

Razvoj Koronarne jedinice Opće bolnice „Dr. Josip Benčević“ u Slavonskom Brodu

Development of the Coronary Care Unit at the General Hospital “Dr. Josip Benčević” in Slavonski Brod

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SAŽETAK: Razvoj Koronarne jedinice u Slavonskom Brodu bilježi se od 1960. godine. Sve do tada, bolesnici s prepoznatim stenokardijama strogo su mirovali na odjelu pet do šest tjedana i tek tada bili upućivani na daljnju dijagnostiku u bolničke centre u Zagrebu, kako bi im se obradom dijagnosticirala postojeća koronarna bolest srca. Tadašnjim nastojanjima prema poboljšanju kvalitete liječenja i razvoja dijagnostičkih i terapijskih mogućnosti, sedamdesetih godina Koronarna jedinica dobiva novi prostor i osoblje posebno educirano za liječenje koronarnih bolesnika. Tijekom Domovinskog rata Koronarna se jedinica privremeno premješta na sjevernu stranu Internog odjela kako bi se zaštitila od ratnih stradanja. Početkom 2002. godine, izgradnjom nove interpolacije u staru zgradu bolnice, Odjel kardiologije dobiva novu koronarnu jedinicu sa sedam bolesničkih kreveta, opremljenu centralnim monitoringom i potrebnom aparaturom za intenzivno liječenje. Povećan je i broj medicinskog osoblja educiranog za provođenje intenzivne njege. Zamahu u liječenju doprinosi uvođenje interventne kardiologije koja poboljšava kvalitetu liječenja, smanjuje morbiditet i duljinu boravka u bolnici. Otvaranjem jedinice za aritmologiju, zatvara se ciklus svih interventnih kardioloških metoda koje se trenutačno primjenjuju u Republici Hrvatskoj, a posebno u bolnicama ovog ranga.

SUMMARY: The development of the Coronary Care Unit (CCU) in Slavonski Brod started in 1960. Until then, patients diagnosed with stenocardia would be prescribed strict bed rest at the department over five to six weeks and would then be sent for further diagnostic processing to hospital centers in Zagreb in order to diagnose their existing coronary artery disease. Due to the efforts to improve quality of treatment and the development of diagnostic and treatment options, in the 1970s the CCU received a new space and staff that was specially educated for the treatment of coronary patients. During the Homeland War, the CCU was temporarily transferred to the north side of the Internal Medicine Department to protect it from the ravages of war. At the start of 2002, the construction of an addition to the old hospital building provided the Cardiology Department with a new CCU with seven hospital beds and equipped with central monitoring and the necessary medical devices for intensive treatment. The number of medical staff educated in administering intensive care was also increased. Treatment quality was also improved by the introduction of interventional cardiology that improved the quality of treatment and reduced morbidity and hospitalization. The opening of the arrhythmology unit completed the cycle of introducing all the interventional cardiology methods currently applied in the Republic of Croatia, especially in hospitals of this level of quality.

KLJUČNE RIJEČI: dijagnostika, infarkt miokarda, koronarna jedinica.

KEYWORDS: diagnostics, myocardial infarction, coronary care unit.

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Nabavkom prvoga elektrokardiografskog (EKG) uređaja 1960. godine počinje put razvoja Koronarne jedinice u Slavonskom Brodu. Dotadašnji način liječenja zaprimljenih bolesnika sa sumnjom na akutni infarkt miokarda (AIM) provodio se višetjednim (5 – 6 tjedana) mirovanjem. Potom su se ti bolesnici bolničkim

The acquisition of the first electrocardiography (ECG) device in 1960 marked the start of the journey to create the Coronary Care Unit (CCU) in Slavonski Brod. The treatment of patient thus far when acute myocardial infarction (AMI) was suspected had consisted of several weeks (5-6) of bed rest. These patients were

sanitetom vozili u kliničke bolnice u Zagrebu na snimanje EKG-a, na potvrdu dijagnoze infarkta miokarda¹. Početkom 70-ih god. 20. stoljeća monitoring bolesnika s mogućim stenokardijama i poremećajima ritma obavljao se na dvama monitorima u sobama Internog odjela.

