



**PROFIL ANTIBIOGRAM PASIEN YANG DIRAWAT DI
RUANG RAWAT INTENSIF RS. NASIONAL DIPONEGORO:
Perbandingan Sebelum dan Selama Pandemi COVID-19**

**LAPORAN HASIL
KARYA TULIS ILMIAH**

**Diajukan sebagai syarat untuk mencapai gelar Sarjana
mahasiswa program strata-1 kedokteran**

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ABSTRAK

Latar Belakang : Perubahan pola dan resistensi bakteri di ICU dapat terjadi sebagai dampak dari perubahan protokol kesehatan, pembatasan penggunaan tempat tidur, dan penggunaan antibiotik yang tidak terkendali selama pandemi COVID-19. Penelitian ini bertujuan mengetahui perbandingan profil antibiogram sebelum dan selama pandemi COVID-19 dari campuran ICU COVID dan non-COVID.

Metode : Penelitian observasional analitik dengan desain *cross sectional*. Data diambil secara retrospektif dengan metode *total sampling* dari 147 rekam medis pasien ICU Rumah Sakit Nasional Diponegoro (RSND) Semarang periode 1 Januari 2019-10 Maret 2020 (sebelum pandemi COVID-19) dan periode 11 Maret 2020-30 April 2022 (selama pandemi COVID-19). Sampel kultur diambil dari darah, urine, sputum, swab dasar luka, dan jaringan tulang. Analisis statistik bivariat menggunakan uji *Chi square*, *Fisher's exact*, dan *Mann-Whitney*.

Hasil : Terdapat 29 isolat sebelum pandemi dan 74 isolat selama pandemi COVID-19. Pola bakteri sebelum pandemi didominasi oleh bakteri Gram negatif (74,1%), sedangkan selama pandemi COVID-19 didominasi oleh bakteri Gram positif (59,4%) ($p=0,007$). Prevalensi *Streptococcus grup viridans* menurun ($p=0,015$), sedangkan prevalensi *Coagulase-negative Staphylococci* (CoNS) dan *S. aureus* meningkat signifikan selama pandemi COVID-19 ($p=0,034$, $p=0,034$). Tidak ditemukan perubahan proporsi spesies bakteri Gram negatif yang signifikan ($p>0,05$), namun resistensinya terhadap *cephalosporin* generasi-III dan *carbapenem* meningkat secara signifikan dari 10% menjadi 42,3% ($p=0,037$). Proporsi *Staphylococcus sp.* yang resisten terhadap *methicillin* meningkat dari 0% menjadi 73%, meskipun hasilnya tidak signifikan secara statistik ($p=0,659$).

Simpulan : Prevalensi bakteri Gram positif meningkat selama pandemi COVID-19. Penggunaan *cephalosporin* generasi-III dan *carbapenem* yang berlebihan selama pandemi COVID-19 menyebabkan peningkatan resistensi diantara kelas antibiotik tersebut.

Kata kunci : Antibiogram, resistensi antibiotik, *Intensive Care Unit* (ICU), COVID-19.

ABSTRACT

Background: Changes in bacterial pattern and resistance in intensive care unit (ICU) may develop due to changes in health protocols, bed restrictions, and uncontrolled use of antibiotics during the COVID-19 pandemic.

Aim: This study aimed to compare the changing of the pattern of antibiogram profile from patients hospitalized in COVID and non-COVID ICU before and during the COVID-19 pandemic.

Methods: A retrospective analytical study was conducted in the ICU of Diponegoro National Hospital Semarang. The medical and microbiological culture data of patients hospitalized in ICU before the COVID-19 pandemic (1st January 2019-10th March 2020) and during the COVID-19 pandemic (11th March 2020-30th April 2022). Variables were analyzed using the Chi square, Fisher's exact, and Mann-Whitney test.

Results: There were 29 isolates before the pandemic and 74 isolates during the COVID-19 pandemic. Gram negative bacteria were predominant before the pandemic (74.1%), while during the pandemic, Gram positive bacteria (59.4%) ($p=0.007$). The prevalence of *coagulase-negative Staphylococci* (CoNS) and *Staphylococcus aureus* significantly increased during the COVID-19 pandemic ($p=0.034$, $p=0.034$). There is no change in the prevalence of methicillin resistant *Staphylococcus sp.* ($p=0,659$). No significant change in species proportion of Gram-negative bacteria ($p>0.05$) were observed, but their resistance to the third-generation cephalosporins (3GC) and carbapenems increased significantly during the COVID-19 pandemic from 10% to 46.2% ($p=0.020$).

Conclusions: The prevalence of Gram positive bacteria has increased during the COVID-19 pandemic. The excessive use of 3GC and carbapenems has led to increased resistance among these antibiotic classes.

Keywords: Antibiogram, antibiotic resistance, Intensive Care Unit, COVID-19