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BIJELA KNJIGA

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RADNA SKUPINA HRVATSKOG GASTROENTEROLOŠKOG DRUŠTVA ZA IZRADU MREŽE
INTERVENCIJSKE GASTROENTEROLOGIJE (CRO-GASTRONET) – ERCP

WHITE PAPER

Croatian Society of Gastroenterology Consensus October 2019

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INTERVENTIONAL GASTROENTEROLOGY NETWORK (CRO-GASTRONET) – ERCP*

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Zagreb, listopad 2019.

Zagreb, October 2019

Jedan od ključnih elemenata zdravstvene zaštite nedvojbeno je dostupnost. Imati jednaku zdravstvenu zaštitu i mogućnost ostvarenja najviše razine zdravstvene usluge temeljno je pravo svakog pojedinca. To pravo nije samo humano i etički neosporno, nego je i definirano zakonom. U tom smislu jasno je da pravo na zdravstvenu zaštitu ne smije biti privilegija već imperativ postupanja.

Znanjem, entuzijazmom i dobrom organizacijom, čak i u materijalno ograničenim okolnostima, može se postići vrlo mnogo. Republika Hrvatska je zemlja posebnih geografskih obilježja i koliko je to čini lijepom u svoj njenoj raznolikosti toliko nerijetko otežava dostupnost najkvalitetnijim oblicima zdravstvene zaštite i zdravstvenih postupaka. Formiranjem visoko specijaliziranih centara objedinjenih u dobro organiziranu mrežu i uz organiziranu i koordiniranu komunikaciju zdravstvenih djelatnika, svim bolesnicima sa specifičnom i zahtjevnom problematikom može biti pružena najbolja zdravstvena zaštita.

U gastroenterologiji akutni kolangitis, akutni bilijarni pankreatitis i komplikacije kolecistektomije u obliku postoperacijskih ozljeda žučovoda, dijagnoze su koje zahtijevaju postupak endoskopske retrogradne kolangiopankreatografije (ERCP) unutar 72 sata, a u pojedinim slučajevima i unutar 24 sata. Nažalost, činjenica je da trenutno u Republici Hrvatskoj takvi bolesnici nerijetko čekaju na intervenciju znatno duže jer ne postoji organizirana mreža slanja i prihvata spomenute kategorije bolesnika.

Radna skupina Hrvatskog gastroenterološkog društva izradila je predložak "Hrvatske mreže intervencijske gastroenterologije – ERCP" i nakon široke javne rasprave Skupština Društva prihvatile je spomenuti dokument kao konsenzus Hrvatskog gastroenterološkog društva. Implementacijom navedenog konsenzusa u svakodnevnu kliničku praksu osigurava se ostvarivanje prava svih građana Republike Hrvatske na jednaku dostupnost najbolje zdravstvene zaštite, očuvanje i poboljšanje zdravlja uz dulji i kvalitetniji život velikog broja ovih bolesnika. Mreža CRO-GASTRONET-ERCP osmišljena je i s nakanom da se svim zdravstvenim djelatnicima, u svim zdravstvenim ustanovama Republike Hrvatske olakša brza komunikacija s devet visoko specijaliziranih tercijarnih centara za djelatnost ERCP-a sa ciljem uske suradnje u smislu najboljeg i najbržeg mogućeg liječenja bolesnika s dijagnozama akutnog kolangitisa, akutnog bilijarnog pankreatitisa ili komplikacija kolecistektomije u obliku postoperacijskih ozljeda žučovoda. Jasno definiranim postupnicima omogućiće se standardizacija zdravstvenih usluga u korist bolesnika, ali i najučinkovitije korištenje ekonomskih resursa. Svaki početak je težak, ali se kako predvidive tako i nepredvidive prepreke mogu uspješno riješiti zajedničkim konstruktivnim radom i naporima svih dionika zdravstvenog sustava.

Prof. dr. sc. Neven Ljubičić, dr. med.
Predsjednik Hrvatskog gastroenterološkog društva

Availability is undoubtedly one of the key elements of the healthcare system. The fundamental right of every person is to have the highest level of healthcare service based on excellence and equality. This right is indisputable not only from the human and ethical viewpoint, but is also defined by law. In this regard, it is clear that the right to healthcare service must not be merely a privilege but rather an imperative.

A great deal can be achieved with knowledge, enthusiasm and good organization, even under circumstances of material restrictions. Republic of Croatia is a country of specific geographical features, which makes it beautiful in all its diversity but often makes the availability of specialized forms of healthcare service and procedures difficult. By forming highly specialized centers integrated into a well-organized network and with organized and coordinated communication of healthcare professionals, all patients with specific and demanding problems can be provided with the best healthcare service.

In gastroenterology, acute cholangitis, acute biliary pancreatitis and cholecystectomy complications in terms of postoperative bile duct injuries are diagnoses requiring endoscopic retrograde cholangiopancreatography (ERCP) within 72 hours, and in some cases within 24 hours. Unfortunately, the fact is that currently in the Republic of Croatia, such patients often have to wait for intervention considerably longer because there is no organized network of referring and admitting this category of patients.

A working group of the Croatian Society of Gastroenterology has developed a model for the Croatian Interventional Gastroenterology Network-ERCP and, following a broad public discussion, the Assembly of the Society accepted the document as a consensus of the Croatian Society of Gastroenterology. The implementation of this consensus into everyday clinical practice provides for exercising the rights of all citizens of the Republic of Croatia to equal availability of the best healthcare service, and for preservation and improvement of health with longer and better quality life for a large number of these patients. The CRO-GASTRONET-ERCP has also been designed to facilitate all healthcare professionals at all healthcare institutions in the Republic of Croatia fast communication with nine highly specialized tertiary centers for ERCP, with the aim of achieving close cooperation in providing the best and fastest possible treatment of patients with the diagnoses of acute cholangitis, acute biliary pancreatitis or cholecystectomy complications in terms of postoperative bile duct injuries. Clearly defined protocols will make it possible to standardize healthcare services to the benefit of patients, but also to use economic resources most efficiently. Every beginning is hard, but both foreseeable and unforeseeable obstacles can be resolved successfully with joint constructive action and efforts of all stakeholders of the healthcare system.

*Professor Neven Ljubičić, MD, PhD
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UVOD

Endoskopska retrogradna kolangiopankreatografija (ERCP), inicijalno dijagnostička, potom dijagnostičko-terapijska, a danas ponajprije terapijska metoda, razvijana tijekom proteklih 50 godina, ima nezamjenjivu ulogu u liječenju bolesti pankreatobiljarnog sustava. To je metoda koja kombinira endoskopiju i dijaskopiju sa ciljem vizualizacije i intervencije u području žučnih i pankreasnih vodova. Postupak započinje tako da se pod kontrolom video kamere, tj. endoskopa dođe do mjesta utoka pankreatobiljarnog voda u početni dio tankog crijeva. S obzirom da su glavni žučni i pankreasni vod daleko manjeg promjera od lumena tankog crijeva u njih se ulazi posebnim priborom i zahvat se dalje izvodi pod kontrolom rendgenskih zraka koje ocrtavaju vodove ispunjene radiološkim kontrastom. ERCP je invazivna metoda i kao takva sa sobom nosi rizik od razvoja kolangitisa, pankreatitisa, ozljede i perforacije žučnog voda. Procjenjuje se da čak 7,9 % pacijenata razvije neku od navedenih komplikacija, a daleko najčešća komplikacija je post-ERCP pankreatitis s prevalencijom od 5,4 % (1). Bitno je naglasiti da je broj komplikacija i uspješnost samog postupka u direktnoj vezi s iskustvom endoskopičara, tj. s brojem postupaka koje pojedinac obavi u godini dana. Uvezši u obzir invazivnost postupka i učestalost komplikacija, samom zahvalu mora prethoditi sveobuhvatna dijagnostička obrada koja obuhvaća laboratorijske i slikevne metode. U slučaju koledokolitijaze, endoskopski ultrazvuk (EUZ) i magnetna kolangiopankreatografija (MRCP) imaju podjednaku dijagnostičku pouzdanost u detekciji konkremenata (2).

Prema vremenu intervencije razlikujemo hitni ERCP (postupak koji se izvodi unutar 24 sata od prijma u bolnicu), rani ERCP (postupak koji se izvodi 24-72 sata nakon prijma) i odgođeni ERCP (postupak koji se izvodi nakon 72 sata od prijma) (3). Akutni kolangitis, akutni bilijarni pankreatitis i postoperacijske komplikacije kolecistektomije u smislu ozljeda žučnih vodova s ekstraluminacijom žuči i/ili rezidualnim konkrementima u žučnim vodovima nedvojbene su indikacije koje zahtijevaju brzu endoskopsku intervenciju (4-7).

AKUTNI KOLANGITIS

Akutni kolangitis je upala žučnih vodova uzrokovanu ascenzijom bakterija iz tankog crijeva zbog neadekvatne drenaže žuči. Najčešće je uzrokovan koledokolitijazom, tj. kamenom u žučnom vodu, ili opstrukcijom glavnog žučnog voda zbog kompresije tumorom. Procjenjuje se da teški akutni kolangitis uzrokuje smrtnost između 11 % i 27 % (8).

INTRODUCTION

Endoscopic retrograde cholangiopancreatography (ERCP), initially diagnostic, then diagnostic and therapeutic, and nowadays primarily a therapeutic method, developed over the past 50 years, has an indispensable role in the treatment of diseases of the pancreatobiliary system. It is a method that combines endoscopy and diascopy with the aim of visualizing and intervening in the area of bile and pancreatic ducts. The procedure begins by reaching the junction of the pancreatobiliary duct and the first part of the small intestine under the guidance of a video camera, i.e. endoscope. As the main bile and pancreatic ducts are by far smaller in diameter than the lumen of the small intestine, they are entered with special equipment and further procedure is carried out under the control of x-rays that delineate the ducts filled with contrast medium. ERCP is an invasive method and as such carries the risk of developing cholangitis, pancreatitis, bile duct injury and perforation. It is estimated that as many as 7.9% of patients develop some of the above complications, the most common one being post-ERCP pancreatitis with a prevalence of 5.4% (1). It should be noted that the number of complications and the success of the procedure itself are directly correlated with the endoscopist's experience, i.e. with the number of the procedures performed by the endoscopist annually. Considering the invasiveness of the procedure and the frequency of complications, the intervention must be preceded by a comprehensive diagnostic workup, which includes both laboratory and imaging methods. In the case of choledocholithiasis, endoscopic ultrasound (EUS) and magnetic cholangiopancreatography (MRCP) are equally diagnostically reliable in detecting stones (2).

