In Vitro Activity of Tedizolid Against Gram-Positive Bacteria in Patients With Skin and Skin Structure Infections and Hospital-Acquired Pneumonia: A Korean Multicenter Study

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We compared the activities of tedizolid to those of linezolid and other commonly used antimicrobial agents against gram-positive cocci recovered from patients with skin and skin structure infections (SSSIs) and hospital-acquired pneumonia (HAP) in Korean hospitals. Gram-positive isolates were collected from 356 patients with SSSIs and 144 patients with HAP at eight hospitals in Korea from 2011 to 2014. SSSIs included impetigo, cellulitis, erysipelas, furuncles, abscesses, and infected burns. Antimicrobial susceptibility was tested by using the CLSI agar dilution method. All of the gram-positive isolates were inhibited by ≤1 μg/mL tedizolid. The minimum inhibitory concentration [MIC]₉₀ of tedizolid was 0.5 μg/mL for methicillin-resistant Staphylococcus aureus, which was 4-fold lower than that of linezolid. Tedizolid may become a useful option for the treatment of SSSIs and HAP caused by gram-positive bacteria.

Key Words: Tedizolid, Skin, Soft tissue, Infection, Pneumonia, Gram-positive bacteria

Skin and skin structure infections (SSSIs) are common problems in both inpatients and outpatients. The vast majority of SSSIs are caused by gram-positive organisms that are normal flora on the skin of human beings. Staphylococci and streptococci cause majority of gram-positive infections [1]. A recent increase in staphylococcal infections caused by methicillin-resistant Staphylococcus aureus (MRSA) has resulted in a significant increase of cases of MRSA pneumonia in the health care setting, especially in the chronically ill population [2]. Vancomycin has been the cornerstone of treatment for MRSA infections. However, recently, vancomycin-resistant S. aureus and linezolid-resistant Staphylococcus strains have emerged [3-5]. These strains pose significant challenges to the clinical treatment of infections caused by these organisms. Tedizolid offers broad in vitro activity against gram-positive pathogens, including MRSA and strains resistant to vancomycin or linezolid, and has greater potency than other drugs of its class [6, 7]. It was specifically designed to be active against linezolid-resistant S. aureus, including strains containing the multidrug-resistant cfr gene [8].

Tedizolid phosphate was recently approved by the U.S. Food and Drug Administration to treat patients with acute bacterial SSSI caused by S. aureus, various Streptococcus species, and...
Enterococcus. In addition, planned studies will investigate the potential role of tedizolid in the treatment of community-acquired bacterial pneumonia and hospital-acquired pneumonia (HAP) [9]. We published a previous report focusing on the activity of tedizolid against collections of clinical isolates in a single institution, but it was not characterized by infection type [10]. Therefore, the present study aimed to compare the activities of tedizolid to those of linezolid and other commonly used antimicrobial agents against gram-positive cocci recovered from patients with SSSIs and HAP in Korean hospitals.

Non-duplicated aerobic and anaerobic gram-positive isolates were collected from clinical specimens of 356 patients with SSSIs and 144 patients with HAP at eight hospitals in Seoul and Gyeonggi province, Korea from 2011 to 2014. SSSIs included impetigo, cellulitis, erysipelas, furuncles, abscesses, and infected burns [1, 11]. HAP was defined as pneumonia that occurred 48 hr or more after admission. Species were identified by using conventional methods or the Vitek 2 system (bioMérieux, Marcy l’Etoile, France). Antimicrobial susceptibility was tested by using the CLSI agar dilution method [12, 13]. Mueller-Hinton agar was used as a growth medium (Becton Dickinson, Cockeysville, MD, USA) for testing Staphylococcus spp. and Enterococcus spp.; Mueller-Hinton agar supplemented with 5% sheep blood for Streptococcus spp.; Brucella agar (Becton Dickinson) supplemented with 5 μg/mL hemin, 1 μg/mL vitamin K1; and 5% laked sheep blood for anaerobic bacteria. Tedizolid and linezolid (Dong-A ST, Seoul, Korea); erythromycin, tetracycline, oxacillin and penicillin G; vancomycin (Daewoong, Seoul, Korea); and teicoplanin (Sanofi Aventis, Bridgewater, NJ, USA) were used as antimicrobial agents against gram-positive cocci recovered from patients with SSSIs and HAP [14].

