

# Impact of updated Dutch antibiotic guidelines on empirical coverage in PJIs after hip surgery

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## Background

Prosthetic joint infections (PJIs) after elective or emergency hip surgery are severe complications associated with considerable mortality, morbidity, and healthcare costs.<sup>1</sup> Insight into the microbiological profiles of PJIs is essential for optimising antibiotic therapy.<sup>2</sup> Adequate empirical antibiotic coverage is crucial in the early phase of infection. The Dutch antibiotic guidelines have recently (April 2024) been updated.<sup>3</sup>

## Methods

This is a single-centre retrospective cohort study

### Inclusion

- All elective total hip arthroplasty or emergency hip surgery in Deventer Hospital.

### Inclusion period

- January 2021 and December 2025.

### Infection protocol (February 2022)

- 2nd/3rd cephalosporin

### The primary outcome

- PJI incidence within one year.

### Secondary outcomes

- Microbiological profiles
- Adequacy of empirical antibiotic coverage after implementation of new antibiotic guidelines.

## Results

Of 3,784 patients (65.5% elective, 34.5% emergency), **93** developed a PJI. In elective surgery the incidence was **2.2%**, and **2.9%** in emergency surgery. *Staphylococcus aureus* was the most common pathogen, occurring in **49.5%** of PJIs, followed by coagulase-negative staphylococci (CoNS) and *Cutibacterium acnes*. 54.8% of infections were polymicrobial.

In **65.6% of PJI cases** initial antibiotic coverage was sufficient. Addition of **vancomycin** according to new Dutch guidelines would have significantly increased adequate coverage to **91.4%** ( $p < 0.001$ ).