According to timing of the intervention, distinction can be made between emergency ERCP (performed within 24 hours following hospital admission), early ERCP (performed 24-72 hours following admission) and delayed ERCP (performed more than 72 hours following admission) (3). Acute cholangitis, acute biliary pancreatitis and postoperative complications of cholecystectomy in the form of bile duct injury with extralumination of bile and/or residual stones in bile ducts are unequivocal indications requiring prompt endoscopic intervention (4-7).

ACUTE CHOLANGITIS

Acute cholangitis is inflammation of bile ducts caused by bacteria ascending from the small intestine due to inadequate biliary drainage. It is most commonly caused by choledocholithiasis, i.e. bile duct stones, or by obstruction of the main bile duct due to compression by tumor. The mortality rate of severe acute cholangitis is estimated to be between 11% and 27% (8).

Terapijski pristup bolesniku s akutnim kolangitisom uvelike zavisi o težini kliničke slike. Tokijski kriteriji (9) jasno definiraju karakteristike teškog, srednje teškog i blagog akutnog kolangitisa (tablica 1).

The treatment approach for a patient with acute cholangitis depends greatly on the gravity of the clinical picture. The Tokyo criteria (9) clearly define the characteristics of severe, moderate and mild acute cholangitis (Table 1).

Tablica 1. Karakteristike akutnog kolangitisa

Teški akutni kolangitis (najmanje jedan od kriterija)
<ul style="list-style-type: none"> - Kardiovaskularna disfunkcija (potreba za noradrenalinom ili dozama dopamina $\geq 5 \mu\text{g}/\text{kg}$ u minuti) - Promijenjeno stanje svijesti - Poremećaj funkcije pluća ($\text{PaO}_2/\text{FiO}_2$ omjer < 300) - Poremećaj funkcije bubrega (oligurija i/ili koncentracije kreatinina u serumu $> 177 \mu\text{mol}/\text{L}$) - Poremećaj funkcije jetara ($\text{PV-INR} > 1.5$) - Poremećaj koagulacije (broj trombocita $< 100 \times 10^9/\text{L}$)
Srednje teški akutni kolangitis (najmanje dva kriterija)
<ul style="list-style-type: none"> - Leukocitoza ili leukopenija ($> 12 \times 10^9/\text{L}$ ili $< 4 \times 10^9/\text{L}$) - Vrućica ($> 39^\circ\text{C}$) - Dob (≥ 75 godina) - Žutica ($> 85 \mu\text{mol}/\text{L}$) - Hipoalbuminemija ($<$ donje granice normalne vrijednosti) - Svi pacijenti koji ne odgovaraju na započetvu terapiju iako ne zadovoljavaju gore navedene kriterije
Blagi akutni kolangitis
<ul style="list-style-type: none"> - Svi koji ne zadovoljavaju kriterije za teški i srednje teški akutni kolangitis

Table 1 Characteristics of acute cholangitis

Severe acute cholangitis (at least one of the criteria)
<ul style="list-style-type: none"> - Cardiovascular dysfunction (requiring noradrenaline or dopamine $\geq 5 \mu\text{g}/\text{kg}$ per min) - Disturbance of consciousness - Respiratory dysfunction ($\text{PaO}_2/\text{FiO}_2$ ratio < 300) - Renal dysfunction (oliguria and/or serum creatinine $> 177 \mu\text{mol}/\text{L}$) - Hepatic dysfunction ($\text{PV-INR} > 1.5$) - Coagulation dysfunction (platelet count $< 100 \times 10^9/\text{L}$)
Moderate acute cholangitis (at least two criteria)
<ul style="list-style-type: none"> - Leukocytosis or leukopenia ($> 12 \times 10^9/\text{L}$ or $< 4 \times 10^9/\text{L}$) - Fever ($> 39^\circ\text{C}$) - Age (≥ 75 years) - Jaundice ($> 85 \mu\text{mol}/\text{L}$) - Hypoalbuminemia ($<$ lower limit of normal) - Any patients who do not respond to the initiated treatment despite not meeting the above criteria
Mild acute cholangitis
<ul style="list-style-type: none"> - All those who do not meet the criteria for severe and moderate acute cholangitis

Bolesnici sa slikom teškog akutnog kolangitisa ponajprije definiranim kao zatajenje jednog ili više organskih sustava zahtijevaju intenzivno liječenje i hitni ERCP u roku od 24 sata od prijma u bolnicu (9,10). U bolesnika sa srednje teškim kolangitisom postoji veliki rizik nastanka zatajenja jednog ili više organskih sustava te je i u tim slučajevima nužno osigurati adekvatnu bilijarnu drenažu unutar 72 sata od prijma u bolnicu (rani ERCP). Odgađanje hitne i rane retrogradne kolangiopankreatografije i uspostave adekvatne bilijarne drenaže u bolesnika s teškim ili srednje teškim akutnim kolangitisom povezano je s velikom stopom smrtnosti i većom incidencijom ponovne hospitalizacije unutar 30 dana od otpusta, što značajno povisuje troškove liječenja posebice u starijih bolesnika u kojih postoji značajan komorbiditet (11,12). Pri tome je uputno

Patients with severe acute cholangitis, defined primarily as dysfunction of one or more organ systems, require intensive treatment and emergency ERCP within 24 hours of hospital admission (9,10). Patients with moderate cholangitis are at a great risk of dysfunction of one or more organ systems, hence in those cases it is necessary to provide adequate biliary drainage within 72 hours of hospital admission (early ERCP). Delay in emergency as well as early retrograde cholangiopancreatography and in the establishment of adequate biliary drainage in patients with severe or moderate acute cholangitis is associated with a high mortality rate and higher incidence of rehospitalization within 30 days of discharge, which significantly increases treatment costs, especially in elderly patients with significant comorbidities (11,12). In the first step, it is advisable to

u prvom aktu osigurati adekvatnu bilijarnu drenažu, a potom u nastavku rješavati sam uzrok opstrukcije putem primjeric koledokolitijaze. U bolesnika sa slikom blagog akutnog kolangitisa potrebno je učiniti rani zahvat ako liječenje antibioticima nema zadovoljavajući učinak ili je blagi akutni kolangitis progredirao u srednje teški ili teški akutni kolangitis (13).

AKUTNI BILIJARNI PANKREATITIS

Akutni bilijarni pankreatitis je akutna upala gušterića, a katkad i okolnog tkiva, uzrokovana neadekvatnom drenažom pankreasnih i bilijarnih sokova zbog opstrukcije glavnog pankreatobilijarnog voda kamenom. S obzirom na težinu kliničke slike razlikujemo blagi, srednje teški i teški akutni pankreatitis koji karakteriziraju znakovi zatajenja organa i/ili razvoj peripankreasnih kolekcija (14,15). Smrtnost akutnog pankreatitisa je na razini 4-7 %, a u slučajevima teškog akutnog pankreatitisa stopa smrtnosti je jako visoka i iznosi 20-30 % (16,17).

Razvojem endoskopskog ultrazvuka (EUS) i magnetne kolangiopankreatografije (MRCP) ERCP je postao u prvom redu terapijska metoda u zbrinjavanju bolesnika s akutnim pankreatitisom. Bolesnici kod kojih treba inzistirati na hitnoj obradi, a potom gotovo u pravilu i ranom ERCP-u - unutar 72 sata, su ponajprije bolesnici s:

1. akutnim pankreatitisom u kojih postoje i znakovi akutnog kolangitisa (tablica 1) (16) i
2. akutnim pankreatitisom u kojih uz dilataciju žučnih vodova postoje jasni laboratorijski pokazatelji kolestatskog sindroma i povišene koncentracije bilirubina u serumu, a posebice ako se radi o srednje teškoj do teškoj bolesti (tablica 2) (18,19).

Tablica 2. Procjena težine akutnog pankreatitisa – sustav BISAP

Sustav BISAP (Bedside Index of Severity in Acute Pancreatitis)		
Ureja > 8,9 mmol/L	DA	NE
Poremećaj stanja svijesti (GCS < 15)	DA	NE
SIRS (≥ 2 komponente)	DA	NE
• temperatura $<36^{\circ}\text{C}$ ili $>38^{\circ}\text{C}$	<input type="checkbox"/>	
• frekvencija srca $>90/\text{min}$	<input type="checkbox"/>	
• frekvencija disanja $>20/\text{min}$ ili $\text{pCO}_2 < 4,3 \text{ kPa}$	<input type="checkbox"/>	
• leukociti $<4 \times 10^9/\text{L}$ ili $>12 \times 10^9/\text{L}$ ili $>10\%$ nezrelih stanica	<input type="checkbox"/>	
Dob > 60 godina	DA	NE
Pleuralni izljev	DA	NE
Prisutnost svake pojedine komponente predstavlja jedan bod (0-5)		
Ukupan zbroj bodova 0-2 = mortalitet < 2 %		
Ukupan zbroj bodova 3-5 = mortalitet > 15 %		
GCS – Glasgow Coma Scale; SIRS – Systemic Inflammatory Response Syndrome (sindrom sustavnog upalnog odgovora)		

ensure adequate biliary drainage, and then to resolve the very cause of obstruction, such as choledocholithiasis. Patients with mild acute cholangitis require an early procedure if antibiotic treatment fails to yield a satisfactory effect or if mild acute cholangitis has progressed to moderate or severe acute cholangitis (13).

