

# Microbiology of Periprosthetic Joint Infection in Total Knee Arthroplasty: Does Organism Profile Vary Across the United States?

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## BACKGROUND

- Regional differences in PJI microbiology and antibiotic resistance may influence diagnosis and empiric treatment
- Direct comparisons of causative organisms across different regions of the United States remain limited
- Understanding geographic variation may help inform region-specific diagnostic and antimicrobial strategies

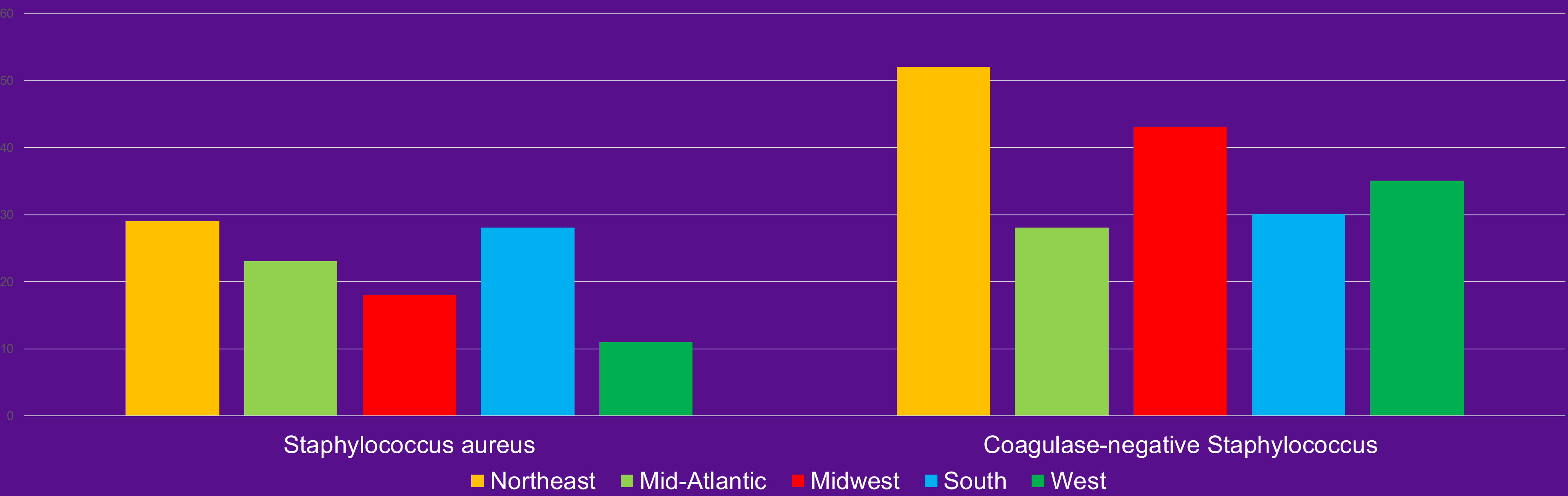
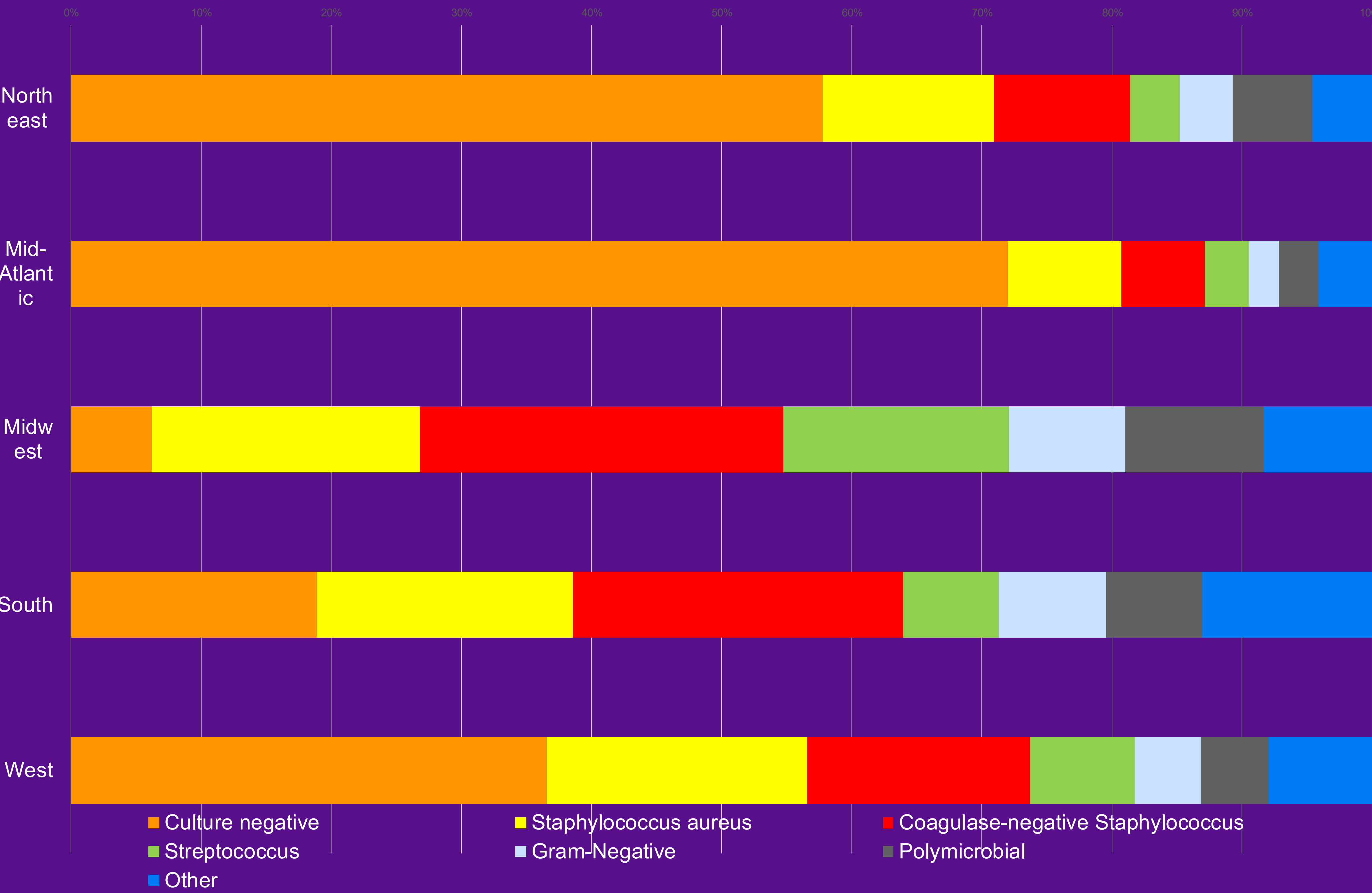
## OBJECTIVES

