

NAZIV DISERTACIJE: ZNAČAJ AKTIVNOG MIKROBIOLOŠKOG NADZORA NAD MULTIPOREZISTENTNIM MIKROORGANIZMIMA KOD PACIJENATA U JEDINICAMA INTENZIVNE NJEGE**Autor:** Azra Čamdžić**Mentor:** Prof. dr. Amela Dedeić-Ljubović**Datum odbrane:** 28.11.2024.**DOI:** <https://doi.org/10.17532/DD.2024.01>**SAŽETAK**

Pojavi bolničke infekcije u pravilu prethodi kolonizacija nekim od bolničkih patogena. Kod pacijenata koji se smještaju u jedinice intenzivne njege, nadzorni brisevi se preporučuju u detekciji kolonizacije na prijemu i u toku hospitalizacije, a iz razloga što su kolonizirani bolesnici potencijalni rezervoar i izvor multiplo rezistentnih mikroorganizama. Upotreba raznih invazivnih metoda, prehodna hospitalizacija, produžen boravak u jedinici intenzivne njege te starosna dob pacijenata značajni su faktori rizika za nastanak bolničkih infekcija kod pacijenata smještenih u jedinici intenzivne njege. Cilj rada je prikazati značaj skrininga kroz rezultate nadzornih kultura prema definisanim intervalima i u odnosu na vrstu uzorka, najčešće izolovane uzročnike, kao i učestalost uzročnika prema vrsti uzoraka, te korelirati kolonizaciju/infekciju i prisutne faktore rizika kod ispitanika. Ova prospektivna, klinička studija je obuhvatila uzorke pacijenata hospitaliziranih na Klinici za anesteziju i reanimaciju Kliničkog centra Univerziteta u Sarajevu (KCUS). Kao uzorci su korišteni brisevi guše ili tubusa, nosa, aksile, prepone, anusa i trahealni aspirat kod pacijenata na mehaničkoj ventilaciji u vremenskim intervalima po prijemu, te trećeg i svakog sedmog dana hospitalizacije. Iz historije bolesti pacijenata uzeti su podaci o prethodnoj hospitalizaciji i prisutnim faktorima rizika za nastanak kolonizacije/infekcije. Iz prijava bolničkih infekcija preuzeti su podaci o vrsti prijavljene bolničke infekcije.

Istraživanjem je obuhvaćeno uzoraka 1125/75 pacijenta, 60% muškaraca i 40% žena, prosječne starosti 56.38 godina. Od 1125 uzoraka 358 (31.8%) je pozitivno, a 767 (68.2%) negativno. Uzorci donjeg respiratornog trakta, ukupno 108, uzeti su od ukupno 36 pacijenata. Najviše pozitivnih rezultata u odnosu na definisane intervale bilo je na skriningu 7. dan (48,9%), nešto manje na 3. dan (30.2%), a najmanje na prijemu u intenzivnu negu. Najčešći izolovani uzročnici su multiplo rezistentni sojevi bakterija: *Acinetobacter baumannii* (30,2%), *Klebsiella pneumoniae* CPE (22,1%), ESBL sojevi enterobakterija (12,8%), i vankomicin rezistentni *Enterococcus faecium* VRE. S brojem dana hospitalizacije povećavala se zastupljenost rezistentnih sojeva bakterija. Najviše pozitivnih rezultata u odnosu na vrstu uzorka bilo je u brisu grla/tubusa (31.8%) i nešto manje u brisu anusa (29,6%). Najučestalija bolnička infekcija u našem istraživanju bila je bolnička pneumonija povezana s mehaničkom ventilacijom (VAP). Po zastupljenosti slijede urinarna infekcija, sepsa i infekcija hirurške rane. Najviše bolničkih infekcija prijavljeno je kod pacijenata koji su u jedinici intenzivne njege boravili sedam dana. Utvrđena je korelacija između prisutnih faktora rizika i prijavljenih bolničkih infekcija.

Neophodna je implementacija mikrobiološkog skrining programa u jedinicama intenzivne njege kod pacijenata po prijemu i u toku boravka na ovim odjelima. Značaj skrining programa ogleda se u ranom otkrivanju pacijenata koloniziranih s multiplo rezistentnim sojevima bakterija, kako bi se na vrijeme moglo spriječiti njihovo širenje i nastanak bolničkih infekcija.

Ključne riječi: aktivan mikrobiološki nadzor, intenzivna nega, bolnički patogeni.

DISSERTATION TITLE:**Author:** Azra Čamdžić**Mentor:** Prof. dr. Amela Dedeić-Ljubović**Date of defence:** 28. November 2024.**DOI:** <https://doi.org/10.17532/DD.2024.01>**SUMMARY**

The occurrence of a hospital-acquired infection is usually preceded by colonization with some of the hospital pathogens. In patients hospitalized in intensive care units, surveillance testing is recommended to detect colonization on admission and during hospitalization, and also for the reason that colonized patients are a potential reservoir and source of multidrug-resistant microorganisms. The use of various invasive methods, temporary hospitalization, prolonged stay in the intensive care unit and the age of the patients are significant risk factors for the occurrence of hospital infections in patients placed in the intensive care unit. The aim of the study is to show the importance of screening through the results of surveillance cultures according to defined intervals and in relation to the type of sample, the most frequently isolated causative agents, and the frequency of causative agents based on the type of samples, while also making a correlation between colonisation/infection and the risk factors that are present in our research participants. This retrospective study included samples of patients hospitalized at the Clinic of Anesthesia and Reanimation of the Clinical Center University of Sarajevo (CCUS). Swabs of the throat or tube, nose, axilla, groin, rectum and tracheal aspirate from patients on mechanical ventilation were used as samples at the following time intervals: on admission and on each third and seventh day of hospitalization, patient medical histories were reviewed to extract data pertaining to prior hospitalizations and current risk factors associated with colonization/infection. Details regarding the specific types of hospital-acquired infections were sourced from nosocomial infection reports. The research included 1125 samples/75 patients, of whom 60% were male and 40% female, with an average age of 56.8 years. Out of 1125 samples, 358 (31.8%) were positive, and 767 (68.2%) were negative. A total of 108 lower respiratory tract samples were collected from 36 patients. In relation to the defined intervals the majority of positive results were reported on Day 7 (48.9%) of the screening, slightly less on Day 3 (30.2%) , while the least positive results were reported on admission to intensive care. The most common isolated pathogens were multidrug-resistant organisms: *Acinetobacter baumannii* (30.2%), *Klebsiella pneumoniae* CPE (22.1%), ESBL-producing *Enterobacteriaceae* (12.8%) and vancomycin resistant *enterococcus faecium*. The prevalence of bacterial resistant strains increased with the duration of hospitalization. In relation to the type of sample, the majority of positive results were found in the throat/tube swab (31.8%), and slightly less in the nose and rectal swab (29.6%). The most prevalent hospital-acquired infection in our study was ventilator-associated pneumonia. Following in prevalence were urinary tract infections, sepsis, and surgical site infections. The highest incidence of hospital-acquired infections was observed in patients who spent seven days in the intensive care unit. A correlation was identified between the presence of risk factors and reported hospital-acquired infections. The implementation of a microbiological screening program in intensive care units for patients upon admission and during their stay in these departments is essential. The significance of such a screening program lies in the early detection of patients colonized with multidrug-resistant bacterial strains, thereby enabling timely prevention of their spread and the occurrence of hospital-acquired infections.

Keywords: active microbiological surveillance, intensive care, hospital pathogens