**Conclusions:** Inappropriate antibiotics for VO treatment compromise symptomatic relief, emphasizing the pivotal role of antimicrobial stewardship. The study reveals significantly lower overall mortality rates and improved clinical symptoms with appropriate antibiotic therapy. In the context of VO's severe illness and rapid deterioration, urgent enhancements in diagnostics and early appropriate antimicrobial therapy are crucial. This research provides substantive insights for optimizing VO management within the framework of antimicrobial stewardship, aiming to enhance patient outcomes and reduce healthcare system burdens.

### Nosocomial bloodstream infections in a teaching hospital in Vietnam: a five-year analysis

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**Introduction:** Nosocomial Bloodstream infection (BSI), including central line-associated blood stream infection (CLABSI) is important causes of morbidity and mortality. There are few studies describing the epidemiology of BSI in Viet Nam. **Methods:** A cross-sectional descriptive study was conducted in 3 intensive care units (ICUs) of the University Medical Center (UMC), Ho Chi Minh City from 2017 to 2022. The UMC service microbiology database was accessed to identify positive blood culture specimens during the period 2017–2022. Demographic and clinical details, antimicrobial management and patient outcome information were extracted from medical and laboratory records. **Results:** Of the 695 unique bacterial and fungal BSI episodes identified during the study period, 232 (33.4%) were community-acquired (CA), and 463 (66.6%) hospital-acquired (HA). The rate of BSI was 11.4% (463 cases/4.069 patients), in which CLABSI accounted for 59.8%. The incidence of CLABSI was 13.2% (307 cases/2.320 catheter patients) and the incidence rate was 5.8 cases per 1.000 catheter-days. On multivariable analysis, severe underweight, patient origin, central line placed in the femoral vein, duration catheter-days were significantly associated with CLABSI. We observed that prolonged duration catheter were the main risk CLABSI with 2.7- fold for 14-28 catther-days (OR=2.7, 95% CI 2.4-3.1), 7.3-fold for more than 28 catheter-days (OR=7.3, 95% CI 5.7-9.4). The most common organisms were Gram-negative bacteria (76.2%), with *K. pneumoniae* (31.4%) and *A. baumannii* (12%) most prevalent. Gram-negative bacteria and Candida were more likely to cause infections in patients in critical care units. In addition, patients with BSI had significantly greater ICU costs than patients with Non-BSI (422 million VND (IQR 239–680) vs 184 million VND (IQR 18–92), p <0.05) **Conclusions:** Our data suggest that catheter duration is an important risk factor for CLABSI in the ICU. A significant daily increase in the risk of CLABSI after 28 days may warrant CVC replacement if intravascular access is necessary beyond that period.

**Keywords:** Bloodstream infection; Intensive care unit; Healthcare-associated infection

### Antibiotic resistance of stroke associated pneumoni in ICU Kariadi Hospital on 2022 – 2023

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**Introduction:** Stroke is the second leading cause of death worldwide, accounting for 4.4 million (9%) of the total 50.5 million deaths per year. Infections are among the highest complicating factors of stroke, particularly respiratory tract infections occurring in 23-65% of stroke patients. Stroke complications such as pneumonia and sepsis require ICU care and the use of antibiotics, which poses a risk of antibiotic resistance. The aim of this study is to determine the profile of antibiotic resistance and the factors influencing antibiotic resistance in pneumonia among stroke patients treated in the ICU. **Method:** This study uses a retrospective descriptive method involving 84 stroke patients with pneumonia treated at the ICU of RSUP Dr. Kariadi Semarang from January 2022 to December 2023. **Results:** Among stroke patients with pneumonia, 62 patients (73.8%) developed sepsis, with 64.5% of them experiencing antibiotic resistance. There was no significant difference in antibiotic resistance between stroke patients with pneumonia and those without pneumonia (p = 0.382). There was also no significant difference in antibiotic resistance between pneumonia patients with stroke who developed sepsis and those who did not (p = 0.756). The most commonly found bacteria were *A. baumannii, P. aeruginosa,* and *K. pneumoniae*. The antibiotic most commonly showing resistance was Ampicillin. Patients with diabetes mellitus had a 5.2 times higher risk of experiencing antibiotic resistance. **Conclusion:** Antibiotic resistance can occur in stroke patients with pneumonia and those progressing to sepsis. Diabetes mellitus is a significant risk factor for antibiotic resistance. Antibiotic management programs and infection control are needed to prevent antibiotic resistance in the ICU.

