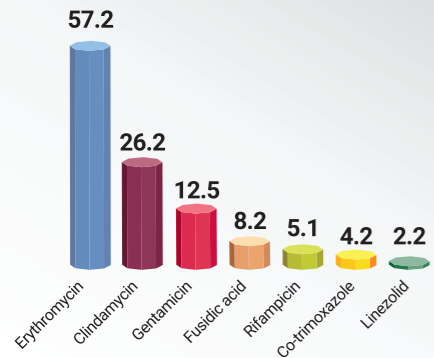


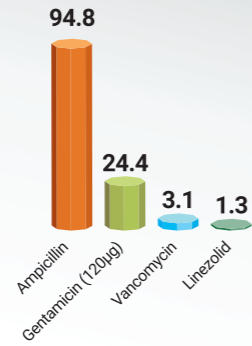
# Exploring The Role of Linezolid in Combating Antibiotic Resistance

Antibiotic-resistant bacteria are prevalent.

Percentage (%) of antibiotic resistance to MRSA in 2021<sup>1</sup>



Percentage (%) of antibiotic resistance to Enterococcus faecium in 2021<sup>1</sup>



Adapted from National Antibiotic Resistance Surveillance Report 2021, Ministry of Health Malaysia.

## Cinezolid Solution For Infusion 2mg/mL

**Content** : Each mL contains 2mg of Linezolid (Linezolid 600mg in 300ml)

- Susceptible Microorganism**
- Enterococcus faecium
  - Staphylococcus aureus
  - Streptococcus agalactiae
  - Streptococcus pneumoniae
  - Streptococcus pyogenes

**Presentation & Packaging:** 300ml bag x 20 packs

For more information, kindly refer to the package insert



### References

1. Antibiotic Resistance Surveillance Reference Laboratory. National Antibiotic Resistance Surveillance Report 2021. Ministry of Health Malaysia; 2021. Accessed January 27, 2023. [https://www.imr.gov.my/images/uploads/NSAR/2021/NSAR-2021\\_to-be-uploaded.pdf](https://www.imr.gov.my/images/uploads/NSAR/2021/NSAR-2021_to-be-uploaded.pdf)
2. Wunderink RG, Niederman MS, Kollef MH, Shorr AF, Kunkel MJ, Baruch A, McGee WT, Reisman A, Chastre J. Linezolid in methicillin-resistant Staphylococcus aureus nosocomial pneumonia: a randomized, controlled study. *Clinical Infectious Diseases*. 2012 Mar 1;54(5):621-9.
3. Doß S, Blessing C, Haller K, Richter G, Sauer M. Influence of Antibiotics on Functionality and Viability of Liver Cells In Vitro. *Current Issues in Molecular Biology*. 2022 Oct 3;44(10):4639-57.
4. Stogios PJ, Savchenko A. Molecular mechanisms of vancomycin resistance. *Protein Science*. 2020 Mar;29(3):654-69

MY008-2023

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# CINEZOLID solution for infusion 2mg / mL

**Composition: Each 1ml contains 2mg of Linezolid**

- **Malaysia's 1st Generic Linezolid Infusion**
- **Approved in 2022**
- **Manufactured in South Korea**
- **Linezolid:**  
Lowest Antibiotic Resistance for MRSA<sup>1</sup>

**Available Now**



MAL22026007AZ

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# Comparison of Linezolid vs Vancomycin