ACUTE BILIARY PANCREATITIS

Acute biliary pancreatitis is acute inflammation of the pancreas, and occasionally of the surrounding tissue, caused by inadequate drainage of pancreatic and biliary juices due to the obstruction of the main pancreaticobiliary duct by stone. With regard to the severity of the clinical picture, a distinction can be made between mild, moderate and severe acute pancreatitis characterized by signs of organ failure and/or development of peripancreatic collections (14,15). The mortality rate of acute pancreatitis is 4%-7%, whereas in cases of severe acute pancreatitis the mortality rate is very high, reaching 20%-30% (16,17).

With the development of EUS and MRCP, ERCP has become primarily a therapeutic method in the management of patients with acute pancreatitis. The patients in which urgent workup should be insisted on, and then almost always requiring early ERCP within 72 hours, are primarily patients with:

- 1) acute pancreatitis who also have signs of acute cholangitis (Table 1) (16), and
- 2) acute pancreatitis who, in addition to bile duct dilation, also have clear laboratory markers of cholestatic syndrome and elevated serum bilirubin levels, in particular in the case of moderate to severe disease (Table 2) (18,19).

Table 2. Assessment of severity in acute pancreatitis: Bedside Index of Severity in Acute Pancreatitis (BISAP)

BISAP score			
BUN >8.9 mmol/L		YES	NO
Abnormal mental status (GCS <15)		YES	NO
SIRS (≥ 2 components)		YES	NO
• Temperature $<36^{\circ}\text{C}$ or $>38^{\circ}\text{C}$		<input type="checkbox"/>	
• Heart rate $>90/\text{min}$		<input type="checkbox"/>	
• Respiratory rate $>20/\text{min}$ or $\text{pCO}_2 <4.3 \text{ kPa}$		<input type="checkbox"/>	
• White blood count (WBC) $<4 \times 10^9/\text{L}$ or $>12 \times 10^9/\text{L}$ or $>10\%$ immature cells		<input type="checkbox"/>	
Age >60 years		YES	NO
Pleural effusion		YES	NO

BUN = blood urea nitrogen; GCS = Glasgow Coma Scale; SIRS = systemic inflammatory response syndrome

Odgoda pravodobne kvalitetne dijagnostike i pravodobne terapijske intervencije dovodi do povećanja iako visokog mortaliteta ovih bolesnika.

Postponing timely and proper diagnosis and timely treatment intervention results in an increase of the already high mortality in these patients.

KOMPLIKACIJE KOLECISTEKTOMIJE

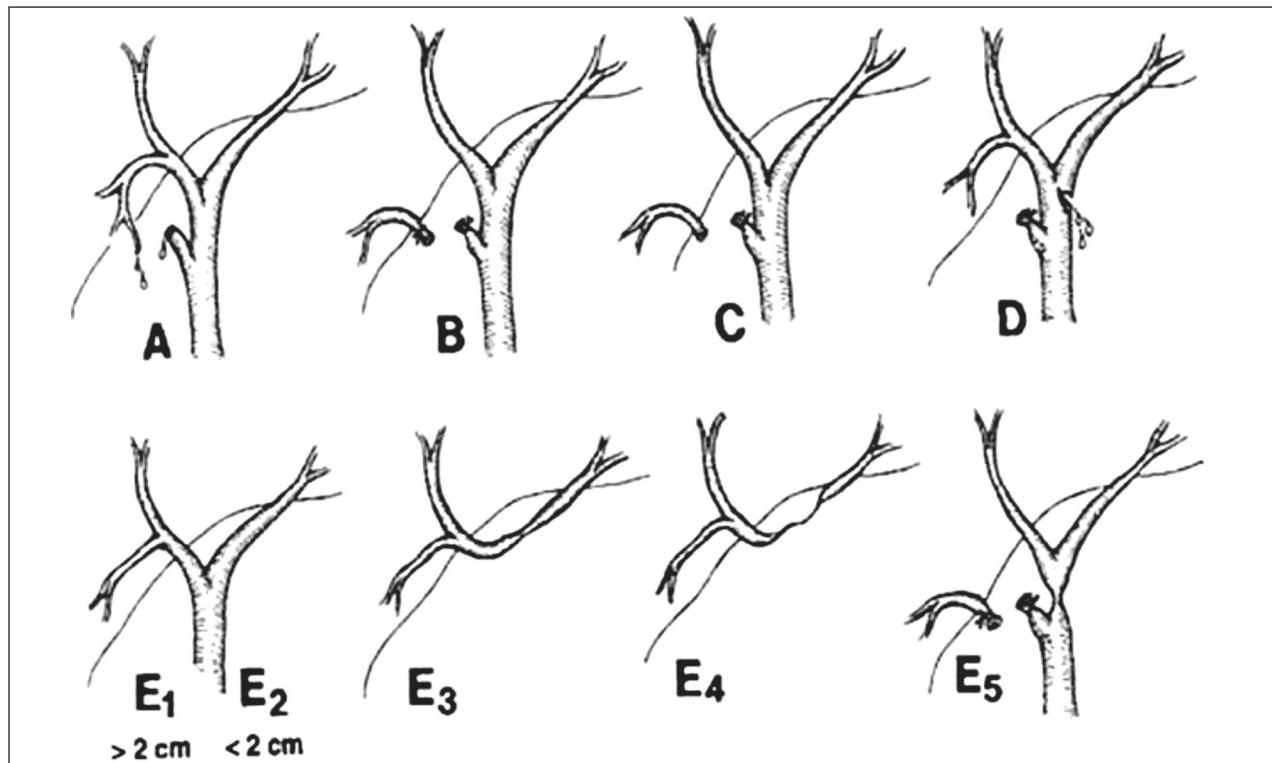
Ekstraluminacija žuči kao posljedica ozljede žučnih vodova tijekom kolecistektomije opasna je komplikacija koja zahtijeva hitnu intervenciju s obzirom na brojne komplikacije u smislu nastanka bilijarnog peritonitisa, sepsie i septičkog šoka čija je smrtnost prema literaturnim podatcima 30 % (20). Iako učestalost ove komplikacije nije točno poznata, procjenjuje se da se javlja u oko 0,5-2,2 % svih kolecistektomija (22), i to dva do četiri puta češće u onih izvedenih laparoskopskom tehnikom (23-25). Apsolutna metoda izbora u zbrinjavanju postoperacijskog bilijarnog „leakage“-a je endoskopska retrogradna kolangiografija s nekoliko dostupnih metoda izvedbe: postavljanje endo-bilijarnog stenta, s bilijarnom sfinkterotomijom ili bez nje i ovisno o nalazu s ekstrakcijom ili bez ekstrakcije rezidualnog konkrementa u koledokusu ili postavljanjem nazobilijarne drenaže (26-28). Brojne studije zorno pokazuju da je optimalno vrijeme ERC-a između 24 i 72 sata od pojave znakova ekstraluminacije žuči (29) što jasno ukazuje da je u bolesnika s ozljedom žučnih vodova nužno učiniti hitni, a u nešto lošijoj varijanti rani ERCP (Strasberg A i D, sl. 1).

CHOLECYSTECTOMY COMPLICATIONS

Extralumination of bile as a consequence of bile duct injury during cholecystectomy is a dangerous complication requiring urgent intervention given the numerous complications in the form of the development of biliary peritonitis, sepsis and septic shock, the mortality of which, according to the literature, is 30% (20). Although the incidence of these complications is not precisely known, it is estimated to occur in 0.5%-2.2% of all cholecystectomies (22), and two to four times more frequently in those performed by laparoscopic technique (23-25). The method of choice in the management of postoperative biliary leakage is endoscopic retrograde cholangiography (ERC) with several performance methods available, e.g., placement of an endobiliary stent, with or without biliary sphincterotomy and, depending on the findings, with or without extraction of residual common bile duct stone, or placement of nasobiliary drainage (26-28). Numerous studies clearly demonstrate that the optimal time for ERC is between 24 and 72 hours from the onset of signs of extralumination of bile (29), which clearly suggests that patients with a bile duct injury require an emergency, or as a suboptimal option, early ERCP (Strasberg A and D, Figure 1).

Tip A	Ekstraluminacija žuči u području <i>ductusa cysticus/a</i> akcesornih vodova/malih intrahepatalnih vodova bez jasnog gubitka kontinuiteta
Tip B	Transekacija i ligiranje akcesornog ili aberantnog žučnog voda iz desnog jetrenog režnja sa stazom žuči
Tip C	Transekacija aberantnog žučnog voda i gubitak kontinuiteta sa zajedničkim žučnim vodom
Tip D	Parcijalna ozljeda glavnog hepatičnog ili žučnog voda
Tip E1	Ozljeda glavnog hepatičnog voda više od 2 cm udaljena od konfluensa
Tip E2	Ozljeda glavnog hepatičnog voda manje od 2 cm udaljena od konfluensa
Tip E3	Ozljeda konfluensa bez separacije
Tip E4	Ozljeda konfluensa sa separacijom
Tip E5	Ozljeda aberantnog desnog posteriornog voda sa strikurom zajedničkog žučnog voda

Type A	Extralumination of bile in the area of <i>ductus cysticus</i> /accessory ducts/small intrahepatic ducts without clear loss of continuity
Type B	Transection and ligation of an accessory or aberrant bile duct from the right liver lobe with cholestasis
Type C	Transection of an aberrant bile duct and loss of continuity with the common bile duct
Type D	Partial injury to the common hepatic or bile duct
Type E1	Injury to the common hepatic duct more than 2 cm from the confluence
Type E2	Injury to the common hepatic duct less than 2 cm from the confluence
Type E3	Injury to the confluence without separation
Type E4	Injury to the confluence with separation
Type E5	Injury to the aberrant right posterior duct with stricture of the common bile duct



Sl. 1. Klasifikacija ozljeda žučnih vodova po Strasbergu / Fig. 1. Strasberg classification of bile duct injuries.

Dok se u stručnim krugovima vode rasprave o najboljem mogućem pristupu endoskopske sanacije, jedno je sigurno – rana intervencija u specijaliziranom centru sa stručnim i iskusnim kadrom imperativ je koji smanjuje mortalitet, morbiditet i trošak liječenja ove skupine bolesnika.