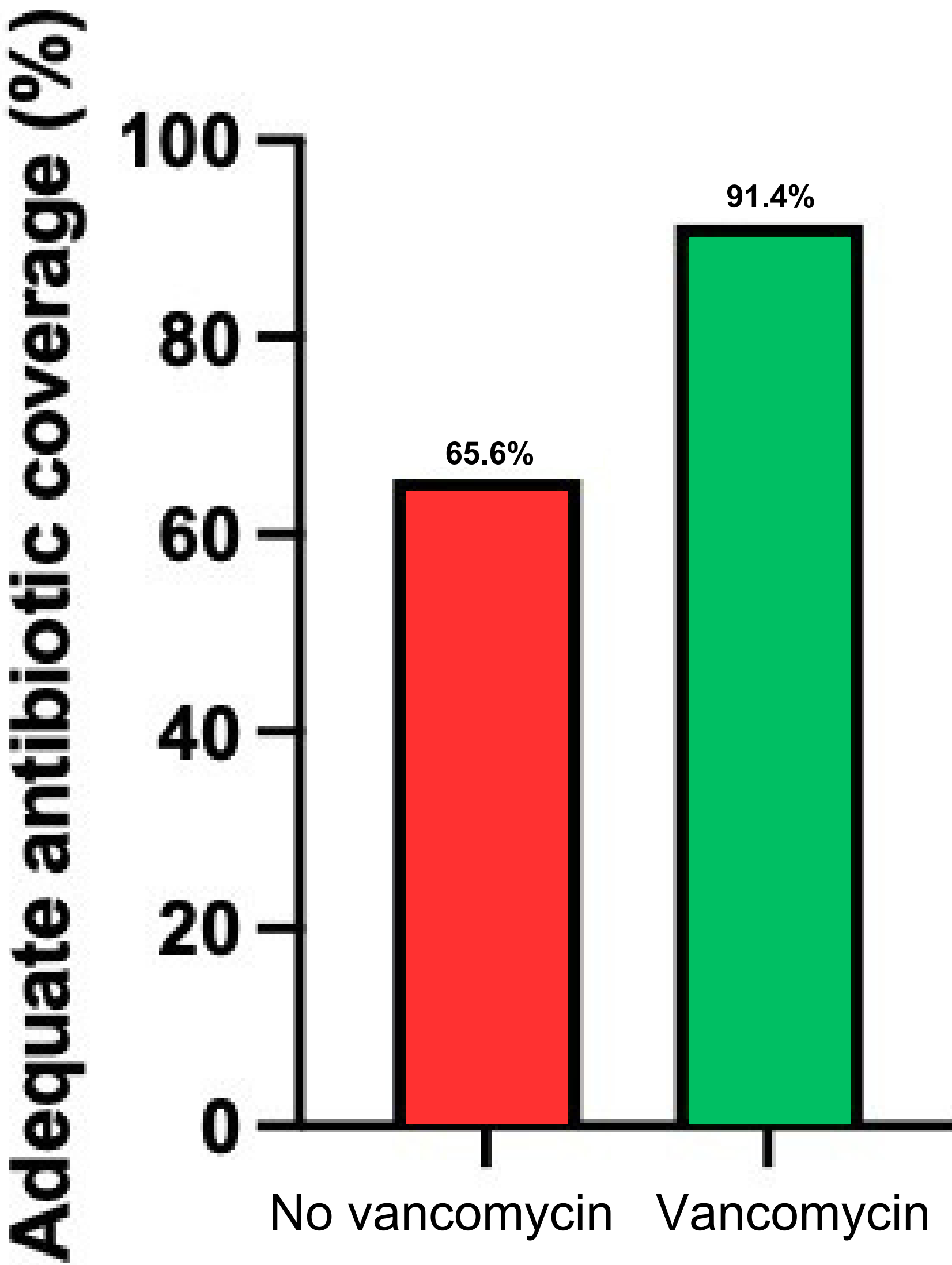


Figure 2. Antibiotic coverage with and without vancomycin

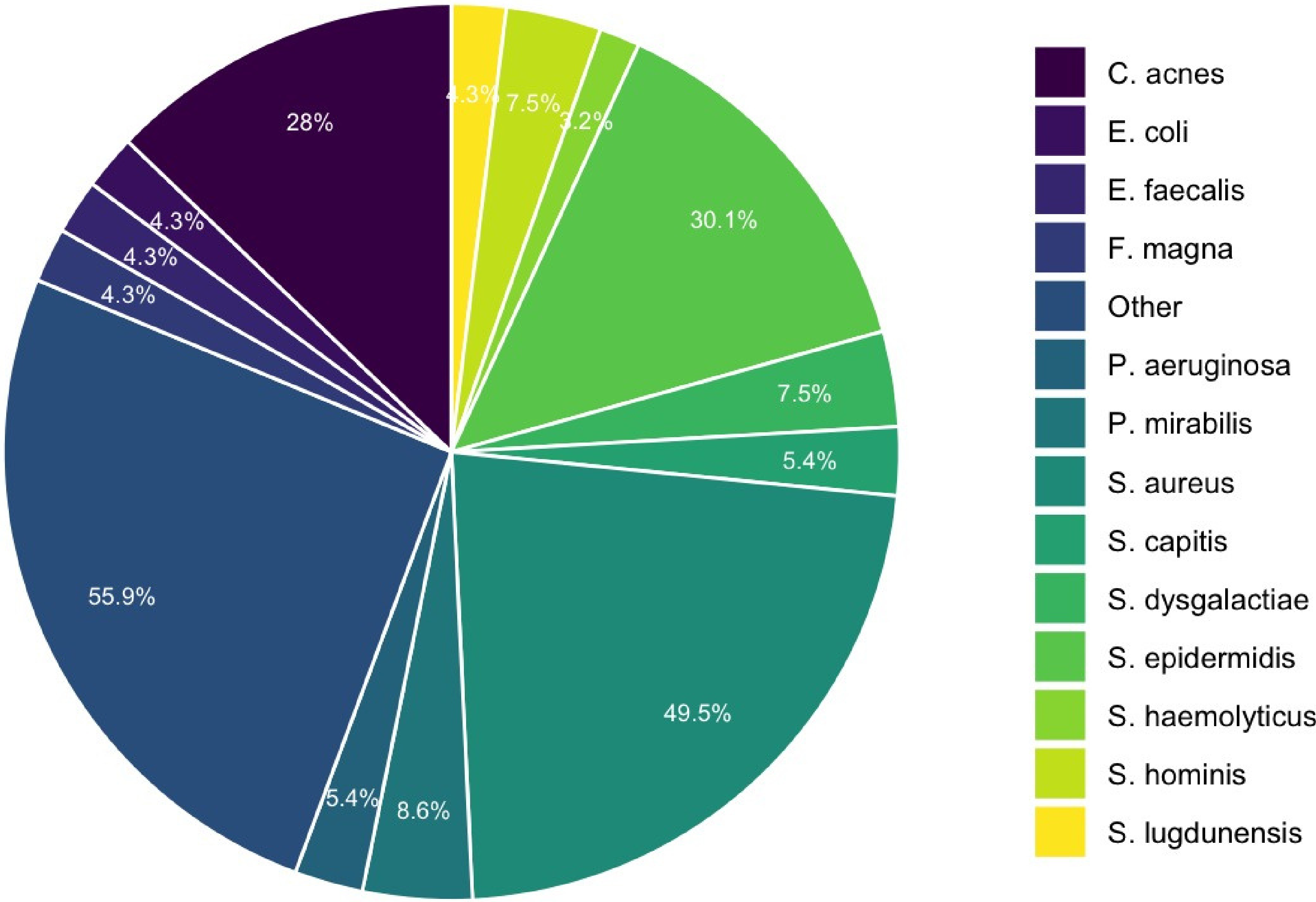


Figure 1. Distribution of causative microorganisms in PJI cases

## Conclusion

The incidence of PJI observed was in line with the literature.<sup>1</sup> The empirical antibiotic coverage was insufficient for a significant part of the PJI's which may contribute to delays in effective therapy. Addition of vancomycin into the empirical regimen would markedly improve coverage to 91.4% ( $p < 0.001$ ). These findings strongly support implementation of the updated Dutch guidelines recommending empirical treatment with **ceftriaxone plus vancomycin** in suspected PJI.

## References

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