guidelines of specific vaccines, patients with systemic immunosuppression were excluded from participating in all except the Johnson & Johnson
vaccine trial [39]. In the Moderna trial, for example, systemic treatment of corticosteroids was limited to ≥20 mg/day. Thus, lots of uncertainty surrounds the efficacy of vaccines administered concurrently with systemic corticosteroid use. With respect to efficacy, previous studies have demonstrated evidence of delayed response to hepatitis B vaccination in children receiving high-dose steroid therapy for nephrotic syndrome, as well as delayed response to the influenza vaccine in cancer patients receiving systemic steroids [40,41]. The effect on efficacy in these studies, however, was not statistically significant and cannot be used to confirm that chronic high dose steroids may impair vaccine-based immunity. Furthermore, while epidural steroids may be absorbed systemically, they are unlikely to have the immunosuppressive effects seen with chronic high-dose systemic steroid usage, based on current dosage regimens and the pharmacodynamics of these injections [39]. Additionally, short-term systemic bolus steroids have not been demonstrated to impact vaccine responsiveness. With respect to safety, corticosteroid use is a concern in the setting of live immunization and at systemic dosages equivalent to 2 mg/kg or a dose of 20 mg/day of prednisone equivalents for two or more weeks. However, all of the adenovirus vector vaccines approved by the FDA so far are considered appropriate for use in immunocompromised hosts, because there is no risk for reversion to a virulent severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) strain, as may be the case with a traditional live vaccine [39].

In addition to concerns regarding the efficacy of COVID-19 vaccines in relation to corticosteroids, NSAIDs and cyclooxygenase (COX) inhibitors have also been under consideration. When used in pharmacological quantities, acetaminophen, aspirin, and naproxen have shown similar results in inhibiting antibody formation, with studies revealing a direct proportional association between greater NSAID dosages and decreased immunoglobulin synthesis [39]. In addition to their anti-inflammatory effect, NSAIDs exert immunomodulatory effects by interfering with human monocyte and T-lymphocyte activation, proliferation, and cytokine synthesis. However, previous research has found that low-dose aspirin had no effect on the efficacy of the H1N1 influenza vaccine in elderly people and that acetaminophen-associated antibody blunting still resulted in protective antibody levels [42,43]. Thus, data on the effect of NSAIDs and COX inhibitors on immunity and vaccine efficiency is often inconclusive or insufficient to determine if they are an appropriate substitute for corticosteroid injections.
sensors Institute for medicine. A patient should avoid surgery or vaccination. Physicians should consider timing an elective corticosteroid injection in such a way that it is administered no less than two weeks prior to and no less than two weeks following a COVID-19 adenovirus vector-based vaccine dose, whenever possible [44]. Given these facts, it is still recommended that physicians determine each individual patient’s level of acuity and weigh out specific risks/benefits before considering the treatment plan.

CONCLUSION

It is clear that the COVID-19 pandemic has caused significant disruptions in all aspects of life within the past year. At the start of the pandemic, with the exception of emergency care, most conventional health services were put on hold as a transition to online and telehealth appointments was observed. This transition was particularly deleterious for chronic pain patients, as it severely limited the different treatment options and modalities available. As a result, guidelines concerning the definition of elective procedures were forced to be reexamined with respect to IPM. Many IPM physicians argued that patients must be considered holistically with respect to factors such as daily function, pharmacological drug use, comorbidities, other risk factors, mental health, social risk factors, and prognosis, when determining whether certain surgeries or procedures were classified as elective. Urgent and emergency acuity classification for IPM patients may be carried out when the clinician assesses that a delay would result in unacceptable disease progression, intractable pain, disability, or suffering. Additionally, with the transition to online and telehealth services, treatment shifted towards other pharmacotherapy methods, including opioids and other non-illicit drugs, further exacerbating the opioid epidemic. Steroids, another common pharmacotherapy used in pain management, were also heavily scrutinized due to the concern of their immunosuppressive effects on susceptibility to contract COVID-19, as well as effects on vaccine efficacy. Steroid distancing is recommended in response to inconclusive evidence regarding the effect of steroids on COVID-19 infection or vaccination. Physicians should consider timing an elective corticosteroid injection in such a way that it
is administered no less than two weeks prior to and no less than two weeks following a COVID-19 adenovirus vector-based vaccine dose. The findings discussed and observed in this review should be taken into consideration when evaluating the guidelines of IPM practices in the future.