While the professional circles are discussing the best possible approach to endoscopic management, one thing is certain – early intervention in a specialized center with qualified and experienced personnel is an imperative that reduces mortality, morbidity and treatment costs for this patient group.

ENDOSKOPSKA RETROGRADNA KOLANGIOPANKREATOGRAFIJA (ERCP) U REPUBLICI HRVATSKOJ

U Republici Hrvatskoj endoskopska retrogradna kolangiopankreatografija (ERCP), nekad dijagnostička, a danas ponajprije terapijska metoda radi se već četrdeset godina. ERCP je kao rutinska dijagnostičko-terapijska metoda ugovorena s Hrvatskim zavodom za zdravstveno osiguranje (HZZO) u sveukupno devet „akutnih“ bolnica u Republici Hrvatskoj (tablica 3).

ENDOSCOPIC RETROGRADE CHOLANGIOPANCREATOGRAPHY (ERCP) IN THE REPUBLIC OF CROATIA

Endoscopic retrograde cholangiopancreatography, once diagnostic and nowadays primarily a therapeutic method, has been performed in the Republic of Croatia for forty years now. ERCP is performed as a routine diagnostic and therapeutic method under a contract with the Croatian Health Insurance Fund (CHIF) in nine ‘acute’ hospitals in the Republic of Croatia (Table 3).

Tablica 3. ERCP ugovoren s Hrvatskim zavodom za zdravstveno osiguranje (HZZO) u devet akutnih bolnica u Republici Hrvatskoj prema godinama

Table 3. Croatian Health Insurance Fund (CHIF) ERCP number in nine acute hospitals in the Republic of Croatia according to years

„Akutne“ bolnice / ‘Acute’ hospitals	2016.	2017.	2018.	Godišnje / Yearly
KB Dubrava	723	741	655	705
KBC Sestre milosrdnice	369	427	540	445
KBC Rijeka	482	420	425	442
KB Osijek	383	454	380	406
KBC Zagreb (Rebro)	403	405	404	404
KBC Split	270	324	444	346
KB Sveti Duh	255	258	265	259
OB Zadar	191	242	232	222
KB Merkur	159	150	186	165

KB – Clinical Hospital; KBC – Clinical Hospital Centre; OB – General Hospital

Broj izvršitelja (endoskopičara), a posebice broj pretraga po svakom izvršitelju znatno varira od bolnice do bolnice (tablica 4).

Tablica 4. Broj pretraga po svakom izvršitelju u „akutnim“ bolnicama

Table 4. Number of procedures per each endoscopist in ‘acute’ hospitals

„Akutna“ bolnica / ‘Acute’ hospital	Godišnje / Per year	>200	100-200	50-100
KB Dubrava	705	2	1	
KBC Sestre milosrdnice	445	1	1	1
KBC Rijeka	442		2	1
KB Osijek	406	1	1	
KBC Zagreb (Rebro)	404		2	2
KBC Split	346		1	1
KB Sveti Duh	259		1	2
OB Zadar	222	1		
KB Merkur	165		1	

KB – Clinical Hospital; KBC – Clinical Hospital Centre; OB – General Hospital

Na drugoj strani, potrebe za ERCP-om, ponajprije kao terapijskom metodom su velike. To se jasno ogleda u broju ERCP-a koji su fakturirani HZZO-u (appendiks 1). Jasno je da su potrebe „akutnih“ bolnica za ERCP-om velike i da najveći broj „akutnih“ bolnica u Republici Hrvatskoj nema ni prostornih ni kadrovskih uvjeta za obavljanje metode ERCP-a. U tom smislu je razvidno da dostupnost navedene metode nije jednaka na čitavom teritoriju Republike Hrvatske što u velikoj mjeri utječe na konačni ishod akutnog bilijarnog pan-kreatitisa i posebice akutnog kolangitisa.

CILJEVI HRVATSKE MREŽE INTERVENCIJSKE GASTROENTEROLOGIJE (CRO-GASTRONET) – ERCP

U Republici Hrvatskoj postoji nekoliko dobrih primjera organizacije zdravstvenih ustanova u nacionalne dijagnostičko-terapijske mreže poput mreže interven-

The number of those performing the procedure (endoscopists), and especially number of procedures *per* endoscopist varies greatly among hospitals (Table 4).

On the other hand, the needs for ERCP, primarily as a therapeutic method, are extensive. This is clearly reflected in the number of ERCPs invoiced to the CHIF (Appendix 1). It is apparent that ‘acute’ hospitals are in great need of ERCP and that the majority of ‘acute’ hospitals in the Republic of Croatia lack both the facilities and the staff necessary to perform the ERCP method. In this regard, it is evident that the availability of this method is not uniform across the Republic of Croatia, which greatly influences the final outcome of acute biliary pancreatitis and in particular of acute cholangitis.

OBJECTIVES OF THE CROATIAN INTERVENTIONAL GASTROENTEROLOGY NETWORK (CRO-GASTRONET) – ERCP

Republic of Croatia has several good examples of organizing healthcare institutions into national diagnostic

cijske kardiologije ili primjerice mreže intervencijske neuroradiologije. U kontekstu činjenice da u Republici Hrvatskoj živi relativno mali broj stanovnika te da je shodno tome relativno mali broj specifične kazuistike, postoji potreba za formiranjem visoko specijaliziranih centara objedinjenih u dobro organiziranu mrežu upućivanja pacijenata sa specifičnom problematikom. Kao što je već navedeno, najveći broj „akutnih“ bolnica u Republici Hrvatskoj nema ni prostornih ni kadrovskih uvjeta za obavljanje metode ERCP-a. U tom smislu jasno je da dostupnost navedene metode nije jednaka na čitavom teritoriju Republike Hrvatske što u velikoj mjeri utječe na konačni ishod akutnog biliarnog pankreatitisa i posebice akutnog kolangitisa. Kvalitetno rješenje navedenog problema je upravo formiranje visoko specijaliziranih centara objedinjenih u dobro organiziranu mrežu unutar koje će se upućivati bolesnici sa specifičnom i zahtjevnom problematikom. Jedino na takav način organizirani sustav ima potencijal istodobno pružiti visoku kvalitetu liječenja uz ekonomsku isplativost.

Hrvatska mreža intervencijske gastroenterologije - ERCP (CRO-GASTRONET-ERCP), vodeći se spomenutim prepostavkama, ima za cilj organizirati centre s već postojećom infrastrukturom, stručnim kadrom i iskustvom kao mjesta kojima će gravitirati točno definirana populacija određenog geografskog područja. Akutni kolangitis, akutni bilijarni pankreatitis i komplikacije kolecistektomije u obliku postoperacijske ozljede žučovoda dijagnoze su koje zahtijevaju ERCP unutar 72 sata, a u pojedinim slučajevima i unutar 24 sata. Nažalost, činjenica je da trenutno u Republici Hrvatskoj takvi bolesnici nerijetko čekaju na intervenciju znatno duže jer ne postoji organizirana mreža slanja i prihvata takvih bolesnika. Uspostavom egzaktne definirane mreže značajno bi se smanjio mortalitet i učestalost niza komplikacija, posebice u starijim dobnim skupinama u kojih postoji značajan komorbiditet. Sve navedeno zagospodarjivo bi smanjilo trošak i poboljšalo ishode liječenja tih bolesnika.

S obzirom na postojeću zdravstvenu, prometnu, komunikacijsku i drugu infrastrukturu, te udaljenost do 150 km od bolnica s tog područja do već postojećih sedam visoko specijaliziranih centara s razvijenom intervencijskom gastroenterologijom koji svakodnevno osiguravaju mogućnost 24-satnog hitnog ili ranog ERCP-a (KBC Osijek, KBC Rijeka, KBC Sestre milosrdnice, KBC Split, KBC Zagreb, KB Dubrava, KB Sveti Duh) morao bi se osigurati transport bolesnika s jasnim indikacijama (teški i srednje teški akutni kolangitis, akutni pankreatitis s dilatacijom žučnih vodova i laboratorijskim pokazateljima kolestatskog sindroma i povišenim koncentracijama bilirubina u serumu) do specijaliziranih, navedenih centara unutar 24, odnosno 72 sata, zavisno o kojoj se indikaciji radi.

and treatment networks, such as the Interventional Cardiology Network or the Interventional Neuroradiology Network. In view of the fact that Republic of Croatia has a relatively small population and consequently a relatively small number of specific cases, there is the need to form highly specialized centers integrated into a well-organized network for referral of patients with specific problems. As has already been mentioned, the majority of ‘acute’ hospitals in the Republic of Croatia lack both the facilities and the staff to perform the ERCP method. Thus, it is clear that the availability of this method is not uniform across the Republic of Croatia, which greatly influences the final outcome of acute biliary pancreatitis and in particular of acute cholangitis. A good solution for this problem is precisely the establishment of highly specialized centers integrated into a well-organized network which patients with specific and demanding issues would be referred to. Only a system organized in this manner has the potential to provide high-quality treatment and cost efficiency at the same time.

The Croatian Interventional Gastroenterology Network-ERCP (CRO-GASTRONET-ERCP), guided by the above assumptions, has the aim of organizing centers with pre-existing infrastructure, professional staff and experience as the sites with a clearly defined catchment population from a particular geographic area. Acute cholangitis, acute biliary pancreatitis and cholecystectomy complications in the form of post-operative bile duct injury are all diagnoses requiring ERCP within 72 hours, and in some cases within 24 hours. Unfortunately, the fact is that currently in the Republic of Croatia such patients often have to wait for intervention considerably longer because there is no organized network of referral and admission of such patients. The establishment of a precisely defined network would significantly reduce the mortality and prevalence of a series of complications, especially in older age groups with significant comorbidities. All this would certainly reduce the costs and improve treatment outcomes in those patients.