All of the aerobic and anaerobic gram-positive isolates in patients with SSSIs were inhibited by ≤1 μg/mL tedizolid (Table 1). The most potent drugs against MRSA were tedizolid (minimum inhibitory concentration \(\text{MIC}_{90} = 0.5 \mu g/mL\) ), linezolid \(\text{MIC}_{90} = 2 \mu g/mL\), and vancomycin \(\text{MIC}_{90} = 2 \mu g/mL\). The MIC range of tedizolid was 0.125 to 0.5 μg/mL for MRSA, while that of linezolid was 0.25 to 4 μg/mL. The \(\text{MIC}_{90}\) s of tedizolid were 0.5 μg/mL for both MRSA and vancomycin-resistant Staphylococcus aureus (MSSA) and ≤0.125 μg/mL for coagulase-negative staphylococci, which were 2- to 4-fold lower than those of linezolid. These MIC values were similar to those described in previous reports [10, 15]. The \(\text{MIC}\) s of tedizolid were 0.25 μg/mL for all three vancomycin-intermediate S. aureus isolates.

The MIC ranges of tedizolid were 0.25 to 0.5 μg/mL for Enterococcus, while those of linezolid were 0.5 to 2 μg/mL. Tedizolid inhibited all vancomycin-resistant Enterococcus at 0.5 μg/mL. When the meningeal breakpoint was applied, most of the pneumococcal isolates tested were not susceptible to penicillin G or cefotaxime. However, the MIC range of tedizolid was 0.25 to 1 μg/mL, and the \(\text{MIC}_{90}\) (0.5 μg/mL) was 4-fold lower than that of linezolid. Tedizolid inhibited all the isolates of viridans Streptococcus spp. and β-hemolytic streptococci such as S. pyogenes and S. agalactiae at 0.5 μg/mL. Tedizolid had excellent activity against gram-positive anaerobes recovered from SSSIs (Table 1). The MIC ranges of tedizolid were 0.06 to 1 μg/mL for Finegolda magna and ≤0.06 to 0.25 μg/mL for the other Peptostreptococcus spp. The \(\text{MIC}_{90}\) values for these organisms were 0.5 and 0.25 μg/mL, respectively, which were 4-8 fold lower than those of linezolid. All the Clostridium spp. isolates were inhibited by tedizolid at 0.5 μg/mL. All the gram-positive isolates in patients with HAP were inhibited by ≤0.5 μg/mL tedizolid (Table 2). The MIC ranges of tedizolid were 0.125 to 0.5 μg/mL for MRSA and 0.25 μg/mL for MSSA. The \(\text{MIC}_{90}\) values of tedizolid were 0.25, 0.5, and 0.5 μg/mL for MRSA, MSSA, and pneumococci, respectively, which were 4- to 8-fold lower than those of linezolid.