**LIST OF ABBREVIATIONS**

COVID-19 - Coronavirus Disease 2019  
NSAIDs - non-steroidal anti-inflammatory drugs  
ASCs - ambulatory surgery centers  
IPM - interventional pain management  
ASIPP - American Society of Interventional Pain Physicians  
CDC - Centers for Disease Control  
PPE - personal protective equipment  
COVID-ARMS - COVID-ASIPP Risk Mitigation and Stratification  
DEA - United States Drug Enforcement Agency  
ASRA - American Society of Regional Anesthesia and Pain Medicine  
ESRA - European Society of Regional Anesthesia and Pain Therapy  
ASPN - American Society of Pain and Neuroscience  
FDA - United States Food and Drug Administration  
HPA - hypothalamic-pituitary-adrenal  
SARS-CoV-2 - severe acute respiratory syndrome coronavirus 2  
COX - cyclooxygenase  

**Conflict of interest:** None declared.
socijalni faktori rizička, i prognoza, prilikom klasifikacije određenih intervencija kao neobaveznih. Urgentna odnosno hitna klasifikacija statusa i potreba pacijenata, za pacijente koji su indikovani za interventnu terapiju bola, može se sprovesti kada kliničar proceni da bi odlaganje intervencije imalo za posledicu neprihvatljiv stepen progresije bolesti, neprestanog bol, invaliditet ili patnju kod pacijenta. Takođe, prelaskom na usluge teledmedicine i konsultacije putem interneta, terapija je prebačena na druge farmakoterapijske metode, uključujući opioide i nelegalne supstance, čime se još više pogršala epidemija upotrebe opioida. Steroidi, još jedan vid uobičajene farmakoterapije koji se primenjuje u terapiji bola, su takođe bili pod lupom zbog sumnje da njihov imunosupresivni efekat može uticati na podložnost KOVID-19 infekciji, kao i na delovnost vaksine protiv ove bolesti. Preporučuje se da se davanje steroida vremenski udalji u odnosu na vakcinaciju, sa obzirom na nedovoljno jasne dokaze o dejstvu steroida na zaražavanje KOVID-19 infekcijom ili na vakcinaciju. Preporučuje se da lekari vremenski planiraju davanje neobavezne injekcije kortikosteroida na takav način da je pacijent prvi ne manje od dve sedmice pre i ne manje od dve sedmice nakon primanja doze adeno virusne vektorske vaksine protiv KOVID-19 infekcije. Rezultati koji su predstavljeni i o kojima se diskutuje u ovom radu trebalo bi da budu uzeti u obzir prilikom procene smernica za rad ITB praksi, u budućnosti.

Sukob interesa: Ne postoji.

SPISAK SKRAĆENICA
KOVID-19 – bolest izazvana koronavirusom 2019
NSAIL - nesteroidni antiinflamatori lekovi
ASC - centar za ambulantno hirurško lečenje (engl. ambulatory surgery center)
ITB - interventna terapija bola
ASIPP - Američko društvo lekara koji se bave interventnom terapijom bola (engl. American Society of Interventional Pain Physicians)
CDC - Centar za kontrolu bolesti (engl. Centers for Disease Control)
LZO - lična zaštitna oprema
COVID-ARMS - KOVID-ASIPP radna grupa za suzbijanje i stratifikaciju rizika (engl. COVID-ASIPP Risk Mitigation and Stratification)
DEA - Američka uprava za borbu protiv droge (engl. United States Drug Enforcement Agency)
ASRA - Američko društvo za regionalnu anesteziju i medicinu bola (engl. American Society of Regional Anesthesia and Pain Medicine)
ESRA - Evropsko društvo za regionalnu anesteziju i terapiju bola (engl. European Society of Regional Anesthesia and Pain Therapy)
ASPN - Američko društvo za bol i neuronaku (engl. American Society of Pain and Neuroscience)
FDA - Američka uprava za hranu i lekove (engl. United States Food and Drug Administration)
HPA - hipotalamsko-hipozofino-nadnabubrežni (engl. hypothalamic-pituitary-adrenal)
SARS-CoV-2 – ozbiljni akutni respiratori sindrom korona virus 2 (engl. severe acute respiratory syndrome coronavirus 2 - SARS-CoV-2)
COX – ciklooksigenaza (engl. cyclooxygenase)

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