Godine 1975. godine osniva se u sklopu Internog odjela Koronarna jedinica s trima monitorima s EKG zapisom frekvencije, tlaka i pulsa koji se prema potrebi postavljaju bolesnicima s bolovima u prsima, AIM-om i poremećajima ritma. Te iste godine Interni se odjel seli u novosagrađenu zgradu, gdje se formiraju Koronarna i Postkoronarna jedinica. Tada se jedan liječnik i četiri medicinske sestre upućuju u Klinički bolnički centar (KBC) Sestre milosrdnice u Zagrebu na edukaciju za praćenje i liječenje intenzivnih koronarnih bolesnika. Zbog sve veće potrebe liječenja i porasta broja oboljelih od koronarne bolesti srca, 1979. godine formira se samostalna Koronarna jedinica s četirima bolesničkim krevetima i monitorima za pojedinačno praćenje bolesnika. Te iste godine implantira se i prvi privremeni elektrostimulator srca (dr. B. Bucić). Nabavkom ehokardiografskog aparata i ergometrijske dijagnostike te respiratora tadašnja Koronarna jedinica dobiva moderne obrise intenzivnog liječenja kakvo se provodi u kliničkim bolnicama (**slika 1**). Sva dotadašnja dijagnostika srčanih tegoba obavljala se u Zagrebu, Ljubljani ili Beogradu. Tijekom Domovinskog rata Koronarna jedinica bila je premještena u prostore dviju soba Odjela gastroenterologije jer je na taj način bila djelomično zaštićena od mogućnosti ratnih stradanja. Tehnološki je bila opremljena četirima monitorima. Takav način rada zahtijevao je mnogo veći i naporniji angažman zdravstvenih djelatnika u pružanju potrebne skrbi koronarnim bolesnicima, ali to se ni u jednom trenutku nije odrazilo na kvalitetu liječenja koja im je u tako skromnim uvjetima pružana.

Nakon završetka Domovinskog rata sele se u prijašnje prostore i s vremenom se nabavljaju centralni monitori, koji medicinskom osoblju olakšavaju hemodinamsko praćenje intenzivnih bolesnika.

Izgradnjom interpolacije dotadašnje bolnice povećava se 2002. godine kapacitet Odjela kardiologije i nove Koronarne jedinice. Koronarna jedinica dobiva sedam intenzivnih i dva postintenzivna kreveta. Pri opremanju prostora nabavljaju se i novi respirator, defibrilator, pulsni oksimetri i sva popratna oprema. Usporedo s opremanjem Koronarne jedinice, dobiva se i mogućnost telemetrijskog praćenja bolesnika na odjelu

subsequently transported by ambulance to university hospitals in Zagreb for ECG and confirmation of the diagnosis of myocardial infarction¹. At the start of the 1970s monitoring of patients with possible stenocardia and rhythm disorders was performed using two monitors in the rooms of the Internal Medicine Department.

The CCU was founded in 1975 as part of the Internal Medicine Department and was equipped with three monitors with ECG monitoring of heart frequency, pressure, and pulse that were used for patients with chest pains, AMI, and rhythm disorders. In the same year, the Internal Medicine Department moved to a newly-constructed building where the Coronary and Postcoronary Care Unit were formed. One physician and four nurses were then sent to the University Hospital Centre "Sestre milosrdnice" in Zagreb for education in monitoring and treating intensive coronary care patients. Due to the increasing need for treatment and growing number of patients suffering from coronary artery disease, an independent CCU was formed in 1979 with four patient beds and monitors for individual patient tracking. The first temporary pacemaker was implanted that year as well (by Dr B. Bucić). The acquisition of an echocardiography device, stress testing equipment, and a respirator was a step towards bringing the CCU closer to the standards of intensive treatment available in university hospitals at the time (**Figure 1**). Until then, all diagnostic for heart disorders were performed in Zagreb, Ljubljana, or Belgrade. During the Homeland War, the CCU was moved to two rooms in the Gastroenterology Department in order to partially protect it from the ravages of war. It was equipped with four monitors. This kind of work required much greater and more strenuous engagement by its healthcare staff in providing the necessary care to coronary patients, but this never resulted in a reduction in the quality of care that was provided to the patients despite the meager conditions.

After the end of the Homeland War the unit moved to its old location and gradually acquired central monitors that facilitated hemodynamic monitoring for intensive care patients.