In summary, the MIC values of tedizolid in this study were not significantly different according to type of infection. All organisms tested were susceptible to tedizolid, nevertheless the breakpoint of tedizolid is 4- or 8-fold lower than that of linezolid. Tedizolid is a potent agent with high in vitro activity against common aerobic and anaerobic gram-positive pathogens in SSSIs and HAP. Tedizolid may become a useful option for the treatment of SSSIs and HAP.
| Organism (N of isolates) and antimicrobial agents | Breakpoint (µg/mL) | MIC (µg/mL) | Susceptibility (%) |
|-------------------------------------------------|--------------------|-------------|--------------------|
|                                                  | S | I | R | Range | 50% | 90% | S | I | R |
| Methicillin-resistant Staphylococcus aureus (90)  |   |   |   |        |     |     |   |   |   |
| Tedizolid*                                        | ≤0.5 | 1 | ≥2 | ≥0.125 | 0.5 | 0.5 | 100 | 0 | 0 |
| Linezolid                                         | ≤2 | - | ≥2 | ≥0.25 | 1 | 1 | 100 | 0 | 0 |
| Erythromycin                                      | ≤0.5 | 1-4 | ≥8 | ≥0.25 | >128 | >128 | 78 | 0 | 72 |
| Clindamycin                                       | ≤0.5 | 1-2 | ≥4 | ≤0.06 | >128 | >128 | 44 | 0 | 56 |
| Cotrimoxazole                                     | ≤2 | - | ≥4 | ≤0.06 | 0.125 | 0.125 | 98 | NA | 2 |
| Gentamicin                                        | ≤4 | 8 | ≥16 | ≤0.125 | 0.125 | 0.125 | 99 | 1 | 1 |
| Levofloxacin                                      | ≤1 | 2 | ≥4 | ≤0.125 | 0.125 | 0.125 | 98 | 0 | 1 |
| Tetrazycline                                      | ≤4 | 2 | ≥16 | ≤0.125 | 0.125 | 0.125 | 98 | 0 | 1 |
| Oxacillin                                         | ≤2 | - | ≥4 | ≤0.06 | ≤0.125 | ≤0.125 | 100 | 0 | 100 |
| Vancomycin                                        | ≤2 | 4-8 | ≥16 | 1-4 | 1 | 2 | 94 | 6 | 0 |
| Methicillin-susceptible S. aureus (90)            |   |   |   |        |     |     |   |   |   |
| Tedizolid                                         | ≤0.5 | 1 | ≥2 | ≤0.06 | 0.25 | 0.5 | 100 | 0 | 0 |
| Linezolid                                         | ≤4 | - | ≥8 | ≤0.25 | 2 | 2 | 100 | NA | 0 |
| Erythromycin                                      | ≤0.5 | 1-4 | ≥8 | ≤0.25 | >128 | >128 | 74 | 1 | 24 |
| Clindamycin                                       | ≤0.5 | 1-2 | ≥4 | ≤0.06 | >128 | >128 | 99 | 0 | 1 |
| Cotrimoxazole                                     | ≤2 | - | ≥4 | ≤0.06 | 0.125 | 0.125 | 100 | NA | 0 |
| Gentamicin                                        | ≤4 | 8 | ≥16 | ≤0.125 | 0.125 | 0.125 | 99 | 1 | 17 |
| Levofloxacin                                      | ≤1 | 2 | ≥16 | ≤0.125 | 0.125 | 0.125 | 98 | 0 | 3 |
| Tetrazycline                                      | ≤4 | 2 | ≥16 | ≤0.125 | 0.125 | 0.125 | 98 | 0 | 3 |
| Oxacillin                                         | ≤2 | - | ≥4 | ≤0.06 | ≤0.125 | ≤0.125 | 100 | 0 | 0 |
| Vancomycin                                        | ≤2 | 4-8 | ≥16 | 1-4 | 1 | 1 | 100 | 0 | 0 |
| Coagulase-negative Staphylococcus (24)³           |   |   |   |        |     |     |   |   |   |
| Tedizolid                                         | NA | NA | NA | ≤0.06 | 0.125 | 0.125 | NA | NA | NA |
| Linezolid                                         | ≤4 | - | ≥8 | ≤0.25 | 0.25 | 0.25 | 100 | NA | 0 |
| Erythromycin                                      | ≤0.5 | 1-4 | ≥8 | ≤0.06 | >128 | >128 | 71 | 0 | 29 |
| Clindamycin                                       | ≤0.5 | 1-2 | ≥4 | ≤0.06 | >128 | >128 | 96 | 0 | 4 |
| Cotrimoxazole                                     | ≤2 | - | ≥4 | ≤0.06 | ≤0.06 | 4 | 79 | NA | 21 |
| Gentamicin                                        | ≤4 | 8 | ≥16 | ≤0.06 | 0.125 | 0.125 | 50 | 21 | 29 |
| Levofloxacin                                      | ≤1 | 2 | ≥4 | ≤0.06 | ≤0.125 | ≤0.125 | 74 | 0 | 21 |
| Tetrazycline                                      | ≤4 | 8 | ≥16 | ≤0.125 | 0.125 | 0.125 | 74 | 0 | 21 |
| Oxacillin                                         | ≤0.25 | - | ≥0.5 | ≤0.125 | 0.5 | 0.5 | 100 | NA | 63 |
| Vancomycin                                        | ≤4 | 8-16 | ≥32 | 1-2 | 2 | 2 | 100 | 0 | 0 |
| Streptococcus pneumoniae (30)                     |   |   |   |        |     |     |   |   |   |
| Tedizolid                                         | NA | NA | NA | 0.25 | 0.25 | 0.5 | NA | NA | NA |
| Linezolid                                         | ≤2 | - | - | ≤0.25 | 1 | 1 | 100 | NA | NA |
| Penicillin G                                      | ≤2 | 4 | ≥8 | ≤0.06 | 0.06 | 0.06 | 27 | 73 | 0 |
| Cefotaxime                                        | ≤1 | 2 | ≥4 | ≤0.06 | 0.25 | 0.25 | 27 | 73 | 0 |