**Keywords:** stroke associated pneumoni; antibiotic resistance; ICU

### Qualitative evaluation of antimicrobial use with gyssens method in the internal medicine wards of Adam Malik General Hospital Medan

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**Objective:** Antimicrobial resistance will become one of the most lethal conditions, which will raise burdens in many sectors across the One

Health spectrum. The irrational use of antibiotics without proper monitoring is one of the causes of antimicrobial resistance. The quality of antimicrobial usage could be evaluated quantitatively using the Defined Daily Dose (DDD) method and qualitatively using the Gyssens method. This study aims to evaluate the antimicrobial usage qualitatively. **Method:** This is a retrospective study using data from the electronic medical record of Adam Malik Hospital within the period of July 2022–December 2023. All adult patients (>18 years old) in the internal medicine ward with a history of antimicrobial prescriptions were included in this study. The quality evaluation was carried out by the researchers, of whom three of them are members of the hospital's antimicrobial stewardship program (PPRA) team. **Result:** There are 293 cases of antimicrobial use included in this study. Most of the population in this study was female (51.9%), in the 18–59 year group (74.1%), and respiratory tract infection was mostly diagnosed in this study (31.2%). Based on the Gyssens analysis, only 33% of cases of antimicrobial usage were appropriate (category 0). It means more than half of the antimicrobial use in internal medicine wards were irrational. **Conclusion:** The rationality of antimicrobial use is one of the most important ways to reduce the rate of antimicrobial resistance. This study shows only 33% of cases of appropriate antimicrobial usage, which is relatively low. Because irrational antimicrobial use can lead to antimicrobial resistance, prolonged length of stay and mortality, efforts need to be taken to improve the quality of antimicrobial use.

**Keywords:** antimicrobial resistance; gyssens method; qualitative evaluation

## A comparison of ISO11140-1 specified type 4 versus type 5 internal chemical indicators for monitoring sterile packs in steam sterilization processes

Brian Kirk and Seto Wing Hong

**Objectives:** Six types of chemical indicators (CIs) are specified in ISO11140-1 for monitoring steam sterilization processes (SSP). Types3-6 are "internal" CIs, placed inside packs to assess attainment of sterilizing conditions. Type4 CIs have an ink patch which changes colour during the SSP. Type5 CIs exist as an ink patch which changes colour or a "moving front" (MF) format where a dye migrates along a wick reaching a pass/fail marker point. This study compares the requirements for type4 versus type5 CIs according to ISO11140-1, evaluates the claims of some type4 and 5 CIs with regard SSP parameters, and tests the ability of type5 CIs to meet specified performance and variability of response. **Methods:** We reviewed ISO requirements and stated commercial claims of type4 and 5 CIs. Samples of several Type5 CIs were exposed to increasing times at a temperature of 121ºC in a CI Evaluating Resistometer. Upon completion of the test cycle samples were removed and the length of the ink migration measured and charted. **Results and Conclusions:** According to ISO11140-1 requirements, Type4 CIs need not respond to all SSP variables. Type4 CIs can have stated values (SV) which are unrelated to SSP parameters used. The tolerances for the pass/fail window for a Type5 CI is better than for a Type4. The performance of a Type5 CI has a relationship to that of a biological indicator (BI). The performance requirements for Type5 CIs are more prescriptive. MF- CIs provide greater clarity for interpretation compared to the colour change of some CIs. The SVs and colour change of type4 CIs are specified by the manufacturer. The minimum SVs for Type5 CIs are prescribed in ISO11140-1. When tested, there was considerable variation in the response of some Type5 MF-CIs; a factor not addressed in ISO11140-1.