

Ehokardiografija u vrijeme COVID-19 pandemije – preporuke i aktivnosti Radne skupine za ehokardiografiju i slikovne metode u kardiologiji Hrvatskoga kardiološkog društva

Echocardiography during COVID-19 pandemic: recommendations and activities of the Working Group on Echocardiography and Cardiac Imaging Modalities of the Croatian Cardiac Society

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CITATION: *Cardiol Croat.* 2020;15(7-8):208-10. | <https://doi.org/10.15836/ccar2020.208>

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TO CITE THIS ARTICLE: Šeparović Hanževački J, Rešković Lukšić V. Echocardiography during COVID-19 pandemic: recommendations and activities of the Working Group on Echocardiography and Cardiac Imaging Modalities of the Croatian Cardiac Society. *Cardiol Croat.* 2020;15(7-8):208-10. <https://doi.org/10.15836/ccar2020.208>

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Pandemija koronavirusa SARS-CoV-2 (COVID-19) prouzročila je nove i nepredvidive izazove moderne medicine i zdravstvenih sustava diljem svijeta. Kako COVID-19 ima direktne i indirektno učinke na kardiovaskularni sustav, a kardiovaskularni bolesnici imaju rizik od povećanog mortaliteta od ove bolesti, sve to odrazilo se i na rad kardioloških odjela. Osim toga, činjenica da se teški akutni respiratorni sindrom uzrokovan spomenutim virusom prenosi s čovjeka na čovjeka kapljičnim putem rezultirala je potrebom za posebnom zaštitom medicinskog i nemedicinskog osoblja koje se skrbi za bolesnike.

Kardiolozi ehokardiografičari i ehokardiografski laboratoriji u Hrvatskoj našli su se izloženi ovoj iznenadnoj i nepoznatoj ugrozi. Naime, kako su ehokardiografičari u bliskom i dovoljno dugom kontaktu s bolesnikom, imaju i povećan rizik da budu zaraženi. Ehokardiografski laboratoriji imali su povećane zahtjeve za ehokardiografijom u hitnih i suspektih bolesnika na COVID-19, što je i razumljivo jer je riječ o temeljnoj kardiovaskularnoj dijagnostici. U svrhu umanjivanja rizika od prijenosa zaraze s bolesnika na bolesnika, s bolesnika na ehokardiografičara i obrnuto, u ovakvoj je situaciji nužno bilo pomno razmotriti indikacije za ehokardiografiju i odabrati samo one koje neizostavno utječu na liječenje i tijek bolesti.

Zahtjevni i novonastali uvjeti u pandemiji, ograničen broj dostupnih osposobljenih ehokardiografičara, te rizik od periproceduralne transmisije postali su zahtjevni i izazovni za-

The coronavirus pandemic caused by SARS-CoV-2 (COVID-19) has created new and unforeseen challenges for modern medicine and healthcare systems around the world. Since COVID-19 has direct and indirect effects on the cardiovascular system and cardiovascular patients are at risk of increased mortality from this disease, the work of cardiology departments has also been affected. Additionally, the fact that the severe acute respiratory syndrome caused by this virus is capable of airborne droplet human-to-human transmission has resulted in the need for special protection for medical and non-medical staff caring for these patients.

Echocardiography fellows and echocardiographic laboratories in Croatia have found themselves exposed to this sudden and unknown danger. Since echocardiography fellows are in close and extended contact with patients, they have increased risk of contracting the infection. Echocardiographic laboratories faced increased demands for echocardiography in critical patients and those suspected for COVID-19, which is understandable given that echocardiography is a basic cardiologic diagnostic procedure. In order to reduce the risk of transmitting the infection for patient to patient, from patient to echocardiography fellow, and vice-versa, it was necessary to carefully evaluate the indications for echocardiography and select only those that always effect the treatment and course of the disease.