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Table 1. Continued

| Organism (N of isolates) and antimicrobial agents | Breakpoint (µg/mL) | MIC (µg/mL) | Susceptibility (%) |
|------------------------------------------------|------------------|-------------|--------------------|
|                                                 | S    | I   | R   | Range | 50% | 90% | S | I | R |
| Clindamycin                                    | ≤0.25 | 0.5 | ≥1  | 0.125- >128 | >128 | >128 | 10 | 0 | 90 |
| Erythromycin                                   | ≤0.25 | 0.5 | ≥1  | 8- >128 | >128 | >128 | 0  | 0 | 100 |
| Cotrimoxazole                                   | ≤0.5  | 1-2 | ≥4  | 0.5- >128 | 32   | 64   | 13 | 0 | 87 |
| Levofloxacin                                    | ≤2    | 4   | ≥8  | 2-8    | 2    | 4    | 87 | 10| 3  |
| Tetracycline                                    | ≤1    | 2   | ≥4  | 0.25-64 | 32   | 32   | 3  | 3 | 93 |
| **S. agalactiae (22)**                          |      |     |     |        |      |      |    |    |    |
| Tedizolid                                      | ≤0.5  | -   | -   | 0.25-0.5 | 0.5  | 0.5  | 100| NA| NA |
| Linezolid                                      | ≤2    | -   | -   | 2-4    | 2    | 2    | 96 | NA| NA |
| Penicillin G                                   | ≤0.12 | -   | -   | 0.015-0.06 | 0.06 | 0.06 | 100| NA| NA |
| Cefotaxime                                      | ≤0.5  | -   | -   | 0.015-0.06 | 0.06 | 0.06 | 100| NA| NA |
| Clindamycin                                    | ≤0.25 | 0.5 | ≥1  | 0.125- >128 | 0.125 | >128 | 82 | 0 | 18 |
| Erythromycin                                   | ≤0.25 | 0.5 | ≥1  | 0.125- >128 | 0.25 | >128 | 77 | 0 | 23 |
| Levofloxacin                                    | ≤2    | 4   | ≥8  | 1-64   | 2    | 64   | 59 | 9 | 32 |
| Tetracycline                                    | ≤2    | 4   | ≥8  | 0.25-32 | 1    | 32   | 59 | 0 | 41 |
| **S. pyogenes (8)**                             |      |     |     |        |      |      |    |    |    |
| Tedizolid                                      | ≤0.5  | -   | -   | 0.125-0.5 | NA   | NA   | NA| NA| NA |
| Linezolid                                      | ≤2    | -   | -   | 1-2    | NA   | NA   | NA| NA| NA |
| Penicillin G                                   | ≤0.12 | -   | -   | 0.015  | NA   | NA   | NA| NA| NA |
| Cefotaxime                                      | ≤0.5  | -   | -   | 0.015-0.06 | NA   | NA   | NA| NA| NA |
| Clindamycin                                    | ≤0.25 | 0.5 | ≥1  | 0.125- >128 | NA   | NA   | NA| NA| NA |
| Erythromycin                                   | ≤0.25 | 0.5 | ≥1  | 0.25-32 | NA   | NA   | NA| NA| NA |
| Levofloxacin                                    | ≤2    | 4   | ≥8  | 0.5-8  | NA   | NA   | NA| NA| NA |
| Tetracycline                                    | ≤2    | 4   | ≥8  | 0.25-8 | NA   | NA   | NA| NA| NA |
| **Enterococcus faecalis (14)**                  |      |     |     |        |      |      |    |    |    |
| Tedizolid                                      | ≤0.5  | -   | -   | 0.25-0.5 | 0.5  | 0.5  | 100| NA| NA |
| Linezolid                                      | ≤2    | 4   | ≥8  | 1-2    | 2    | 2    | 100| 0 | 0  |
| Ampicillin                                      | ≤8    | -   | ≥16 | 0.5-4  | 1    | 4    | 100| NA| 0  |
| Erythromycin                                   | ≤0.5  | 1-4 | ≥8  | 0.5- >128 | >128 | >128 | 0  | 36| 64 |
| Levofloxacin                                    | ≤2    | 4   | ≥8  | 1- >128 | 1    | 128  | 64 | 0 | 36 |
| Tetracycline                                    | ≤4    | 8   | ≥16 | 0.5- >128 | 64   | 128  | 14 | 0 | 86 |
| Teicoplanin                                     | ≤8    | 16  | ≥32 | ≤0.06-1 | 0.5  | 1    | 100| 0 | 0  |
| Vancomycin                                      | ≤4    | 8-16 | ≥32 | 0.5-4  | 1    | 2    | 100| 0 | 0  |
| **E. faecium (16)**                             |      |     |     |        |      |      |    |    |    |
| Tedizolid                                      | NA    | NA  | NA  | 0.25-0.5 | 0.25 | 0.25 | NA| NA| NA |
| Linezolid                                      | ≤2    | 4   | ≥8  | 0.5-2  | 2    | 2    | 100| 0 | 0  |
| Ampicillin                                      | ≤8    | -   | ≥16 | 16- >128 | 64   | 128  | 0  | NA| 100 |
| Erythromycin                                   | ≤0.5  | 1-4 | ≥8  | ≤0.06- >128 | >128 | >128 | 6  | 0 | 94 |
| Levofloxacin                                    | ≤2    | 4   | ≥8  | 32-128 | 128  | 128  | 0  | 0 | 100 |