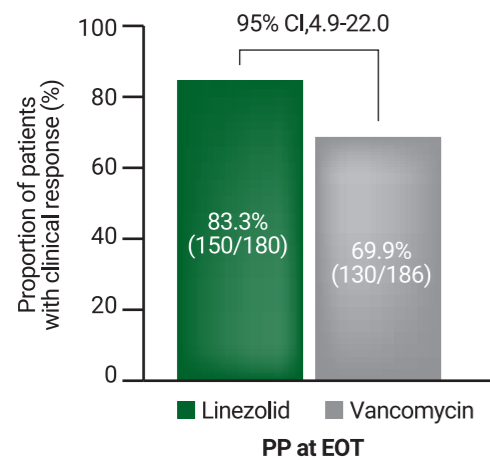
Based on per-protocol group analysis\*

Based on modified intent-to-treat (mITT) population analysis\*\*

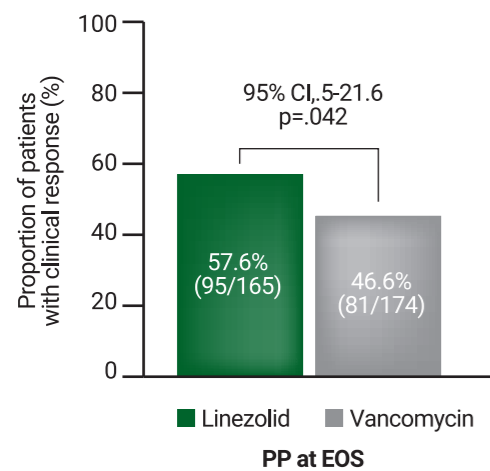
## 1 Success in Clinical Treatment<sup>2</sup>

Linezolid showed clinical efficacy superior to vancomycin at both times

### End of Treatment (EOT)



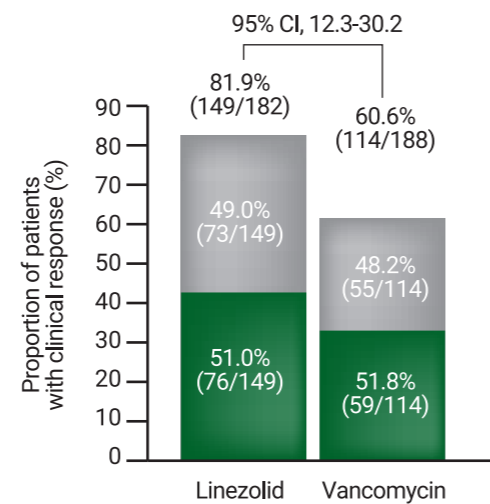
### End of Study (EOS)



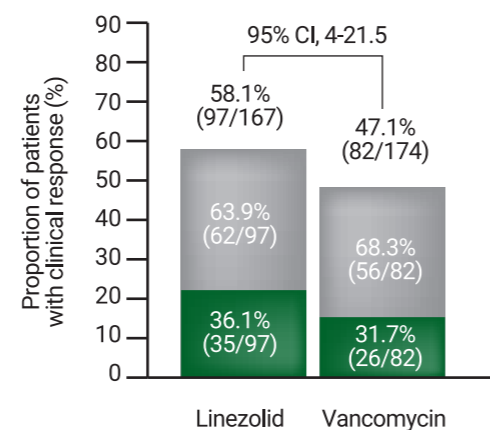
## 2 Success in Microbiological Treatment<sup>2</sup>

Linezolid achieved a higher microbiologic success compared to vancomycin at both times

### End of Treatment (EOT)



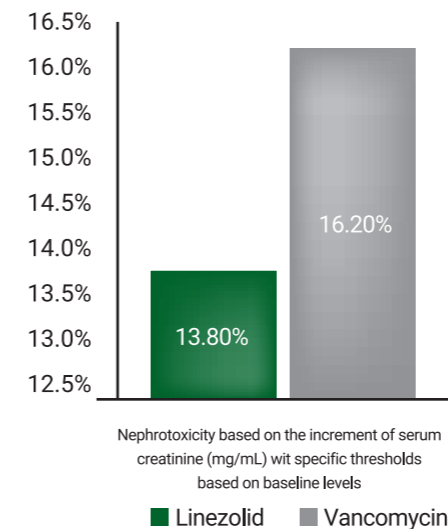
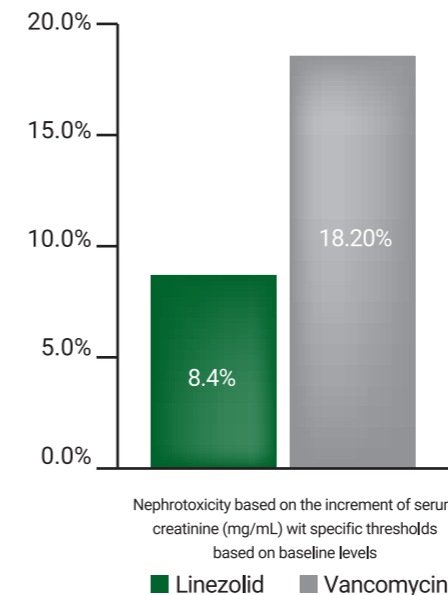
### End of Study (EOS)