Given the existing healthcare, transport, communication and other infrastructure, and distance of up to 150 km from the hospitals in a certain area to the existing seven highly specialized centers with developed interventional gastroenterology that provide 24-hour emergency or early ERCP on a daily basis (Osijek University Hospital Centre (UHC), Rijeka UHC, Sestre milosrdnice UHC, Split UHC, Zagreb UHC, Dubrava University Hospital (UH), and Sveti Duh UH), transport would need to be provided for patients with clear indications (severe or moderate acute cholangitis, acute pancreatitis with bile duct dilation and lab markers of cholestatic syndrome and elevated serum bilirubin levels) to the above mentioned specialized centers within 24 or 72 hours, depending on the indication.

Grad Zagreb, Zagrebačka županija te županije sjeverozapadne Hrvatske (Karlovачka županija, Sisačko-moslavačka županija, Bjelovarsko-bilogorska županija, Koprivničko-križevačka županija, Međimurska županija, Varaždinska županija i Krapinsko-zagorska županija), uključujući i Požeško-slavonsku županiju i Virovitičko-podravsku županiju (smeđe obojene na sl. 2) teritorijalne su jedinice čije bi sveukupno stanovništvo u slučaju potrebe za ERCP-om i s jasnom indikacijom bilo upućivano u jedan od specijaliziranih centara u gradu Zagrebu (tablica 5). Vukovarsko-srijemska županija, Osječko-baranjska županija i Brodsko-posavska županija gravitirale bi KBC-u Osijek (žuto obojeno na sl. 2), dok bi županije jugozapadne Hrvatske (Istarska županija, Primorsko-goranska županija i Lička županija) gravitirale KBC-u Rijeka (tamno plavo obojano na sl. 2). Južne županije (Dubrovačko-neretvanska županija, Splitsko-dalmatinska županija i veći dio Šibensko-kninske županije) gravitirale bi KBC-u Split (zeleno obojano na sl. 2), dok bi grad Knin s okolicom i Zadarska županija gravitirali OB Zadar (narancasto obojano na sl. 2) (tablica 5). KB Merkur bi s obzirom na kadrovski i organizacijski potencijal zadržao obavljanje djelatnosti ERCP-a za svoje gravitirajuće područje (tablica 5).

Prema vlastitim dosadašnjim iskustvima u svakodnevnom radu kao i prema iskustvima drugih "mreža" poput mreže intervencijske kardiologije za očekivati je pojedine probleme koji će se javljati posebice na početku uvođenja sustava na svim njegovim razinama. Jedan od problema bi mogao biti predugački vremenski slijed od dolaska bolesnika u hitnu službu do postavljanja dijagnoze. Kada se postavi dijagnoza, postoje problemi u komunikaciji s tercijalnim centrom, često i međusobno nepovjerenje, te nepoznavanje kriterija za hitni, odnosno rani ERCP. Postupnikom koji bi izradila Radna skupina Hrvatskog gastroenterološkog društva za hitni i rani ERCP, koji bi se potom uputio svim hitnim službama u svim „akutnim“ bolnicama, naznačeni problemi provedbe bi se u velikoj mjeri minimalizirali ili u potpunosti uklonili. Hrvatsko gastroenterološko društvo preuzima zadaću trajne edukacije zdravstvenih kadrova koji će omogućiti razvoj i održavanje *Hrvatske mreže intervencijske gastroenterologije* što uključuje i kontrolu kvalitete rada u svakom od centara u kojem se radi ERCP.

The City of Zagreb, Zagreb County and the counties of northwest Croatia (Karlovac, Sisak-Moslavina, Bjelovar-Bilogora, Koprivnica-Križevci, Međimurje, Varaždin and Krapina-Zagorje), including the Požega-Slavonija and Virovitica-Podravina Counties (brown-colored in Figure 2) are territorial units the overall population of which, in case of the need for ERCP and with clear indication, would be referred to one of the specialized centers in the City of Zagreb (Table 5). Vukovar-Srijem, Osijek-Baranja and Brod-Posavina Counties would be catchment areas of the Osijek UHC (yellow-colored in Figure 2), while the counties of southwest Croatia (Istria, Primorje-Gorski Kotar and Lika) would be catchment areas of the Rijeka UHC (dark blue-colored in Figure 2). The southern counties (Dubrovnik-Neretva, Split-Dalmatia and the majority of the Šibenik-Knin County) would be catchment areas of the Split UHC (green-colored in Figure 2), while the town of Knin with its surroundings and the Zadar County would be catchment areas of the Zadar General Hospital (GH) (orange-colored in Figure 2) (Table 5). Merkur UH would, given its staff and organizational potential, continue performing ERCP activities for the respective catchment area (Table 5).

Based on our own previous experience in daily routine, as well as the experience of other networks, such as the Interventional Cardiology Network, certain problems are to be expected that will occur especially in the initial introduction of the system at all its levels. One of the problems could be too long a time sequence from patient arrival to emergency department to diagnosis. Once the diagnosis is established, there are problems in communication with the tertiary center, frequently also mutual mistrust, and lack of familiarity with the criteria for emergency or early ERCP. A protocol that would be developed by the working group of the Croatian Society of Gastroenterology for emergency and early ERCP, which would then be sent to all emergency departments in all 'acute' hospitals, would to a large extent minimize or completely eliminate the suggested problems in implementation. The Croatian Society of Gastroenterology assumes the task of continuously training healthcare professionals who will enable the development and maintenance of the Croatian Interventional Gastroenterology Network, which also includes monitoring the quality of work in each of the centers performing ERCP.

Tablica 5. Prikaz ustanova u kojima se radi ERCP s gravitacijskim područjima i brojem osiguranika

Table 5. Hospitals performing ERCP activities and their respective gravitational areas and number of insured persons

Ustanova / Institution	Gravitacijsko područje / Catchment area	Broj osiguranika / No. of insured persons
KBC Sestre milosrdnice	Centar, Trešnjevka	158521
	Zagrebačka županija – Zagreb County	57193
	Karlovačka županija – Karlovac County	118824
	Sisačko-moslavačka županija – Sisak-Moslavina County	154908
KBC Zagreb	Maksimir, Novi Zagreb	190705
	Zagrebačka županija – Zagreb County	95393
	Varaždinska županija – Varaždin County	164459
	Bjelovarsko-bilogorska županija – Bjelovar-Bilogora County	108787
KB Dubrava	Sesvete, Dubrava	180063
	Zagrebačka županija – Zagreb County	50871
	Međimurska županija – Međimurje County	106847
	Koprivničko-križevačka županija – Koprivnica-Križevci County	107581
	Virovitičko-podravska županija – Virovitica-Podravina County	77040
	Požeško-slavonska županija – Požega-Slavonia County	70030
KB Merkur	Medveščak, Trnje, Peščenica-Žitnjak	135110
KB Sveti Duh	Črnomerec, Susedgrad, Zaprešić	166674
	Krapinsko-zagorska županija – Krapina-Zagorje County	123506
	Zagrebačka županija – Zagreb County	82877
KBC Rijeka	Primorsko-goranska županija – Primorje-Gorski Kotar County	292501
	Istarska županija – Istria County	217050
	Ličko-senjska županija – Lika-Senj County	47731
KBC Osijek	Osječko-baranjska županija – Osijek-Baranja County	280683
	Vukovarsko-srijemska županija – Vukovar-Srijem County	161844
	Brodsko-posavska županija – Brod-Posavina County	143709
KBC Split	Splitsko-dalmatinska županija – Split-Dalmatia County	460591
	Dubrovačko-neretvanska županija – Dubrovnik-Neretva County	129411
	Šibensko-kninska županija – Šibenik-Knin County	86357
OB Zadar	Zadarska županija – Zadar County	174257
	Šibensko-kninska županija – Šibenik-Knin County	18463

KB – Clinical Hospital; KBC – Clinical Centre; OB – General Hospital



I.	ZAGREBAČKA	XII.	BRODSKO-POSAVSKA
II.	KRAPINSKO-ZAGORSKA	XIII.	ZADARSKA
III.	SISAČKO-MOSLAVAČKA	XIV.	OSJEČKO-BARANJSKA
IV.	KARLOVAČKA	XV.	ŠIBENSKO-KNINSKA
V.	VARAŽDINSKA	XVI.	VUKOVARSKO-SRIJEMSKA
VI.	KOPRIVNIČKO-KRIŽEVAČKA	XVII.	SPLITSKO-DALMATINSKA
VII.	BJELOVARSKO-BILOGORSKA	XVIII.	ISTARSKA
VIII.	PRIMORSKO-GORANSKA	XIX.	DUBROVAČKO-NERETVANSKA
IX.	LIČKO-SENJSKA	XX.	MEDIJMURSKA
X.	VIROVITIČKO-PODRAVSKA	XXI.	GRAD ZAGREB
XI.	POŽEŠKO-SLAVONSKA		

Sl. 2. Mreža ERCP-a / Fig. 2. ERCP network

UTJECAJ NA PRORAČUN HRVATSKOG ZAVODA ZA ZDRAVSTVENO OSIGURANJE

U kontekstu najčešćih ponajprije terapijskih zahvata koji će se raditi u okviru Mreže intervencijske gastroenterologije (CRO-GASTRONET) – ERCP bit će ERCP sa sfinkterotomijom i ekstrakcijom konkrementa, jedinične uprosječene cijene 8.415,00 kuna te ERCP sa sfinkterotomijom i bez nje i s postavljanjem stenta u žučni vod uprosječene cijene 10.633,00 kuna. S obzirom da je očekivani broj hitnih i ranih ERCP-a koji dolaze iz ustanova koje nemaju mogućnosti obavljanja ERCP-a kao terapijske metode oko 303 slučaja godišnje (apendiks 1), pretpostavka je da je u kontekstu uprosječene cijene ERCP-a na razini jedne godine nužno osigurati tri milijuna kuna kao posebnu stavku unutar proračuna Hrvatskog zavoda za zdravstveno osiguranje pod nazivom Mreža intervencijske gastroenterologije (CRO-GASTRONET) – ERCP (tablica 6).

