In vitro Evaluation of Delafloxacin Activity When Tested against Contemporary Community-Acquired Bacterial Respiratory Tract Infection Isolates (2014–2016): Results from the SENTRY Antimicrobial Surveillance Program

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Abstract

Background: Delafloxacin (DLX) is a broad-spectrum fluorooledoxin (FLX) antibacterial that received approval in 2017 from the US Food and Drug Administration for the treatment of acute bacterial skin and skin structure infections (ABSSSI) caused by susceptible pathogens. DLX is a class III clinical trial partner for community-acquired respiratory tract infections (CA-RTI) collected in medical centers in the United States and participating in the SENTRY surveillance program during 2014–2016.

Methods: In vitro activity distributions of 1,673 isolates collected during 2014–2016 were determined. Other antibacterials tested included levofloxacin (LVX), penicillin (PEN), amoxicillin-clavulanate (AMX–CLAV), ceftriaxone (CXR), tetracycline (TET), and clindamycin (CLIND). MIC values were determined using CLSI method B. Interpretive criteria were as published by CLSI (2017) and EUCAST (2017) for breakpoints. Other antibacterials tested included levofloxacin (LVX), penicillin (PEN), amoxicillin-clavulanate (AMX–CLAV), ceftriaxone (CXR), tetracycline (TET), and clindamycin (CLIND).

Results

• Susceptibility testing was performed according to CLSI reference breaking point methodology, and results were interpreted per CLSI and EUCAST (2017) breakpoints. Other antibacterials tested included levofloxacin (LVX), penicillin (PEN), amoxicillin-clavulanate (AMX–CLAV), ceftriaxone (CXR), tetracycline (TET), and clindamycin (CLIND). DLX demonstrated superior activity against PHN and MC isolates collected during 2014–2016. For LVX-resistant SPN, the DLX MIC50/90 values were 0.12/0.25 mg/L with all isolates having DLX MIC90 values ≤0.12 mg/L. For HI, the DLX MIC50/90 values were 0.008/0.008 mg/L with all isolates having DLX MIC90 values ≤0.008 mg/L.

Conclusions

• Against SPN, DLX had the lowest MIC of the agents tested. DLX was more potent than LVX• Against HI, DLX had the lowest MIC of the agents tested. No difference in activity was observed between US and EU isolates. Against LVX-SPN, DLX was very active with isolates having MICs ≤0.03 mg/L. For HI and MC, DLX had the lowest MIC of the agents tested.

• All isolates tested a DLX MIC of ≤0.03 mg/L. DLX was more potent than LVX. – EU resistant isolates of HI and MC were low (MIC ≤1.0 MICxR)

• These data support the continued study of DLX as a potential treatment for community-acquired pneumonia.

References
