

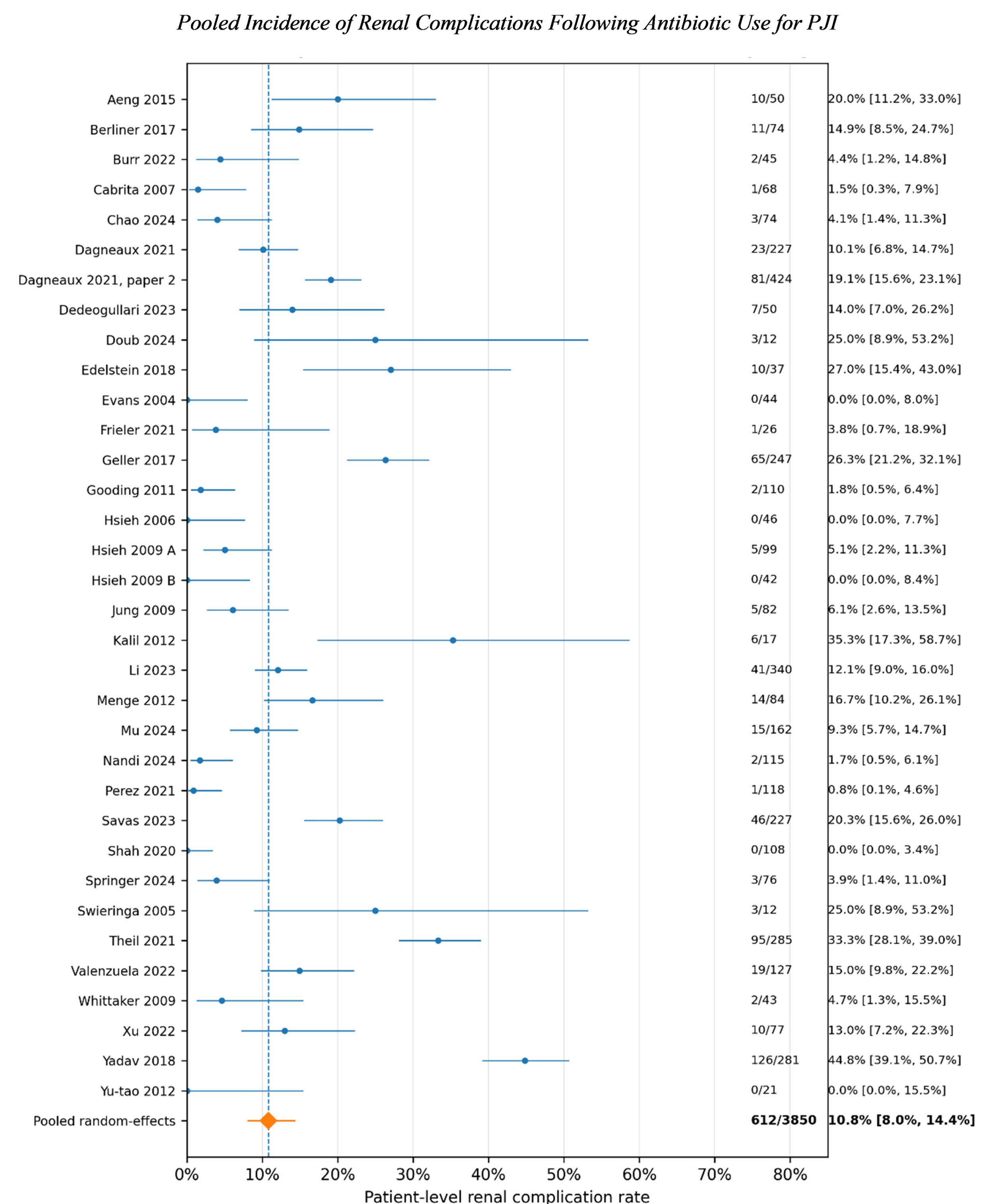
BACKGROUND

- Periprosthetic joint infection (PJI) following hip and knee arthroplasty frequently requires prolonged and often multi-agent antibiotic therapy.
- Although antibiotics are central to both curative and suppressive treatment pathways, most PJI literature emphasizes infection eradication and surgical outcomes, while treatment-related toxicity remains inconsistently characterized.
- This systematic review and meta-analysis aimed to quantify patient-level antibiotic-associated adverse events during PJI management.