The construction of an addition to the hospital building in 2002 increased the capacity of the Cardiology Department and the new CCU. The coronary unit got seven intensive care beds and two post-intensive care beds. The new space was also equipped with a new respirator, defibrillator, pulse oximeter, and all accompanying gear. In parallel with the acquisition of this new equipment, it also became possible to tele-

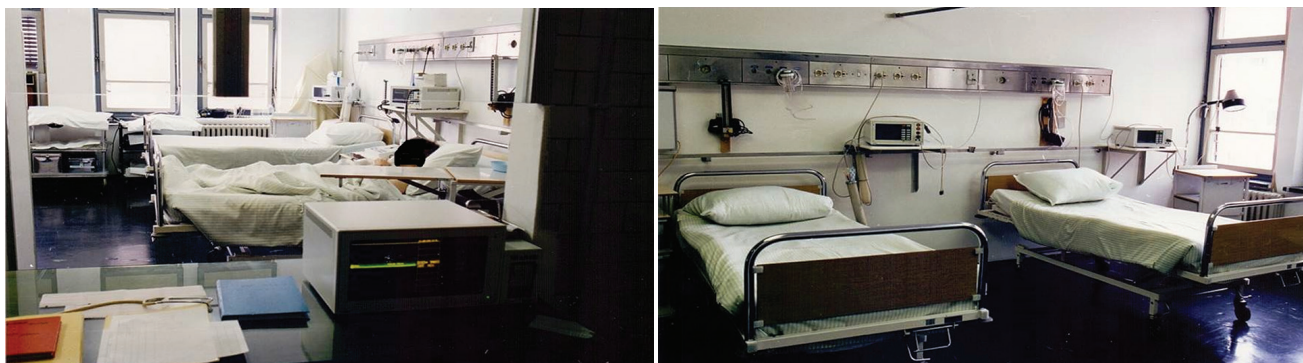


FIGURE 1. The Coronary Care Unit in the 1990s.

kardiologije. Kako su potrebe posla zahtijevale i više zdravstvenog osoblja, sistematizacijom je broj medicinskih sestara povećan s četiri na devet, od kojih osam sa srednjom stručnom spremom i jedna prvostupnica sestrinstva. Tako su od tada u smjenskom radu po dvije medicinske sestre i jedan kardiolog u dežurstvu. S vremenom se neke medicinske sestre educiraju i završavaju trogodišnje školovanje te postaju prvostupnice sestrinstva. U konačnici to rezultira novom organizacijom rada, tako da 2007. godine u Intenzivnoj koronarnoj jedinici radi pet prvostupnica sestrinstva i šest medicinskih sestara srednje stručne spreme.

Najveći zamah u kardiologiji bolnica dobiva 2003. godine, kada se otvara Laboratorij za invazivnu kateterizaciju srca. Svake se godine povećava broj intervencija koji zahtjeva sve bolju stručnost i iznimno dobru edukaciju osoblja koje radi s takvim bolesnicima. Stjecanjem velikog iskustva na polju invazivne kardiologije, 2003. godine započinje se s invazivnim intervencijama i potom ulazimo u Hrvatsku mrežu intervencijom liječenja akutnog infarkta miokarda koja pokriva područje Slavenskog Broda, Nove Gradiške, Pakraca, Daruvara, Požege, a često i Županje i Vinkovaca. Na početku su u timu s intervencijskim kardiologom radila tri kardiologa, dvije medicinske sestre i dva inženjera radiologije. S vremenom se taj broj mijenjao. Pošto se otvara još jedna dvorana za intervencijsku kardiologiju, danas tamo radi sedam kardiologa, tri magistre sestrinstva, jedna prvostupnica i jedan medicinski tehničar te dva inženjera radiologije. Uvođenjem liječenja poremećaja ritma u angiološkim salama postoji potreba za povećanjem broja prijмова bolesnika u koronarnu jedinicu. Velikim zalaganjem i entuzijazmom svih zdravstvenih djelatnika u Intenzivnoj koronarnoj jedinici, ni na jedan način ne dovodi se u pitanje briga za bolesnika i nastojanje kako bi pri prijmu i daljnjem liječenju izostala potrebna medicinska skrb.