Tablica 6. Mreža intervencijske gastroenterologije (CRO-GASTRONET) - ERCP (broj ERCP-a godišnje, broj ERCP-a iz ustanova koje nemaju ERCP, uprosječena cijena ERCP-a i stavka unutar proračuna HZZO)

Table 6. Interventional gastroenterology network (no. of ERCP annually, no. of ERCP from institutions lacking ERCP, average price of ERCP, Item within chif budget)

Broj ERCP-a godišnje / No. of ERCP annually	Broj ERCP-a iz ustanova koje nemaju ERCP / No. of ERCP from institutions lacking ERCP	Uprosječena cijena terapijskog ERCP-a / Average price of therapeutic ERCP	Stavka unutar proračuna HZZO / Item with CHIF budget
3346	303	9.500,00 kuna	3.000.000,00 kuna

ZAKLJUČAK

Uključivanje *Hrvatske mreže intervencijske gastroenterologije* – ERCP u svakodnevno liječenje bolesnika s akutnim kolangitisom, akutnim biliarnim pankreatitism i postoperacijskim komplikacijama kolecistektomije osigurava spašavanje života, brzi povratak radne sposobnosti te dulji i kvalitetniji život velikog broja bolesnika koji obolijevaju od navedenih bolesti. Akutni kolangitis, akutni biliarni pankreatitis i komplikacije kolecistektomije u obliku postoperacijske ozljede žučovoda, dijagnoze su koje zahtijevaju ERCP unutar 72 sata, a u pojedinim slučajevima i unutar 24 sata. Nążlost, činjenica je da trenutno u Republici Hrvatskoj takvi bolesnici nerijetko čekaju na intervenciju znatno duže, jer ne postoji organizirana mreža slanja i prihvata takvih bolesnika.

Grad Zagreb, Zagrebačka županija te županije sjeverozapadne Hrvatske (Karlovачka županija, Sisačko-moslavačka županija, Bjelovarsko-bilogorska županija, Koprivničko-križevačka županija, Međimurska županija, Varaždinska županija i Krapinsko-zagorska županija), uključujući i Požeško-slavonsku županiju i Virovitičko-podravsku županiju, teritorijalne su jedinice čije bi sveukupno stanovništvo u slučaju potrebe za ERCP-om i s jasnom indikacijom bilo upućivano

IMPACT ON THE BUDGET OF THE CROATIAN HEALTH INSURANCE FUND

The most common, primarily treatment procedures that will be performed within the Interventional Gastroenterology Network (CRO-GASTRONET)-ERCP include ERCP with sphincterotomy and extraction of concrements, with the average unit price of HRK 8.415,00, and ERCP with or without sphincterotomy and stent placement in the bile duct with the average price of HRK 10.633,00. Given the expected number of emergency and early ERCPs coming from institutions that lack the possibility of performing ERCP as a therapeutic method, of about 303 cases annually (Appendix 1), it is assumed that in view of the average price of ERCP at the annual level, it is necessary to allocate three million HRK as a separate item within the budget of the CHIF under the title Interventional Gastroenterology Network (CRO-GASTRONET)-ERCP (Table 6).

CONCLUSION

The implementation of the Croatian Interventional Gastroenterology Network-ERCP into everyday treatment of patients with acute cholangitis, acute biliary pancreatitis and postoperative complications of cholecystectomy ensures saving lives, quick recovery of work capacity, and longer and better quality of life for a large number of patients suffering from these diseases. Acute cholangitis, acute biliary pancreatitis and cholecystectomy complications in the form of postoperative bile duct injury are diagnoses requiring ERCP within 72 hours, and in some cases within 24 hours. Unfortunately, such patients often have to wait for intervention considerably longer because there is no organized network for referring and admitting such patients.

The City of Zagreb, Zagreb County and the counties of northwest Croatia (Karlovac, Sisak-Moslavina, Bjelovar-Bilogora, Koprivnica-Križevci, Međimurje, Varaždin and Krapina-Zagorje), including the Požeško-Slavonija and Virovitica-Podravina Counties, are territorial units the overall population of which, in case of the need of ERCP and with clear indication, would be referred to one of the specialized centers in the City of Zagreb. Vukovar-Srijem, Osijek-Baranja and Brod-Posavina Counties would be catchment areas of

u jedan od specijaliziranih centara u gradu Zagrebu. Vukovarsko-srijemska županija, Osječko-baranjska županija i Brodsko-posavska županija gravitirale bi KBC-u Osijek, dok bi županije jugozapadne Hrvatske (Istarska županija, Primorsko-goranska županija i Lička županija) gravitirale KBC-u Rijeka. Južne županije (Dubrovačko-neretvanska županija, Splitsko-dalmatinska županija i veći dio Šibensko-kninske županije) gravitirale bi KBC-u Split, dok bi grad Knin s okolicom i Zadarska županija gravitirali u OB Zadar. KB Merkur bi s obzirom na kadrovski i organizacijski potencijal zadržao obavljanje djelatnosti ERCP-a za svoje gravitirajuće područje.

Sasvim je jasno da policentričnim pristupom diferentna dijagnostika i differentno liječenje ove kazuistike ima nedvojbenu kratkoročnu, ali i dugoročnu ekonomsku opravdanost. Sveobuhvatnost i dostupnost jedni su od temeljnih načela zdravstvene zaštite Republike Hrvatske, a upravo bi se uspostavom mreže intervencijske gastroenterologije – ERCP osigurala ista razina i kvaliteta liječenja šire populacije naše zemlje, a ne samo onog manjeg broja ljudi koji sada gravitiraju velikim bolnicama u kojima je ova differentna terapija dostupna zahvaljujući postojećim prostornim, ljudskim i ostalim resursima.

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the Osijek UHC, while the counties of southwest Croatia (Istria, Primorje-Gorski Kotar and Lika) would be catchment areas of the Rijeka UHC. The southern counties (Dubrovnik-Neretva, Split-Dalmatia and the majority of the Šibenik-Knin County) would be catchment areas of the Split UHC, while the town of Knin with its surroundings and the Zadar County would be catchment areas of the Zadar GH. Merkur UH would, given its staff and organizational potential, continue performing ERCP procedures for its respective catchment area.

It is quite clear that with a polycentric approach, the differential diagnosis and differential treatment of these cases have an unequivocal, both short-term and long-term economic justification. Comprehensiveness and availability are among the fundamental principles of healthcare system in the Republic of Croatia, and it is precisely establishment of the interventional gastroenterology network – ERCP that would provide the same level and quality of treatment for overall population of our country, and not just for the smaller catchment population of large hospitals in which this differential therapy is available owing to the existing spatial, human and other resources.

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APENDIKS 1 – APPENDIX 1

USTANOVA / INSTITUTION	BROJ POSTUPAKA ERCP-A PO GODINAMA / NUMBER OF ERCP PROCEDURES ACCORDING TO YEARS					UKUPAN BROJ POSTUPAKA / TOTAL NUMBER OF PROCEDURES
	2014. god.	2015. god.	2016. god.	2017. god.	2018. god.	
KBC Osijek	142	190	204	316	168	1020
KBC Rijeka	285	328	277	335	448	1673
KBC Sestre milosrdnice	272	369	430	745	959	2775
KBC Split	220	188	215	211	276	1110
KBC Zagreb	254	299	412	342	294	1601
KB Dubrava	609	718	697	374	1416	3814
KB Merkur	9	6	13	29	35	92
KB Sveti Duh	134	150	195	197	240	916
Klinika za tumore	3	2	0	1	2	8
Klinika za dječje bolesti	0	1	0	0	0	1
OB Bjelovar	30	42	27	31	18	148
OB Dubrovnik	0	0	0	0	1	1
OB Gospić	0	1	0	0	0	1
OB Karlovac	8	27	38	57	16	146
Opća i veteranska bolnica Hrvatski ponos Knin	4	3	6	4	6	23
OB Koprivnica	28	32	33	32	24	149
OB Nova Gradiška	3	2	2	11	3	21
OB Pakrac	2	12	6	8	11	39
OB Požega	8	7	25	31	53	124
OB Ivo Pedišić Sisak	13	12	12	8	7	52
OB Ogulin	0	4	7	9	2	22
OB Pula	0	0	41	27	12	80
OB Slavonski Brod	9	7	20	39	39	114
OB Šibenik	1	3	7	11	17	39
OB Varaždin	33	24	22	9	8	96
OB Vinkovci	6	0	2	0	3	11
OB Virovitica	19	10	46	33	40	148
OB Vukovar	8	6	11	10	14	49
OB Zabok	11	12	34	33	37	127
OB Zadar	523	487	516	421	268	2215
OB Našice	2	5	14	3	7	31
OB Čakovec	8	12	22	19	35	96

KB – Clinical Hospital; KBC – Clinical Hospital Centre; OB – General Hospital; Klinika za dječje bolesti – Clinic for Children Diseases; Opća i veteranska bolnica – General and Veteran Hospital



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APENDIKS 2 – APPENDIX 2

Županija – County	Grad/općina/gradska četvrt grada Zagreba Town/district/City of Zagreb municipality	Ukupno Total
	OP. NEPOZNATA - UNKNOWN	13
Bjelovarsko-bilogorska – Bjelovar-Bilogora County	Berek	1.228
	Bjelovar	37.652
	Čazma	7.335
	Daruvar	10.978
	Dežanovac	2.250
	Đulovac	2.945
	Garešnica	9.325
	Grubišno Polje	5.785
	Hercegovac	2.095
	Ivanska	2.538
	Kapela	2.617
	Končanica	2.013
	Nova Raca	2.986
	Rovišće	4.389
	Severin	776
	Sirač	2.006
	Šandrovac	1.491
	Štefanje	1.799
	Velika Pisanica	1.476
	Velika Trnovica	1.223
	Veliki Grđevac	2.591
	Veliko Trojstvo	2.498
	Zrinski Topolovac	791
Županija bjelovarsko-bilogorska – Bjelovar-Bilogora County		108.787
Brodsko-posavska – Brod-Posavina County	Bebrina	2.997
	Brodska Stupnik	2.650
	Bukovlje	2.941
	Cernik	3.241
	Davor	2.790
	Donji Andrijevci	3.344
	Dragalić	1.160
	Garcin	4.221
	Gornja Vrba	2.343

