

# Prevalence of carbapenem-resistant gram-negative bacteria from blood specimen in Adam Malik Hospital Indonesia

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**Objective:** Carbapenem-resistant Gram-Negative Bacteria (CR-GNB) are a current global concern. CR-GNB in hospitalized patients with bacteremia is a critical health concern due to its high level of resistance to antibiotics and is associated with high mortality rates. This study aims to identify the prevalence of CR- GNB from blood specimens of patients in Adam Malik Hospital. **Method:** A retrospective cross-sectional study was carried out on blood specimens of patients received at the Clinical Microbiology Laboratory Adam Malik Hospital from January 2023 to December 2023. The bacterial isolates were identified using BD™ Bruker MALDI Biotyper and the susceptibility of the isolates to various antimicrobial agents was tested using the automated antimicrobial susceptibility tests. We performed a descriptive statistical analysis of the Gram-negative bacterial growth from blood specimens and antimicrobial susceptibility against each bacterial isolate. **Results:** There were 939 bacterial isolates obtained from blood culture, and 57% (534/938) were Gram-negative. The most prevalent Gram-negative bacteria were *Klebsiella pneumoniae* (22.09%), *Escherichia coli* (19.84%), *Pseudomonas aeruginosa* (9.20%), and *Acinetobacter baumannii* (7.89%). Among all the Gram-negative isolates, 18.1% were carbapenem-resistant. The most prevalent Gram-negative bacteria that are resistant to carbapenems were *A. baumannii* (56.4%); 22/39), *K. pneumoniae* (25.2%; 27/107), *P. aeruginosa* (22.7%; 10/44), *Proteus mirabilis* (20%; 1/5) and *Enterobacter cloacae* (18.6%); 8/43). The highest antimicrobial susceptibility for the most prevalent CR-GNB were amikacin for *E. cloacae*, *P. aeruginosa* and *A. baumannii* (87.5%, 60 %; 40%; respectively), trimethoprim-sulfamethoxazole for *K. pneumoniae* (66.7%), tigecycline for *E. cloacae* (87.5%). **Conclusion:** The prevalence of CR-GNB from blood specimens in Adam Malik Hospital was 18.1%. The most common CR-GNB isolates were *Acinetobacter baumannii*, *K. pneumoniae*, *P. aeruginosa*, and *Enterobacter cloacae*. The infection control program is a critical action to prevent the transmission of CR-GNB, particularly in hospital settings.

**Keywords:** Carbapenem-resistant; Gram-negative bacteria; Adam Malik Hospital

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# Medical devices preparation model development for quality services in Srinagarind Hospital Faculty of Medicine, Khon Kaen University, Thailand

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**Background and objective:** Preparation of medical devices is a critical component of healthcare services. Used reusable items require reprocessing and sterilization, which eliminate contaminant microorganisms, to ensure safety and availability prior to subsequent applications. The objective of this research is to develop medical device preparation guidelines which address existing quality issues for quality services. **Methods:** This action research was conducted in three phases. Phase one, research planning, literature review of APSICS guideline and work system development techniques 5M model. Phase Two included guideline implementation,

observation and analysis. In the 1<sup>st</sup> year, staff members were trained to perform duties according to the new guidelines, new inspection categories were added, and cleaning procedures were improved. In the 2<sup>nd</sup> year, new policies for collection of used items were implemented, ATP test was introduced to improve microorganism detection. The team oversaw more staff training and quality control of RO water used in cleaning medical devices in the 3<sup>rd</sup> year. In the 4<sup>th</sup> year, more staff members were trained and water supply pipes were replaced to accommodate increasing RO water demands. Trained staff members received follow- ups and percentages of reprocessed medical items that passed quality criteria were monitored. Phase three was analysis and evaluation, using the number of staff members who received training, percentages of reprocessed medical items that passed quality criteria. **Results:** The number of staff members who performed tasks correctly increased every year. The percentage of reprocessed reusable medical items which met quality requirements from 2018 - 2022 showed a steady increase ( $R^2 = 0.860$ ) (91.82, 95.33, 98.95, 98.68 and 99.42, respectively). The score for compliance to APSICS guideline for cleaning & decontamination processes from 2020 - 2022 increased continuously (78.57, 96.43, and 100.00). **Conclusion:** The approaches to medical device preparation align with 5M model requiring proper management for maximum efficiency and cost effectiveness.

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# Surgical site infection prevention in Gynae-oncology unit: together we can

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**Objective:** To describe a collaboration effort between gynae-oncology and infection control unit in a sustainable surgical site infection prevention program **Methods:** In January 2023, gynae-oncologist noted a surge in surgical site infection (SSI) in gynae-oncology unit in Sabah Women and Children's Hospital (SWACH), Kota Kinabalu, Sabah, Malaysia. The increasing trend of SSI was further confirmed by active surveillance started in January and February 2023. The SSI rate was found to be up to 46.2% (6 out of 13) in the elective gynae-oncology cases and 5 out of 15ases (31.2%) in February 2023. Outbreak interventions taken place. A combined continuous medical education of the latest SSI guidelines was carried out in the gynae-oncology unit including clinical nurses, clinicians and infection control team (ICT). Ward clinical nurses and infection control nurses developed SSI prevention program based on the latest SSI guideline and started ward clinical nurse education. An active SSI surveillance team was formed consisting ward sister and one clinical nurse, chief clinicians and infection control nurse to collect SSI cases. **Results:** SSI rate had reduced and maintained since March 2023. The SSI rate was maintained at zero except June and August with one superficial SSI respectively. Since September until December 2023 there was no SSI detected in active surveillance. **Conclusions:** Collaborative effort and understanding between clinical services and infection control unit are important in creating an effective and sustainable infection prevention program. Effective infection prevention program is not necessarily expensive. In fact, a highly motivated team, simple and practical approach can have amazing results.

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