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Table 1. Continued

| Organism (N of isolates) and antimicrobial agents | Breakpoint (µg/mL) | MIC (µg/mL) | Susceptibility (%) |
|-------------------------------------------------|-------------------|-------------|--------------------|
|                                                 | S     | I     | R     | Range | 50% | 90% | S | I | R |
| Tetracycline                                    | ≤4    | 8     | ≥16   | 0.25-128 | 0.5 | 128 | 56 | 0 | 44 |
| Vancomycin                                      | ≤4    | 8-16  | ≥32   | 1- >128  | 1   | >128 | 56 | 0 | 44 |
| Teicoplanin                                     | ≤8    | 16    | ≥32   | 0.25-128 | 1   | 32  | 56 | 19| 25 |
| Viridans group Streptococcus spp. (10)†         |       |       |       |         |     |     |     |    |    |
| Tedizolid                                       | NA    | NA    | NA    | 0.25-0.5 | 0.25 | 0.25 | NA | NA | NA |
| Linezolid                                       | ≤2    | -     | -     | 1-2     | 1   | 2   | 100| NA| NA |
| Penicillin G                                    | ≤0.12 | 0.25-2| ≥4    | 0.03-2  | 0.06 | 0.5  | 70 | 10| 0  |
| Cefotaxime                                      | ≤1    | 2     | ≥4    | 0.06-2  | 0.25 | 1    | 90 | 10| 0  |
| Clindamycin                                     | ≤0.25 | 0.5   | ≥1    | ≤0.06- >128 | 0.125 | >128 | 60 | 0 | 40 |
| Erythromycin                                    | ≤0.25 | 0.5   | ≥1    | ≤0.06- >128 | 0.125 | 128  | 50 | 10| 40 |
| Levofloxacin                                    | ≤2    | 4     | ≥8    | 0.5-2   | 1   | 2   | 100| 0 | 0  |
| Tetracycline                                    | ≤2    | 4     | ≥8    | 0.25-64 | 16  | 64  | 40 | 0 | 60 |
| Finegoldia magna (21)                           |       |       |       |         |     |     |     |    |    |
| Tedizolid                                       | NA    | NA    | NA    | 0.06-1  | 0.25 | 0.5  | NA | NA | NA |
| Linezolid                                       | NA    | NA    | NA    | 0.5-2   | 2   | 2   | NA | NA | NA |
| Piperacillin                                    | ≤32   | 64    | ≥128  | ≤0.06-0.25 | 0.125 | 0.25 | 100| 0 | 0  |
| Pip/tazobactam                                  | ≤32   | 64    | ≥128  | ≤0.06-0.25 | ≤0.06 | 0.125 | 100| 0 | 0  |
| Cefotaxin                                       | ≤16   | 32    | ≥64   | 0.125-2 | 1   | 1   | 100| 0 | 0  |
| Cefotetan                                       | ≤16   | 32    | ≥64   | 0.25-2  | 1   | 2   | 100| 0 | 0  |
| Imipenem                                       | ≤4    | 8     | ≥16   | ≤0.06-0.125 | ≤0.06 | 0.125 | 100| 0 | 0  |
| Clindamycin                                     | ≤2    | 4     | ≥8    | ≤0.06- >128 | 2   | >128 | 55 | 9 | 36 |
| Metronidazole                                   | ≤8    | 16    | ≥32   | 0.25-4  | 1   | 2   | 100| 0 | 0  |