■ Documented eradication<sup>a</sup>    ■ Presumed eradication<sup>b</sup>  
 a: Microbiologic data available, confirmed microbiologic eradication.    b: No microbiologic data, but confirmed clinical cure.

## 3 Lower Nephrotoxicity Rate<sup>2</sup>

In terms of nephrotoxicity, the side effect rate of Linezolid is half that of Vancomycin



\*\* The modified intent-to-treat (mITT) population consisted of all randomized patients who received ≥1 dose of study drug with a diagnosis of nosocomial pneumonia caused by MRSA.

## 4 Lower Hepatotoxic Potential<sup>3</sup>

| Parameter  | Negative Control (neg. Ctrl.) |      | Linezolid |   | Vancomycin |     |
|--|-------------------------------|------|-----------|---|------------|-----|
|  | M                             | P    | M         | P | M          | P   |
| Medium (M) / Plasma (P)                                  | M                             | P    | M         | P | M          | P   |
| Cell Count (x100,000)                                    | 7.8                           | 5.6  | ↓         |   |            |     |
| Vitality [%]   | 94                            | 91   | ↓         | ↓ | ↓          |     |
| Lactate Dehydrogenase (LDH) 6d [U/L]                     | 91                            | 168  |           |   | ↑          |     |
| Activity of mitochondrial dehydrogenases (XTT-test) (OD) | 1.38                          | 1.26 |           |   | ↓          | ↓   |
| Microalbumin (MA) (mg/L)                                 | 6.6                           | 33.1 |           |   |            | ↓   |
| Cytochrome (P450) 1A2 enzyme (CYP1A2) [pmol/L]           | 8.77                          | 5.3  |           |   | ↓          | ↓   |
| Hepatotoxic Potential (Cmax)                             |                               |      | ##        | # | ####       | ### |

### Remarks:

- 1.Reduction in Cell Count indicates that cell proliferation is negatively impacted.
- 2.Increase in LDH indicates an increased loss of cell integrity.
- 3.The XTT-test is used to quantify functional cell impairment. Reduced XTT indicates a decrease in the activity of mitochondrial dehydrogenase in hepatocytes.
- 4.Decreased in MA indicates that microalbumin synthesis is negatively influenced by the antibiotic.
- 5.Decrease in CYP1A2 can indicate that it is more difficult for some of the specific drug metabolism.
- 6.Number of # (significant difference relative to the negative control) represents the degree of hepatotoxicity in terms of impairment parameters of the tested antibiotics in medium and plasma at clinically relevant concentrations.

### Protein Synthesis vs Cell Wall Synthesis

- Vancomycin is a glycopeptide antibiotic that inhibits bacterial cell wall synthesis by binding to the D-alanyl-D-alanine portion of the cell wall precursor.
- Vancomycin resistance can result from the degradation and replacement of the cell wall precursor, leading to reduced binding of vancomycin<sup>4</sup>
- Linezolid belongs to a new class of antimicrobials called oxazolidinones and is a synthetic antibacterial agent.
- Linezolid is an effective solution for vancomycin resistance as it targets bacterial protein synthesis by binding to a specific site on the 50S subunit of the bacterial ribosome, disrupting the formation of a functional bacterial translation complex and selectively inhibiting bacterial protein synthesis.



\* The per-protocol population consisted of patients with MRSA-caused nosocomial pneumonia who met eligibility criteria, received at least 5 days of treatment (or at least 2 days in case of treatment failure), hand observed outcomes at each visit and did not have a failed treatment.