
INTRODUCTION

Methicillin-resistant Staphylococcus aureus (MRSA) has been an emerging nosocomial pathogen in many hospitals worldwide for the past 5 decades. However, in the past 20 years, additional concerns for the emergence and spread of community-associated MRSA (CA-MRSA) in the United States.

This brings difficulties for the empiric treatment of community-acquired infections, and guidelines were revised to provide appropriate MIC ranges.

In addition, CA-MRSA isolates were initially associated with diabetic foot infections, and risk factors, the distinction between hospital-acquired MRSA (HA-MRSA) and CA-MRSA isolates has become blurred in recent years.

Tedizolid is a novel oxazolidinone prodrug administered as a dose of 200 mg once daily for 6 days either orally (with or without food) or as an intravenous (IV) infusion in patients ≥18 years of age.

Tedizolid is approved for the treatment of acute bacterial skin and skin structure infections (ABSSSIs) caused by susceptible isolates of S. aureus (including MRSA), S. epidermidis, S. lugdunensis, S. hominis, and Enterococcus faecalis.

Tedizolid has high bioavailability and the benefit of a prolonged half-life, which allows for once-daily dosing.

Given that several studies have reported on the high incidence of CA-MRSA in the United States, this study was conducted to evaluate the activity of tedizolid compared with other agents with and/or IV formulations against CA-MRSA.

RESULTS

A total of 2138 CA-MRSA isolates were collected during the Surveillance of Tedizolid Activity and Resistance (STAR) Program for 2014 and 2015.

Minimum inhibitory concentration (MIC) readings for tedizolid and linezolid were performed according to the CLSI guidelines (ie, the first well in which there was a visible zone of inhibition). Testing was performed using reference 96-well panels manufactured by JMI Laboratories.

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Tedizolid MIC results were 2- to 4-fold lower than those obtained for IV options such as daptomycin (MIC₅₀/₉₀, 0.25/0.5 µg/mL) and 8-fold lower than vancomycin (MIC₅₀/₉₀, 1/4 µg/mL) for CA-MRSA from adult and pediatric patients (Table 1) and were consistent against clindamycin-resistant CA-MRSA populations from pediatric and adult patients (Figure 3).

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Tedizolid potency was greater than that of comparators with oral and/or IV formulations. SARs of tedizolid activity against community-acquired CA-MRSA were observed in this study, which can be attributed to the oxazolidinone prodrug structure of tedizolid.

The oxazolidinone prodrug structure of tedizolid is believed to be responsible for its potent activity against CA-MRSA, likely related to both mechanisms of action: inhibition of bacterial protein synthesis and rupture of the bacterial membrane.

To further elucidate the activity of tedizolid by comparing aminoglycosides, broad-spectrum cephalosporins, and ß-lactamase inhibitors, the activity of tedizolid was compared.

Tedizolid had consistent activities against clindamycin-resistant CA-MRSA populations from pediatric and adult patients (Figure 2).

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