| Vancomycin                                      | NA    | NA    | NA    | 0.25-1 | 0.25 | 0.5  | NA | NA | NA |
| Peptostreptococcus spp. (27)§                   |       |       |       |         |     |     |     |    |    |
| Tedizolid                                       | NA    | NA    | NA    | ≤0.06-0.25 | 0.125 | 0.25 | NA | NA | NA |
| Linezolid                                       | NA    | NA    | NA    | 0.5-2   | 1   | 2   | NA | NA | NA |
| Piperacillin                                    | ≤32   | 64    | ≥128  | ≤0.06-1 | ≤0.06 | 1   | 100| 0 | 0  |
| Pip/tazobactam                                  | ≤32   | 64    | ≥128  | ≤0.06-1 | ≤0.06 | 0.25 | 100| 0 | 0  |
| Cefotaxin                                       | ≤16   | 32    | ≥64   | ≤0.06-8 | 0.5  | 4   | 100| 0 | 0  |
| Cefotetan                                       | ≤16   | 32    | ≥64   | 0.125-8 | 0.5  | 2   | 100| 0 | 0  |
| Imipenem                                       | ≤4    | 8     | ≥16   | ≤0.06-0.5 | ≤0.06 | 0.125 | 100| 0 | 0  |
| Clindamycin                                     | ≤2    | 4     | ≥8    | ≤0.06-128 | 0.25 | 128  | 74 | 4 | 22 |
| Metronidazole                                   | ≤8    | 16    | ≥32   | 0.5-2   | 1   | 2   | 100| 0 | 0  |
| Vancomycin                                      | NA    | NA    | NA    | 0.125-1 | 0.25 | 1   | NA | NA | NA |
| Clostridium spp. (4)§                           |       |       |       |         |     |     |     |    |    |
| Tedizolid                                       | NA    | NA    | NA    | 0.25-0.5 | NA  | NA  | NA | NA | NA |
| Linezolid                                       | NA    | NA    | NA    | 2-4     | NA  | NA  | NA | NA | NA |
| Piperacillin                                    | ≤32   | 64    | ≥128  | 0.25-2  | NA  | NA  | NA | NA | NA |

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### Table 1. Continued

| Organism (N of isolates) and antimicrobial agents | Breakpoint (µg/mL) | MIC (µg/mL) | Susceptibility (%) |
|-----------------------------------------------|-----------------|-------------|--------------------|
|                                              | S   | I     | R | Range | 50% | 90% | S  | I | R |
| Pip/tazobactam                             | ≤ 32 | 64 | ≥128 | 0.125-2  | NA  | NA  | NA | NA | NA |
| Cefoxitin                                  | ≤ 16 | 32 | ≥64  | 0.25-2   | NA  | NA  | NA | NA | NA |
| Cefotetan                                  | ≤ 16 | 32 | ≥64  | 0.25-2   | NA  | NA  | NA | NA | NA |
| Imipenem                                   | ≤ 4  | 8  | ≥16  | 0.25-2   | NA  | NA  | NA | NA | NA |
| Clindamycin                                | ≤ 2  | 4  | ≥8   | 0.125-2  | NA  | NA  | NA | NA | NA |
| Metronidazole                              | ≤ 8  | 16 | ≥32  | 0.5-8    | NA  | NA  | NA | NA | NA |
| Vancomycin                                 | NA   | NA | NA   | 0.5-4    | NA  | NA  | NA | NA | NA |