The demanding and unprecedented conditions created by the pandemic, the limited number of trained echocardiography fellows available, and

RECEIVED:

June 1, 2020

ACCEPTED:

June 7, 2020



datci u organizaciji ehokardiografskih laboratorija. Potaknuta navedenom situacijom, Radna skupina za ehokardiografiju i slikovne metode u kardiologiji Hrvatskoga kardiološkog društva, po uzoru na preporuke EACVI-ja¹, donijela je preporuke za ehokardiografiju u vrijeme pandemije COVID-a19 (slika 1 i slika 2.)². Postupnik, koji je prilagođen posebnostima i uvjetima u Hrvatskoj, detaljno daje preporuke o kategorizaciji bolesnika s obzirom na COVID-19 status, indikacijama za ehokardiografske preglede te mjerama zaštite osoblja (zaštitna oprema, organizacija ehokardiografskih laboratorija, odabir i zaštita uređaja). Najveći je naglasak stavljen na postavljanje indikacija za ehokardiografski pregled, što je tema koja ostaje aktualna i nakon smirivanja epidemije – ehokardiografski je pregled indiciran ako odgovara na ciljani klinički upit, a ehokardiografski nalaz izravno utječe na tijek i/ili ishod liječenja bolesnika.

the risk of periprocedural transmission have become significant challenges in the organization of echocardiographic laboratories. As a result, the Working Group for Echocardiography and Imaging Modalities in Cardiology of the Croatian Cardiac Society has, based on the example of the EACVI guidelines¹, published a set of protocol recommendations for echocardiography during the COVID-19 pandemic (Figure 1 in Croatian, Figure 2)². The protocol, which is adapted to the specific conditions in Croatia, provides detailed recommendations on categorizing patients based on COVID-19 status, indications for echocardiography examinations, and protective measures for staff (personal protective equipment, organization of echocardiographic laboratories, choice and protection of devices). The greatest emphasis is placed on establishing the indications for an echocardiographic examination, which will remain topical even after the epidemic has subsided – an echocardiographic examination is indicated if it answers the crucial clinical question and if echocardiographic findings directly influence the course and/or outcome of patient treatment.

Procijeniti rizik od COVID-19 u bolesnika kod kojeg je zatražen ehokardiografski pregled (CAT 1-3)	<ul style="list-style-type: none"> • CAT 1: potvrđeno pozitivni • CAT 2: suspekti • CAT 3: niski rizik: 1. potvrđeno negativni, 2. bez faktora rizika (epid. anamneza, kašalj, temperatura, bez radioloških znakova pneumonije)
Da li je pregled indiciran? Da li je dostupan iskusan ehosonografičar?	<ul style="list-style-type: none"> • Echo indiciran od strane kardiologa • Da li će nalaz neposredno utjecati na liječenje • Kliničko pitanje – unaprijed planirati protokol
Izdvojen ehokardiografski uređaj i prostorija za suspektne i pozitivne bolesnike ili prijenosni uređaj	
Stupanj zaštitne opreme osoblja ovisno o COVID-19 statusu bolesnika i vrsti pretrage	<ul style="list-style-type: none"> • Smanjiti nepotrebne kontakte bolesnika s osobljem
Slijediti preporuke za smanjivanje kontaminacije aerosolom u laboratoriju	<ul style="list-style-type: none"> • Bolesniku staviti kiruršku masku. • CAT 1, CAT 2 - Minimalizirati vrijeme snimanja i čekanja transporta, ne stavljati elektrode za EKG, izbjegavati zadržavanje daha
Ciljani upit – fokusirani pregled (CAT 1, CAT 2), st. protokol (CAT 3, CAT 2 niskog rizika). Mjerenja, analiza i pisanje nalaza u drugoj prostoriji	
Skidanje zaštitne opreme u istoj prostoriji, čišćenje uređaja i prostorije nakon svakog pregleda (CAT 1)	<ul style="list-style-type: none"> • Voditi evidenciju kontakata bolesnika/ehosonografičara/liječnika
SLIKA / FIGURE 1. Preporuke Radne skupine za ehokardiografiju i slikovne metode u kardiologiji Hrvatskoga kardiološkog društva za ehokardiografiju u vrijeme COVID-19 pandemije.	