- Compare causative organism distribution in TKA PJI across five US regions
- Evaluate regional differences in antibiotic resistance, particularly methicillin resistance among staphylococcal isolates

## METHODS

- Retrospective cohort study of 1,601 revision TKAs for PJI
- Patients were treated across five US regions:
  - Northeast: 736
  - Mid-Atlantic: 389
  - Midwest: 179
  - South: 122
  - West: 175
- Baseline characteristics, intraoperative culture results, and antibiotic resistance patterns were collected
- Patients were grouped by geographic region for comparison
- Baseline characteristics differed significantly between regions

Chart Title



## RESULTS

- Organism distribution differed significantly across US regions
- S. aureus* was more common in the Midwest (21%), South (20%), and West (20%) than the Northeast (13%) and Mid-Atlantic (9%) ( $p < 0.001$ )
- Coagulase-negative *Staphylococcus* was most frequent in the Midwest (28%) and South (25%), compared with the West (17%), Northeast (10%), and Mid-Atlantic (6%) ( $p < 0.001$ )
- Streptococcus* was most frequent in the Midwest (17%) ( $p < 0.001$ )
- Culture-negative PJI showed the largest geographic variation, occurring in 72% of Mid-Atlantic and 58% of Northeast cases versus 37% in the West, 19% in the South, and only 6% in the Midwest ( $p < 0.001$ )
- Methicillin resistance among *S. aureus* isolates ranged from 11–29% across regions ( $p = 0.161$ )
- Methicillin resistance among coagulase-negative *Staphylococcus* isolates ranged from 28–52% ( $p = 0.050$ )

## CONCLUSIONS

PJI organism profiles after TKA vary geographically across the US, with *S. aureus* and coagulase-negative *Staphylococcus* more frequent in the Midwest and South and culture-negative PJI more common in the Northeast and Mid-Atlantic, supporting region-specific diagnostic and empiric antibiotic strategies.