Početkom 2019. godine, uviđa se potreba za nabavom novoga telemetrijskog sustava jer se stari često kvario, te se s pomoću donacije Gradskog poglavarstva dobiva novi centralni sustav za praćenje bolesnika na odjelu. Nabavom opreme olakšava se rad medicinskom osoblju i samim tim bolesnicima koji su visoko rizični za nastanak malignih aritmija.

Danas je Intenzivna koronarna jedinica (**slika 2**) opremljena prema svim standardima koje zahtijeva kvalitetno provođenje liječenja bolesnika oboljelih od kardiovaskularne bolesti.

Prostor se sastoji od:

- 7 bolesničkih postelja
- 2 postintenzivne postelje
- 8 telemetrijskih praćenja
- 2 respiratora
- 1 transportabilnog respiratora
- 2 defibrilatora
- 2 EKG-a
- 2 ehokardiografska aparata.

Godišnje se na intenzivno liječenje zaprimi između 700 i 900 bolesnika (**tablica 1**). Sve medicinsko osoblje odlazi na povremene edukacije, čime trajno održava sve najnovije standarde i preporučene algoritme liječenja u svim segmentima akutnih kardioloških zbivanja.

metrically monitor patients at the Cardiology Department. As the work now required more healthcare staff, systematization increased the number of nurses from four to nine, of which eight with nursing vocational school and one with a bachelor's degree in nursing. Over time, some nurses were educated and completed a three-year college, receiving a bachelor's degree in nursing. This resulted in a new organization of labor, and in 2007 the Intensive Coronary Care Unit employed five nurses with a bachelor's degree and six nurses with nursing vocational school.

The most significant development in cardiology at our hospital came in 2003 when the new Laboratory for Invasive Heart Catheterization was opened. The number of interventions grows every year, which requires more and more competencies and education for the staff working with these patients. After acquiring a large amount of experience in the field of invasive cardiology, we started with invasive interventions in 2003 and subsequently became part of the Croatian Network for Interventional Treatment of Acute Myocardial Infarction that covers the areas of Slavonski Brod, Nova Gradiška, Pakrac, Daruvar, Požega, and often also of Županja and Vinkovci. Initially the team employed an interventional cardiologist working with three other cardiologists, two nurses, and two radiology engineers. These numbers changed over time. After another hall for interventional cardiology was opened, we now have seven cardiologists, three nurses with a master's degree, one with a bachelor's degree, and one male nurse as well as two radiology engineers. Since treatment of sinus rhythm in angiography procedure halls was introduced there has been a growing need to increase the number of patients admitted to the CCU. Due to the great efforts and enthusiasm of all healthcare workers at the Intensive Coronary Care Unit, in no way is the treatment of patients brought into question and neither are our efforts to provide the necessary care at and after patient admission.

At the start of 2019 we realized there was a need for a new telemetry system as malfunctions were common in the old one, and the acquisition of a new central system for monitoring patients at the department was made possible by a grant from the City Council. The acquisition of this equipment facilitates the work of the medical personnel and is beneficial to the patients as well, who are at high risk for the development of malignant arrhythmias.

Today the Intensive Coronary Care Unit (**Figure 2**) is equipped according to all the standards required for high-quality treatment of patients suffering from cardiovascular diseases. The unit space consists of:

- 7 patient beds
- 2 postintensive care beds
- 8 telemetry monitors
- 2 respirators
- 1 transportable respirator
- 2 defibrillators
- 2 ECGs
- 2 echocardiography devices

The unit admits between 700 and 900 patients annually for intensive treatment (**Table 1**). All the medical staff occasionally attends education programs in order to maintain the newest standards and recommended treatment algorithms in all segments of acute cardiological events.



FIGURE 2. The coronary unit today.

Uz stručnu edukaciju putem visokoškolskog obrazovanja, završenih tečajeva naprednih mjera održavanja života i EKG-a, svi su zaposlenici prošli tečajeve komunikacijskih vještina u svrhu osiguranja optimalnih psiholoških, emocionalnih i stručnih potreba hospitaliziranih bolesnika.

In addition to education through high-level university courses and completion of courses in advanced measures for reanimation and ECGs, all employees have also completed courses in communication skills in order to optimally ensure the psychological, emotional, and professional needs of the hospitalized patients.

TABLE 1. The number of admitted patients between 2012 and 2018.

Year	Number of hospitalizations
2012	754
2013	726
2014	877
2015	824
2016	900
2017	835
2018	845

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