



IMPACT OF ANTIMICROBIAL RESISTANCE ON HOSPITAL MORTALITY, LENGTH OF HOSPITAL STAY AND LENGTH OF ICU STAY IN PATIENTS WITH BACTERIAL PNEUMONIA ADMITTED TO ICU

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BACKGROUND AND IMPORTANCE

The rise of antimicrobial resistance (AMR) jeopardizes the effectiveness of antimicrobial drugs

AIM AND OBJECTIVES

To determine the impact on hospital mortality and length of hospital stay and Intensive Care Unit (ICU) stay of patients with pneumonia due to AMR bacteria who required admission to the ICU.

MATERIALS AND METHODS

- Retrospective case-control study including hospitalization episodes of patients aged 17 years and older with a diagnosis of bacterial pneumonia who required ICU admission during the period 2017 to 2022, using the Clinical Administrative National Dataset. Episodes with a diagnosis of pneumonia in which the causative agent could not be identified were excluded.
- Cases were defined as any hospitalization labelled as AMR in terms of ICD-10. Controls were the remaining episodes of bacterial pneumonia free of these resistance label.
- Using Stata v.17, three multivariate models based on Poisson regression were constructed to study AMR impact, adjusted for confounding covariates: age, sex, vanWalraven comorbidity index, sepsis, non-COVID viral pneumonia, COVID19 and severity level and risk mortality according to the international APR system.

RESULTS

| | Bacteria standard | AMR bacteria | Sig. |
|---------------------------------------|-------------------|-----------------|----------|
| Hospitalization episodes, n (%) | 24,050 (90.53%) | 2,517 (9.47%) | p<0.0000 |
| Hospital length of stay, median (IQR) | 21 days (11-39) | 34 days (19-60) | p<0.0000 |
| Length of ICU stay , median (IQR) | 9 days (4-11) | 16 days (7-35) | p<0.0000 |
| Sepsis, n (%) | 1.1258 (46,81%) | 1.293 (51,37%) | p<0.0000 |
| COVID-19 infection, n (%) | 4.002 (16,64%) | 587 (23,32%) | p<0.0000 |
| non-COVID-19 viral infection, n (%) | 4.795 (19,94%) | 653 (25,94%) | p<0.0000 |
| Hospital mortality , n (%) | 6.655 (27,67%) | 848 (33,69%) | p<0.0000 |

- 26,567 hospitalization episodes.
- Male 69.94% versus 30.06% females.
- Median age at hospital admission 64 years (IQR 53-73)

| | IRR | 95%IC | Sig. |
|---------------|-------|-------------|-------------|
| Mortality | 1.118 | 1.056-1.18 | p> z <0.000 |
| Hospital stay | 1.361 | 1,309-1,414 | p> z <0.000 |
| ICU stay | 1.376 | 1,312-1,443 | p> z <0.000 |

CONCLUSION AND RELEVANCE

AMR bacteria pneumonia due requiring admission to the ICU increases >10% the incidence of mortality and >35% length of ICU and hospital stay.

