

MRSA Antibiogram Results for Oregon Laboratories, 1996 and 2003



Background

Microbiology laboratories in Oregon were surveyed in 1996 and 2003 to examine statewide antimicrobial resistance patterns for several micro-organisms, including *Staphylococcus aureus*. The antibiograms from those laboratories that responded were aggregated to determine the percentage of methicillin-resistant *S. aureus* (MRSA) isolates statewide and in different regions of Oregon. This information is used to track the susceptibility of *S. aureus* to oxacillin over time at regional and statewide levels, and may also be helpful in the antibiotic treatment of *S. aureus* or suspected *S. aureus* infections by healthcare providers.

Methods and Results

1996 Survey

Antibiogram data from the 1996 calendar year that included *S. aureus* and methodological surveys were collected from 18 Oregon microbiology laboratories. The overall percentage of MRSA among all *S. aureus* isolates was 11% (i.e., 89% were susceptible to oxacillin) based on a total of 7,572 isolates. When the analysis was restricted to the five highest-volume labs, which accounted for 4,244 (56%) of the isolates, the percentage of MRSA among all *S. aureus* isolates was 13%, indicating that the results were not unduly influenced by one or two labs with a large number of isolates.

As expected, there was considerable variability across the susceptibilities reported by individual facilities (range of 0–23% MRSA); this variability may be due to a number of factors such as the number of isolates cultured and the characteristics of the patient population served by the facility. As seen in Figure 1, however, the variability lessened when the isolates were aggregated across multiple facilities within a geographic region (range of 5–14% MRSA). These results indicate that the percentage of MRSA among all *S. aureus* isolates was relatively low in 1996 and did not substantially differ across geographic regions of Oregon.

2003 Survey

Surveys and letters requesting antibiogram data from the 2003 calendar year were mailed to 49 Oregon microbiology laboratories. Of the 47 (96%) who responded, 25 prepared antibiograms, and 20 (80%) of the laboratories with antibiograms provided antibiogram data that included *S. aureus*. An additional two hospital antibiograms were obtained via an independent

laboratory's website, for a total of 22 antibiograms analyzed here. Twelve of the 22 laboratories had also provided antibiograms from 1996.

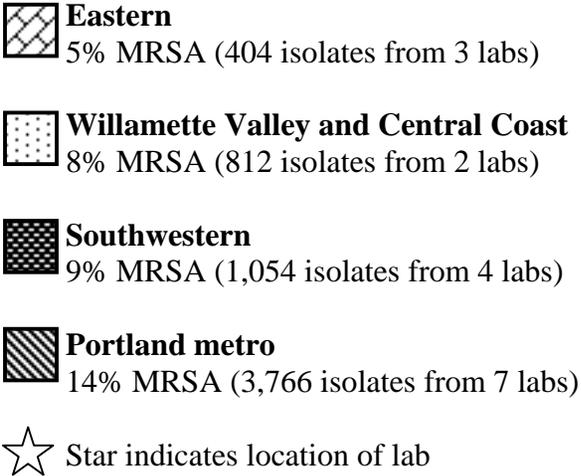
The susceptibilities of *S. aureus* to oxacillin were aggregated across all 22 antibiograms for isolates collected in 2003. In contrast to 1996, the percentage of MRSA among all *S. aureus* isolates increased dramatically to 39% (i.e., 61% were susceptible to oxacillin) based on a total of 20,729 isolates. When the analysis was restricted to the five highest-volume labs, which accounted for 13,614 (66%) of the isolates, the percentage of MRSA among all *S. aureus* isolates was again 39%, indicating that the results were not unduly influenced by one or two labs with a large number of isolates.

Similar to 1996, there was considerable variability in the susceptibilities reported by individual facilities (range of 22–60% MRSA) and relatively less variability when the isolates were aggregated across multiple facilities located in different geographic regions (range: 35–44% MRSA; see Figure 2 below). Further demonstrating that this increase in MRSA was widespread, all antibiograms from the 12 facilities—located throughout Oregon—that provided data in both survey years showed an increase in the percentage of MRSA among *S. aureus* isolates.

Conclusions

Consistent with national trends, the antibiogram data collected in these two surveys shows that the percentage of MRSA isolates among all *S. aureus* isolates increased from 11% in 1996 to 39% in 2003. Moreover, despite mild variability in resistance patterns across different regions of Oregon, this increase in MRSA occurred in all regions of the state and for all 12 facilities that provided antibiogram data for both survey years. Although it is important to qualify this conclusion by noting that antibiogram data are inherently imprecise due to the potential inclusion of duplicate isolates from a person during a single illness, the magnitude of this increase in the percentage of MRSA among all *S. aureus* isolates in only seven years is nevertheless impressive and warrants systematic tracking in future years.