*FDA breakpoints were used for tedizolid; †Staphylococcus epidermidis (N=22), S. caprae (N=1), S. warneri (N=1); ²Streptococcus mitis (N=6), S. anginosus (N=2), S. constellatus (N=2); ³P. asaccharolyticus (N=11), P. micros (N=7), Anaerococcus prevetti (N=8), P. anaerobius (N=1); ⁴C. perfringens (N=2), C. ramosum (N=2).

### Abbreviations: MIC, minimum inhibitory concentration; S, susceptible; I, intermediate; R, resistant; NA, not available/applicable; Pip/tazobactam, piperacillin/tazobactam.

### Table 2. Comparative in vitro activities of tedizolid and other antimicrobial agents against bacteria recovered from patients with hospital-acquired pneumonia

| Organism (N of isolates) and antimicrobial agents | Breakpoint (µg/mL) | MIC (µg/mL) | Susceptibility (%) |
|-----------------------------------------------|-----------------|-------------|--------------------|
|                                              | S   | I     | R | Range | 50% | 90% | S  | I | R |
| Methicillin-resistant Staphylococcus aureus (61) | | | | | | | |
| Tedizolid*                                  | ≤ 0.5 | 1 | ≥2  | 0.125-0.5  | 0.25 | 0.5 | 100 | 0 | 0 |
| Linezolid                                   | ≤ 4  | - | ≥8  | 1-2    | 2 | 2 | 100 | 0 | 0 |
| Erythromycin                                | ≤ 0.5 | 1-4 | ≥8  | 0.25- >128 | >128 | >128 | 10 | 0 | 90 |
| Clindamycin                                 | ≤ 0.5 | 1-2 | ≥4  | ≤0.06- >128 | >128 | >128 | 23 | 0 | 77 |
| Cotrimoxazole                               | ≤ 2  | - | ≥4  | ≤0.06-4  | ≤0.06 | 0.125 | 98 | NA | 2 |
| Gentamicin                                  | ≤ 4  | 8  | ≥16 | 0.125-128 | 32 | 64 | 38 | 0 | 62 |
| Levofoxacin                                  | ≤ 1  | 2 | ≥4  | 0.25- >128 | 128 | 128 | 16 | 0 | 84 |
| Tetracycline                                 | ≤ 4  | 8  | ≥16 | 0.25-128  | 128 | 128 | 18 | 0 | 82 |
| Oxacillin                                    | ≤ 2  | - | ≥4  | 32- >128 | >128 | >128 | 0 | NA | 100 |
| Vancomycin                                   | ≤ 2  | 4-8 | ≥16 | 0.5-2    | 1 | 2 | 100 | 0 | 0 |

| Methicillin-susceptible S. aureus (28) | | | | | | | |
| Tedizolid                                  | ≤ 0.5 | 1 | ≥2  | 0.25-0.25 | 0.25 | 0.25 | 100 | 0 | 0 |
| Linezolid                                   | ≤ 4  | - | ≥8  | 1-2    | 2 | 2 | 100 | 0 | 0 |
| Erythromycin                                | ≤ 0.5 | 1-4 | ≥8  | 0.25- >128 | 0.25 | 0.25 | 93 | 4 | 4 |
| Clindamycin                                 | ≤ 0.5 | 1-2 | ≥4  | ≤0.06- >128 | ≤0.06 | ≤0.06 | 93 | 4 | 4 |
| Cotrimoxazole                               | ≤ 2  | - | ≥4  | ≤0.06-0.25 | ≤0.06 | ≤0.06 | 100 | NA | 0 |
| Gentamicin                                  | ≤ 4  | 8  | ≥16 | 0.125-16  | 0.25 | 0.25 | 96 | 0 | 4 |
| Levofoxacin                                  | ≤ 1  | 2 | ≥4  | 0.125-8  | 0.25 | 1 | 93 | 0 | 7 |
| Tetracycline                                 | ≤ 4  | 8  | ≥16 | 0.25-0.25 | 0.25 | 0.25 | 100 | 0 | 0 |
| Oxacillin                                    | ≤ 2  | - | ≥4  | 0.125-0.5 | 0.25 | 0.5 | 100 | NA | 0 |
| Vancomycin                                   | ≤ 2  | 4-8 | ≥16 | 1-2    | 1 | 1 | 100 | 0 | 0 |