Županija – County	Grad/općina/gradska četvrt grada Zagreba Town/district/City of Zagreb municipality	Ukupno Total
Županija brodsko-posavska – Brod-Posavina County	Gornji Bogičevci	1.664
	Gundinci	1.755
	Klakar	2.140
	Nova Gradiška	12.782
	Nova Kapela	3.686
	Okučani	2.742
	Oprisavci	2.210
	Oriovac	5.219
	Podcrkavlje	2.405
	Rešetari	4.129
	Sibinj	6.275
	Sikirevci	2.168
	Slavonski Brod	55.386
	Slavonski Šamac	1.840
	Stara Gradiška	1.086
	Staro Petrovo Selo	4.491
	Velika Kopanica	3.085
	Vrbje	1.906
	Vrpolje	3.053
Županija brodsko-posavska – Brod-Posavina County		143.709
Županija dubrovačko-neretvanska - Dubrovnik-Neretva County	Blato	3.682
	Dubrovačko Primorje	1.945
	Dubrovnik	47.597
	Janjina	558
	Konavle	9.384
	Korčula	5.916
	Kula Norinska	1.648
	Lastovo	896
	Lumbarda	1.285
	Metković	16.964
	Mljet	1.295
	Opuzen	3.131
	Orebić	4.099
	Ploče	9.428
	Pojezerje	903
	Slivno	1.918
	Smokvica	907
	Ston	2.427

Županija – County	Grad/općina/gradska četvrt grada Zagreba Town/district/City of Zagreb municipality	Ukupno Total
Županija dubrovačko-neretvanska - Dubrovnik-Neretva County	Trpanj	740
	Vela Luka	4.122
	Zazabljе	707
	Župa Dubrovačka	9.859
Županija dubrovačko-neretvanska - Dubrovnik-Neretva County		129.411
Županija Grad Zagreb – City of Zagreb County	Nepoznato	2.428
	Brezovica	12.003
	Črnomerec	39.866
	Donja Dubrava	36.260
	Donji Grad	36.874
	Gornja Dubrava	61.697
	Gornji Grad - Medvesčak	29.343
	Maksimir	49.085
	Novi Zagreb - Istok	58.026
	Novi Zagreb - Zapad	64.879
	Peščenica - Žitnjak	56.255
	Podsljeme	19.761
	Podsused - Vrapče	46.719
	Sesvete	75.479
	Stenjevec	54.941
	Trešnjevka - Jug	67.342
	Trešnjevka - Sjever	54.597
	Trnje	42.872
Županija Grad Zagreb – City of Zagreb County		808.427
Županija istarska – Istria County	Bale	1.247
	Barban	2.569
	Brtonigla	1.602
	Buje	4.712
	Buzet	6.078
	Cerovlje	1.543
	Fažana	3.810
	Funtana	1.105
	Gradišće	1.413
	Grožnjan	681
	Kanfanar	1.713
	Karojba	1.449
	Kastelir - Labinci	1.537
	Krsan	3.031

Županija – County	Grad/općina/gradska četvrt grada Zagreba Town/district/City of Zagreb municipality	Ukupno Total
	Labin	11.668
	Lanišće	299
	Ližnjan	4.346
	Lupoglav	871
	Marčana	4.426
	Medulin	7.254
	Motovun	902
	Novigrad	4.416
	Oprtalj	751
	Pazin	8.878
	Pićan	1.761
	Poreč	19.597
	Pula	58.471
Županija istarska – Istria County	Raša	3.031
	Rovinj	15.730
	Sveta Nedelja	3.015
	Sveti Lovreč	1.033
	Sveti Petar u Šumi	1.105
	Svetvincenat	2.194
	Tar-Vabriga	2.418
	Tinjan	1.720
	Umag	14.752
	Višnjan	2.360
	Vižinada	1.159
	Vodnjan	6.365
	Vrsar	2.508
	Žminj	3.530
Županija istarska – Istria County		217.050
Županija karlovačka – Karlovac County	Barilović	2.884
	Bosiljevo	1.055
	Cetingrad	1.872
	Draganić	2.624
	Duga Resa	10.615
	Generalski Stol	2.386
	Josipdol	3.543
	Kamanje	732
	Karlovac	52.432
	Krnjak	1.435

Županija – County	Grad/općina/gradska četvrt grada Zagreba Town/district/City of Zagreb municipality	Ukupno Total
Županija karlovačka – Karlovac County	Lasinja	1.429
	Netretić	2.564
	Ogulin	12.851
	Ozalj	6.083
	Plaški	1.865
	Rakovica	2.381
	Ribnik	349
	Saborsko	545
	Slunj	4.696
	Tounj	1.003
	Vojnić	3.953
	Žakanje	1.527
Županija karlovačka – Karlovac County		118.824
Županija koprivničko-križevačka – Koprivnica-Križevci County	Drnje	1.675
	Đelekovec	1.382
	Đurđevac	7.937
	Ferdinandovac	1.529
	Gola	2.212
	Gornja Rijeka	1.631
	Hlebine	1.195
	Kalinovac	1.407
	Kalnik	1.206
	Kloštar Podravski	2.920
	Koprivnica	30.134
	Koprivnički Bregi	2.093
	Koprivnički Ivanec	1.944
	Križevci	19.972
	Legrad	1.961
	Molve	1.964
	Novigrad Podravski	2.541
	Novo Virje	1.083
	Peteranec	2.522
	Podravske Sesvete	1.514
	Rasinja	2.858
	Sokolovac	3.005
	Sveti Ivan Žabno	4.597
	Sveti Petar Orehovec	4.206
	Virje	4.093
Županija koprivničko-križevačka – Koprivnica-Križevci County		107.581

Županija – County	Grad/općina/gradska četvrt grada Zagreba Town/district/City of Zagreb municipality	Ukupno Total
Županija krapinsko-zagorska – Krapina-Zagorje County	Bedekovčina	7.696
	Jesenje	1.399
	Klanjec	2.750
	Konjičina	3.470
	Kraljevec na Sutli	1.565
	Krapina	11.892
	Krapinske Toplice	5.103
	Kumrovec	1.437
	Lobor	2.551
	Mače	2.345
	Marija Bistrica	5.688
	Mihovljan	1.790
	Novi Golubovec	893
	Oroslavje	5.900
	Petrovsko	2.429
	Pregrada	6.108
	Radoboj	3.139
	Stubičke Toplice	2.716
	Sveti Križ Začretje	5.792
	Tuhelj	1.981
	Veliko Trgovišće	4.637
	Zabok	8.908
	Zagorska Sela	828
	Zlatar	5.702
	Zlatar Bistrica	2.387
Županija krapinsko-zagorska – Krapina-Zagorje County		123.506
Županija ličko-senjska – Lika-Senj County	Brinje	2.790
	Donji Lapac	1.581
	Gospic	12.374
	Karlobag	898
	Lovinac	994
	Novalja	4.610
	Otočac	9.001
	Perušić	2.302
	Plitvička Jezera	4.109
	Senj	6.802
	Udbina	1.533
	Vrhovine	737
Županija ličko-senjska – Lika-Senj County		47.731

Županija – County	Grad/općina/gradska četvrt grada Zagreba Town/district/City of Zagreb municipality	Ukupno Total
Županija međimurska – Međimurje County	Belica	2.948
	Čakovec	27.008
	Dekanovec	700
	Domašinec	1.945
	Donja Dubrava	1.721
	Donji Kraljevec	3.946
	Donji Vidovec	1.218
	Goričan	2.415
	Gornji Mihaljevec	1.771
	Kotoriba	2.940
	Mala Subotica	5.157
	Mursko Središće	5.797
	Nedelišće	11.472
	Orehoviac	2.522
	Podturen	3.458
	Prelog	7.214
	Pribislavec	3.182
	Selnica	2.571
	Strahotines	2.654
	Sveta Marija	2.072
	Sveti Juraj na Bregu	4.887
	Sveti Martin na Muri	2.339
	Šenkovec	2.856
	Štrigova	2.318
	Vratišnec	1.736
Županija međimurska – Međimurje County		106.847
Županija osječko-baranjska – Osijek-Baranja County	Antunovac	3.661
	Beli Manastir	8.810
	Belišće	10.087
	Bilje	5.142
	Bizovac	4.133
	Čeminac	2.741
	Čepin	10.485
	Darda	6.249
	Donja Motičina	1.488
	Donji Miholjac	8.626
	Draž	2.248
	Drenje	2.311

Županija – County	Grad/općina/gradska četvrt grada Zagreba Town/district/City of Zagreb municipality	Ukupno Total
Županija osječko-baranjska – Osijek-Baranja County	Đakovo	25.635
	Đurđenovac	5.912
	Erdut	6.349
	Ernestinovo	2.117
	Feričanci	1.890
	Gorjani	1.412
	Jagodnjak	1.745
	Kneževi Vinogradi	3.862
	Koška	3.507
	Levanjska Varoš	883
	Magadenovac	1.733
	Marijanci	2.178
	Našice	15.463
	Osijek	102.538
	Petlovac	2.071
	Petrijevci	2.598
	Podgorac	2.660
	Podravska Moslavina	1.030
	Popovac	1.727
	Punitovci	1.639
	Satnica Đakovačka	1.975
	Semeljci	3.915
	Strizivojna	2.336
	Šodolovci	1.382
	Trnava	1.422
	Valpovo	10.505
	Viljevo	1.814
	Viskovci	1.644
	Vladislavci	1.696
	Vuka	1.064
Županija osječko-baranjska – Osijek-Baranja County		280.683
Županija požeško-slavonska – Požega-Slavonija County	Brestovac	3.350
	Čaglin	2.076
	Jakšić	3.725
	Kaptol	3.018
	Kutjevo	5.569
	Lipik	5.498
	Pakrac	7.714