Figure 1. Regional estimates of percentage of MRSA among all *S. aureus*, 1996



Notes:
 – Blank areas represent counties where susceptibility results were either not available or not reported.

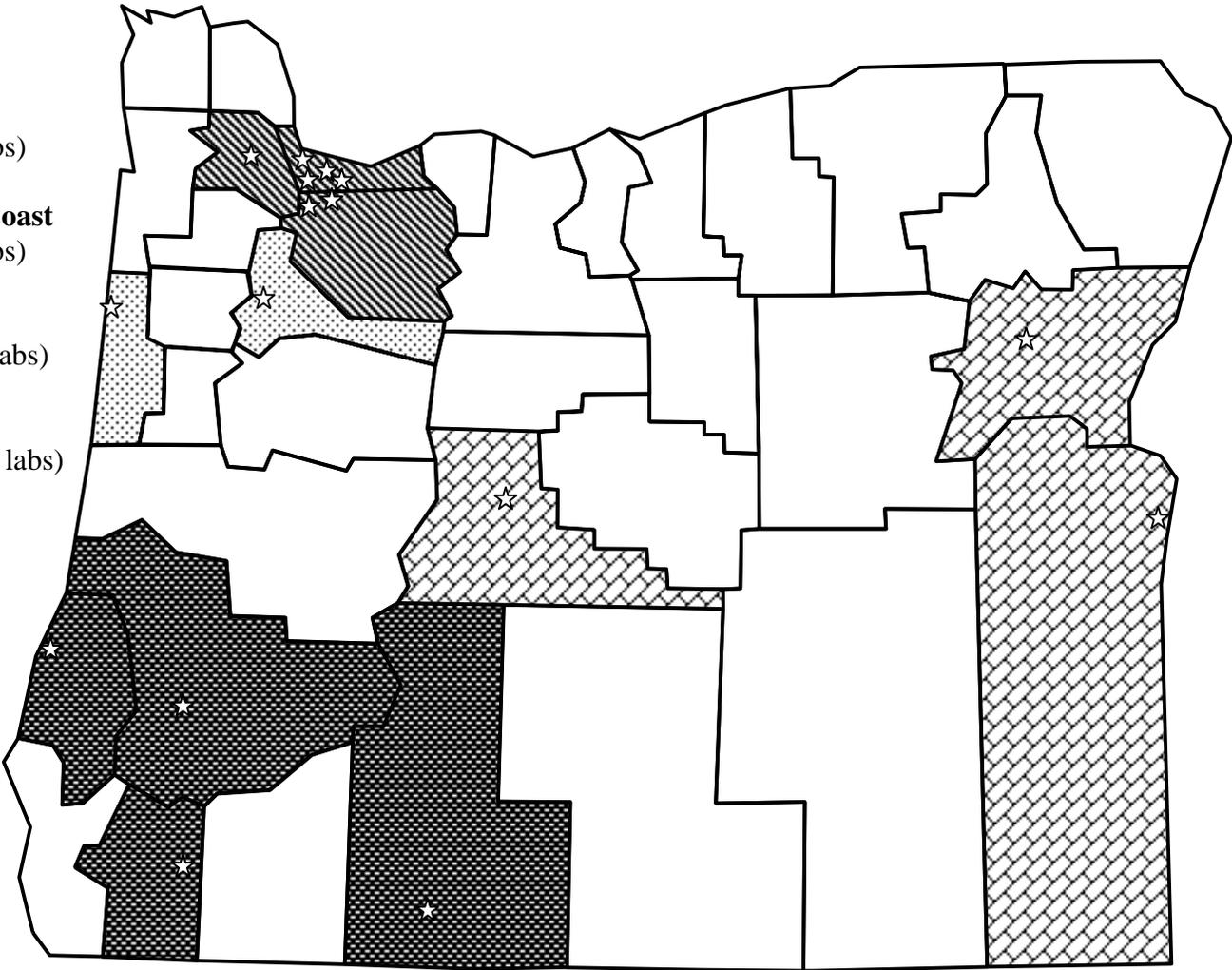


Figure 2. Regional estimates of percentage of MRSA among all *S. aureus*, 2003