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Table 2. Continued

| Organism (N of isolates) and antimicrobial agents | Breakpoint (µg/mL) | MIC (µg/mL) | Susceptibility (%) |
|-------------------------------------------------|-------------------|-------------|--------------------|
|                                                  | S | I | R | Range | 50% | 90% |
|                                                  | S | I | R |       |     |     |
| **S. epidermidis** (8)                           |   |   |   |       |     |     |
| Tedizolid                                        | NA | NA | NA | ≤ 0.06 | NA | NA | NA | NA | NA | NA |
| Linezolid                                        | ≤ 4 | - | ≥ 8 | 0.25 | NA | NA | NA | NA | NA | NA |
| Erythromycin                                     | ≤ 0.5 | 1-4 | ≥ 8 | ≤ 0.06-128 | NA | NA | NA | NA | NA | NA |
| Clindamycin                                      | ≤ 0.5 | 1-2 | ≥ 4 | ≤ 0.06->128 | NA | NA | NA | NA | NA | NA |
| Cotrimoxazole                                    | ≤ 2 | - | ≥ 4 | ≤ 0.06-4 | NA | NA | NA | NA | NA | NA |
| Gentamicin                                       | ≤ 4 | 8 | ≥ 16 | ≤ 0.06-128 | NA | NA | NA | NA | NA | NA |
| Levofloxacin                                     | ≤ 1 | 2 | ≥ 4 | 4-128 | NA | NA | NA | NA | NA | NA |
| Tetracycline                                     | ≤ 4 | 8 | ≥ 16 | 0.125-32 | NA | NA | NA | NA | NA | NA |
| Oxacillin                                        | ≤ 0.25 | - | ≥ 0.5 | 0.5-32 | NA | NA | NA | NA | NA | NA |
| Vancomycin                                       | ≤ 4 | 8-16 | ≥ 32 | 1-2 | NA | NA | NA | NA | NA | NA |
| **Streptococcus pneumoniae** (47)                |   |   |   |       |     |     |
| Tedizolid                                        | NA | NA | NA | 0.25-0.5 | 0.25 | 0.5 | NA | NA | NA | NA |
| Linezolid                                        | ≤ 2 | - | - | 1-2 | 1 | 2 | 100 | NA | NA | NA |
| Penicillin G                                     | ≤ 2 | 4 | ≥ 8 | 0.015-8 | 2 | 8 | 49 | 28 | 23 |     |
| Cefotaxime                                       | ≤ 1 | 2 | ≥ 4 | 0.015-32 | 1 | 32 | 55 | 26 | 19 |     |
| Clindamycin                                      | ≤ 0.25 | 0.5 | ≥ 1 | 0.125->128 | > 128 | > 128 | 15 | 0 | 85 |     |
| Erythromycin                                     | ≤ 0.25 | 0.5 | ≥ 1 | 0.25->128 | > 128 | > 128 | 6 | 0 | 94 |     |
| Cotrimoxazole                                    | ≤ 0.5 | 1-2 | ≥ 4 | 1-32 | 8 | 32 | 23 | 15 | 62 |     |
| Levofloxacin                                     | ≤ 2 | 4 | ≥ 8 | 2-128 | 2 | 32 | 72 | 2 | 26 |     |
| Tetracycline                                     | ≤ 1 | 2 | ≥ 4 | 0.25-128 | 32 | 64 | 13 | 0 | 87 |     |

*FDA breakpoints were used for tedizolid.

Abbreviations: MIC, minimum inhibitory concentration; S, susceptible; I, intermediate; R, resistant; NA, not available/applicable; Pip/tazobactam, piperacillin/tazobactam.

Authors’ Disclosures of Potential Conflicts of Interest

No potential conflicts of interest relevant to this article were reported.

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