Županija – County	Grad/općina/gradska četvrt grada Zagreba Town/district/City of Zagreb municipality	Ukupno Total
Županija požeško-slavonska – Požega-Slavonija County	Pleternica	10.152
	Požega	23.937
	Velika	4.991
Županija požeško-slavonska – Požega-Slavonija County		70.030
Županija primorsko-goranska – Primorje-Gorski Kotar County	Bakar	8.322
	Baška	2.012
	Brod Moravice	732
	Cres	3.093
	Crikvenica	11.193
	Čabar	3.275
	Čavle	7.385
	Delnice	5.432
	Dobrinj	2.460
	Fužine	1.514
	Jelenje	5.352
	Kastav	10.603
	Klana	1.895
	Kostrena	4.662
	Kraljevica	4.381
	Krk	7.105
	Lokve	910
	Lopar	1.302
	Lovran	3.882
	Mali Lošinj	8.714
	Malinska-Dubašnica	3.727
	Matulji	11.377
	Mošćenička Draga	1.435
	Mrkopalj	1.051
	Novi Vinodolski	4.984
	Omišalj	3.446
	Opatija	11.514
	Punat	2.232
	Rab	8.228
	Ravna Gora	2.224
	Rijeka	121.354
	Skrad	957
	Vinodolska Općina	3.444
	Viškovo	16.563

Županija – County	Grad/općina/gradska četvrt grada Zagreba Town/district/City of Zagreb municipality	Ukupno Total
Županija primorsko-goranska – Primorje-Gorski Kotar County	Vrbnik	1.367
	Vrbovsko	4.374
Županija primorsko-goranska – Primorje-Gorski Kotar County		292.501
Županija sisačko-moslavačka – Sisak-Moslavina County	Donji Kukuruzari	1.324
	Dvor	3.946
	Glina	7.793
	Gvozd	2.361
	Hrvatska Dubica	1.658
	Hrvatska Kostajnica	2.425
	Jasenovac	1.728
	Kutina	21.238
	Lekenik	5.496
	Lipovljani	3.037
	Majur	946
	Martinska Ves	3.042
	Novska	12.374
	Petrinja	22.619
	Popovača	10.901
	Sisak	44.164
	Sunja	4.841
	Topusko	2.558
	Velika Ludina	2.457
Županija sisačko-moslavačka – Sisak-Moslavina County		154.908
Županija splitsko-dalmatinska – Split-Dalmacija County	Baška Voda	3.076
	Bol	1.968
	Brela	1.729
	Cista Provo	2.001
	Dicmo	2.952
	Dugi Rat	7.139
	Dugopolje	3.873
	Gradac	2.931
	Hrvace	3.630
	Hvar	5.049
	Imotski	10.592
	Jelsa	3.881
	Kaštela	39.833
	Klis	5.186
	Komiža	1.666

Županija – County	Grad/općina/gradska četvrt grada Zagreba Town/district/City of Zagreb municipality	Ukupno Total
Županija splitsko-dalmatinska – Split-Dalmacija County	Lečevica	555
	Lokvičići	750
	Lovrec	1.498
	Makarska	16.367
	Marina	4.610
	Milna	1.297
	Muč	3.736
	Nerežišća	945
	Okrug	3.366
	Omiš	15.463
	Otok	5.325
	Podbablje	4.565
	Podgora	2.753
	Podstrana	10.244
	Postira	1.681
	Prgomet	605
	Primorski Dolac	777
	Proložac	3.527
	Pučišća	2.182
	Runovići	2.240
	Seget	4.763
	Selca	1.836
	Sinj	24.502
	Solin	25.890
	Split	174.213
	Stari Grad	2.970
	Sućuraj	502
	Supetar	4.654
	Sutivan	1.027
	Šestanovac	1.844
	Šolta	2.251
	Trilj	8.648
	Trogir	13.501
	Tučepi	2.047
	Vis	2.173
	Vrgorac	6.763
	Vrlika	1.778
	Zadvarje	250

Županija – County	Grad/općina/gradska četvrt grada Zagreba Town/district/City of Zagreb municipality	Ukupno Total
Županija splitsko-dalmatinska – Split-Dalmacija County	Zagvozd	1.121
	Zmijavci	1.866
Županija splitsko-dalmatinska – Split-Dalmatia County		460.591
Županija Šibensko-kninska – Šibenik-Knin County	Bilice	2.493
	Biskupija	1.241
	Civljane	196
	Drniš	7.033
	Eršenik	648
	Kijevo	326
	Kistanje	2.639
	Knin	13.413
	Murter-Kornati	2.098
	Pirovac	1.884
	Primošten	2.793
	Promina	988
	Rogoznica	2.487
	Ružić	1.427
	Skradin	3.714
	Šibenik	46.033
	Tisno	3.156
	Tribunj	1.658
	Unešić	1.379
	Vodice	9.214
Županija Šibensko-kninska – Šibenik-Knin County		104.820
Županija varaždinska – Varaždin County	Bednja	3.524
	Beretinec	2.140
	Breznica	2.056
	Breznički Hum	1.211
	Cestica	4.891
	Donja Voća	1.985
	Gornji Kneginec	5.154
	Ivanec	12.976
	Jalžabet	3.080
	Klenovnik	1.830
	Lepoglava	6.689
	Ludbreg	8.111
	Ljubeščica	1.781
	Mali Bukovec	1.967

Županija – County	Grad/općina/gradska četvrt grada Zagreba Town/district/City of Zagreb municipality	Ukupno Total
Županija varaždinska – Varaždin County	Martijanec	3.480
	Maruševec	5.922
	Novi Marof	12.479
	Petrijanec	4.571
	Sračinec	4.769
	Sveti Đurđ	3.449
	Sveti Ilijas	3.318
	Trnovec Bartolovečki	6.517
	Varaždin	45.750
	Varaždinske Toplice	5.872
	Veliki Bukovec	1.315
	Vidovec	5.153
	Vinica	3.066
	Visoko	1.403
Županija varaždinska – Varaždin County		164.459
Županija virovitičko-podravska – Virovitica-Podravina County	Crnac	1.241
	Čačinci	2.501
	Čadavica	1.709
	Gradina	3.251
	Lukač	3.108
	Mikleuš	1.222
	Nova Bukovica	1.441
	Orahovica	4.880
	Pitomača	9.173
	Slatina	12.499
	Sopje	2.083
	Suhopolje	5.798
	Špišić Bukovica	3.698
	Virovitica	20.590
	Voćin	2.209
	Zdenci	1.637
Županija virovitičko-podravska – Virovitica-Podravina County		77.040
Županija vukovarsko-srijemska – Vukovar-Srijem County	Andrijaševci	3.814
	Babina Greda	3.096
	Bogdanovci	1.704
	Borovo	4.258
	Bošnjaci	3.359
	Cerna	4.090

Županija – County	Grad/općina/gradska četvrt grada Zagreba Town/district/City of Zagreb municipality	Ukupno Total
Županija vukovarsko-srijemska – Vukovar-Srijem County	Drenovci	4.380
	Gradište	2.477
	Gunja	3.169
	Ilok	5.988
	Ivankovo	7.264
	Jarmina	2.329
	Lovas	1.085
	Markušica	2.064
	Negoslavci	1.110
	Nijemci	4.020
	Nuštar	5.252
	Otok	5.604
	Privlaka	2.569
	Staro Jankovci	3.973
	Stari Mikanovci	2.629
	Štitar	1.828
	Tompojevci	1.310
	Tordinci	1.841
	Tovarnik	2.395
	Trpinja	4.649
	Vinkovci	33.637
	Vodinci	1.835
	Vrbanja	3.361
	Vukovar	26.263
	Županja	10.491
Županija vukovarsko-srijemska – Vukovar-Srijem County		161.844
Županija zadarska – Zadar County	Benkovac	11.365
	Bbinje	4.167
	Biograd na Moru	6.111
	Galovac	1.310
	Gračac	3.906
	Jasenice	1.613
	Kali	1.874
	Kolan	935
	Kukljica	873
	Lisane Ostrovičke	721
	Nin	3.042
	Novigrad	2.379

Županija – County	Grad/općina/gradska četvrt grada Zagreba Town/district/City of Zagreb municipality	Ukupno Total
Županija zadarska – Zadar County	Obrovac	3.945
	Pag	3.501
	Pakoštane	4.451
	Pašman	2.398
	Polača	1.460
	Poličnik	4.910
	Posedarje	3.753
	Povljana	703
	Preko	4.244
	Privlaka	2.336
	Ražanac	3.095
	Sali	2.312
	Stankovci	1.939
	Starigrad	2.116
	Sukošan	4.846
	Sveti Filip i Jakov	4.562
	Škabrnja	1.807
	Tkon	809
	Vir	3.338
	Vrsi	2.099
	Zadar	75.164
	Zemunik Donji	2.173
Županija zadarska – Zadar County		174.257
Županija zagrebačka – Zagreb County	Bedenica	1.322
	Bistra	6.256
	Brckovljani	6.182
	Brdovec	11.120
	Dubrava	4.220
	Dubravica	1.280
	Dugo Selo	17.885
	Farkaševac	1.555
	Gradec	3.362
	Ivanić-Grad	13.948
	Jakovlje	3.781
	Jastrebarsko	15.224
	Klinča Sela	5.034
	Kloštar Ivanić	5.877
	Krašić	2.242

Županija – County	Grad/općina/gradska četvrt grada Zagreba Town/district/City of Zagreb municipality	Ukupno Total
Županija zadarska – Zadar County	Kravarsko	1.861
	Križ	6.478
	Luka	1.337
	Marija Gorica	2.121
	Orle	1.821
	Pisarovina	3.527
	Pokupsko	2.013
	Preseka	1.205
	Pušča	2.617
	Rakovec	1.158
	Rugvica	7.484
	Samobor	38.412
	Stupnik	3.832
	Sveta Nedjelja	18.503
	Sveti ivan Zelina	15.108
Županija zagrebačka – Zagreb County	Velika Gorica	62.980
	Vrbovec	13.537
	Zaprešić	25.019
	Žumberak	636
Republika Hrvatska – ukupno Republic of Croatia – total		308.937
		4.161.956