Članovi Nukleusa Radne skupine za ehokardiografiju i slikovne metode u kardiologiji HKD-a prezentirali su postupnik na prvome mrežnom seminaru „Ehokardiografija u vrijeme COVID-19 pandemije“, održanom 30. travnja 2020. Tijekom mrežnog seminara prikazan je prethodno snimljen videozapis s detaljnim preporukama i uputama, a potom su predstavnici regionalnih centara izmijenili i vlastita iskustva iz prakse s bolesnicima oboljelima od COVID-a 19 i organizaciji ehokardiografskih laboratorija, te raspravljali uživo. Mrežni su seminari pobudili velik interes i odaziv, a nakon prvog, uslijedilo je još pet mrežnih seminara s tematskom poveznicom „Ehokardiografija u vrijeme COVID-19 pandemije“ koji su

Core members of the Working Group for Echocardiography and Imaging Modalities in Cardiology of the Croatian Cardiac Society presented the protocol at the first web seminar titled “Echocardiography during the COVID-19 pandemic” that was held on April 30, 2020. During the web seminar, a previously recorded video was shown that presented detailed recommendations and instructions, after which representatives of regional centers exchanged their practical experiences with COVID-19 patients and organizing echocardiographic laboratories and had a live online discussion. The web seminars were received with great interest and had a good response, so the first one was followed with five more web seminars

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Establish COVID-19 category in patient referred for echocardiography (CAT 1-3)	<ul style="list-style-type: none"> • CAT1: confirmed positive • CAT2: suspected • CAT3: low risk: 1. confirmed negative, 2. no risk factors (epidemiological anamnesis, fever, cough, no signs of pneumonia on chest X-ray)
Is there an indication for echocardiography? Is there a fit sonographer available?	<ul style="list-style-type: none"> • Echo requested by consultant cardiologist • Will echo alter immediate patient management • What is the clinical question – plan ahead the echo protocol
Dedicated echocardiography machine and room for COVID-19 suspected and positive patients or portable echo machine	
Appropriate personal PPE depending on patient COVID-19 status and type of the exam	<ul style="list-style-type: none"> • Minimise patient exposure to staff
Aim to reduce aerosol contamination and exposure in the echo laboratory	<ul style="list-style-type: none"> • A patient should wear surgical mask. Minimise scanning time and patient transportation. No ECG, avoid breath holding
Clinical question – focused echo exam (CAT 1, 2), standardized protocol (CAT 3, CAT 2 low risk) Measurements, analysis and writing report in other room	
PPE removal in the bay, cleaning echo machines and the bay after each patient (CAT 1)	<ul style="list-style-type: none"> • Keep a log of patient/sonographer/clinician contacts
FIGURE 2. The Working Group on Echocardiography and Cardiac Imaging Modalities of the Croatian Cardiac Society recommendations for echocardiography during COVID-19 pandemic.	

obrađivali teme „Ultrazvuka pluća“ i „FoCUS ehokardiografija“.² Edukativni videomaterijali postavljeni su na platformu „Echo iz fotelje“ kako bi bili dostupni što većem broju liječnika za naknadno pregledavanje na zahtjev.³

Radna skupina za ehokardiografiju i slikovne metode u kardiologiji nastavit će i dalje provoditi različite edukativne projekte, kao što je višegodišnji projekt „Echo u gostima“ s radionicama uživo, ali i nastaviti novi započeti projekt „Echo iz fotelje“ s mrežnim seminarima uživo i na edukativnoj platformi.

under the overarching topic of “Echocardiography during the COVID-19 pandemic” that addressed the sub-topics “Pulmonary ultrasound” and “FoCUS echocardiography”². Educational video materials were made available on the “Armchair Echo” platform in order to make them accessible for on-demand viewing to as many physicians as possible³.

The Working Group for Echocardiography and Imaging Modalities in Cardiology will continue to implement various educational projects, such as the multi-year “Echo on Wheels” project with in-person workshops, while also continuing the “Armchair Echo” project through web seminars available both live and on-demand from their educational platform.

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