ABSTRACT

The Linezolid Experience and Accuracy of Resistance (LEADER) Program has monitored LZD-R rates in the United States since 2004. Isolates were collected from 60 medical centers in 37 states (representing all 9 Census Regions). In 2012, 2547 isolates were submitted from 13 medical centers in six Census Regions spanning the United States. LZD susceptibility testing was performed using a Clinical and Laboratory Standards Institute (CLSI) broth microdilution method. MIC results were compared to published interpretive criteria (CLSI M100-S23, 2013). Isolates displaying resistance (MIC ≥ 8 μg/ml) were collected and subjected to sequencing to detect mutations in the 23S RNA (≥8 μg/ml) and 16S rRNA (≥4 μg/ml) genes. This study was sponsored by Pfizer Inc.

RESULTS

A total of 3,429 GP isolates were submitted to LEADER laboratories and distributed among the following organism groups: S. aureus (2,980 strains), CoNS (1,121), Enterococcus (937), Streptococcus pneumoniae (DRSP) and vancomycin-resistant enterococci (VRE). The isolate was used to treat uncomplicated and complicated skin and skin structure infections (cSSSI) and pneumonia caused by Gram-positive organisms. The MIC50/90 for SA was at 0.5/2 μg/ml. Four (4-) of 720 SA isolates contained the 23S RNA (≥8 μg/ml) and 16S rRNA (≥4 μg/ml) mutations that were associated with in vitro or in vivo resistance to LZD. The MIC50 for SA was at 0.5 μg/ml when tested against all 47 SA isolates that exhibited a MIC50 ≤0.12 μg/ml.

METHODS

Bacteriologic study collection. Fifty medical centers were selected to represent the U.S. (2004-2011) and provided information on the number of clinical isolates from groups of Gram-positive cocci isolated from submitted to LEADER. As per protocol, there were at least 1,000 isolates per geographic region and year. The laboratory director was asked to forward to LEADER laboratories the following organisms with suspect MIC values: S. aureus (2,980) (≤0.12 μg/ml), CoNS (680), S. pneumoniae (470), vancomycin-resistant enterococci (360), Staphylococcus epidermidis (256), and Enterococcus faecium (230). The MIC50, MIC90 for all agent tested was determined.

CONCLUSIONS

This study was performed to determine if the LEADER Program has accurately detected emerging resistance and changes in geographic variances in the United States over the years of surveillance. The LEADER Program has monitored LZD-R rates in the United States since 2004. Isolates were collected from 60 medical centers in 37 states (representing all 9 Census Regions). In 2012, 2547 isolates were submitted from 13 medical centers in six Census Regions spanning the United States. LZD susceptibility testing was performed using a CLSI broth microdilution method. MIC results were compared to published interpretive criteria (CLSI M100-S23, 2013). Isolates displaying resistance (MIC ≥ 8 μg/ml) were collected and subjected to sequencing to detect mutations in the 23S RNA (≥8 μg/ml) and 16S rRNA (≥4 μg/ml) genes. This study was sponsored by Pfizer Inc.