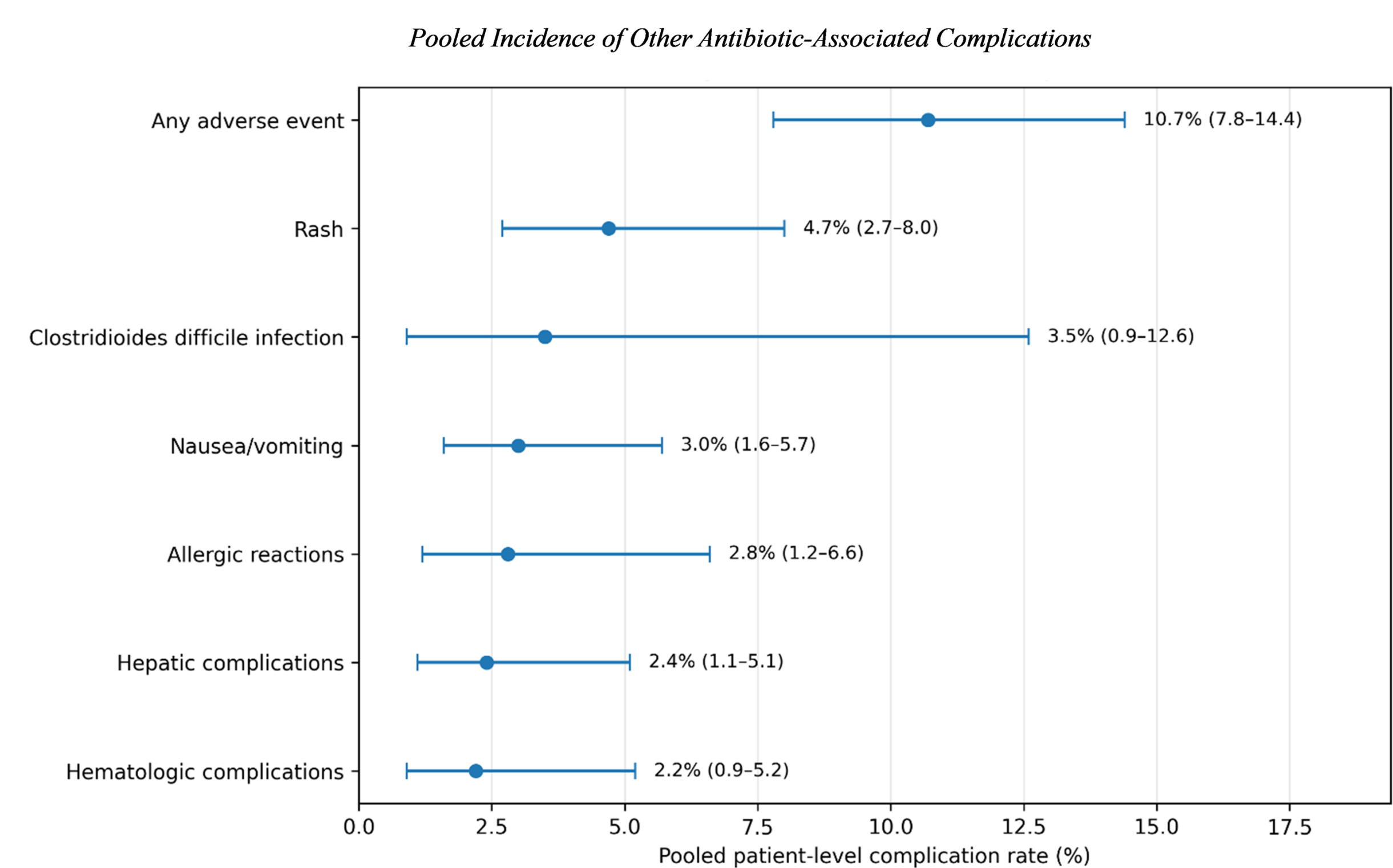
METHODS

- A PRISMA-guided systematic review and meta-analysis was performed to identify studies reporting antibiotic-associated complications among patients treated for PJI following hip or knee arthroplasty.
- Adverse-event data were extracted at the patient level by complication category, including renal, hepatic, hematologic, gastrointestinal, infectious, and allergic complications.
- A study-defined composite of “any adverse drug event” was included in pooled analysis only when explicitly reported.
- Random-effects proportion meta-analysis was performed separately for renal complications and other reported antibiotic-associated adverse events.
- Renal complications were additionally stratified according to exposure to local antibiotic delivery, including antibiotic spacers, antibiotic-loaded cement, intra-articular or topical antibiotics, and antibiotic-containing sponges, versus systemic-only treatment.
- Thirty-nine studies published from 1998–2024, comprising 4,133 patients, met eligibility criteria.
- Antibiotic exposure varied substantially: intravenous treatment ranged from 2–12 weeks and was most commonly 6 weeks; subsequent oral therapy ranged from 4 weeks to 12 months, while suppressive therapy ranged from 3 months to a mean of 5 years.
- Reported follow-up and adverse-event assessment windows ranged from 7 days to 9 years, reflecting substantial variation in treatment and safety surveillance across studies.

RESULTS



Random-effects logit proportion meta-analysis; k=34; I²=89%; crude rate=15.9%.



CONCLUSION

- Antibiotic-associated adverse events during PJI treatment are diverse and clinically relevant, but their definitions and reporting remain highly inconsistent across the literature.
- Renal complications were the most consistently reported toxicity and occurred in approximately 1 in 9 patients receiving antibiotic treatment for PJI.
- Greater standardization of adverse-event definitions, surveillance, and reporting is needed to accurately characterize antibiotic-related harm and better inform the risk-benefit balance of prolonged PJI treatment.