

Do Resistance Patterns Change After Carbapenem Exposure?

A retrospective review of Diabetic Foot Infections

Aim

Antimicrobial resistance (AMR) is a global health threat, particularly in diabetic foot infections (DFIs), where prolonged and repeated antibiotic exposure is common.

This study reviewed carbapenem use and outcomes in patients managed through an outpatient parenteral antimicrobial therapy (OPAT) service.

Method

A retrospective review was conducted on 100 patients with severe DFIs referred to OPAT between June 2023 and June 2025. 33 patients were prescribed a carbapenem: Ertapenem (n=30) or Meropenem (n=3), were included.

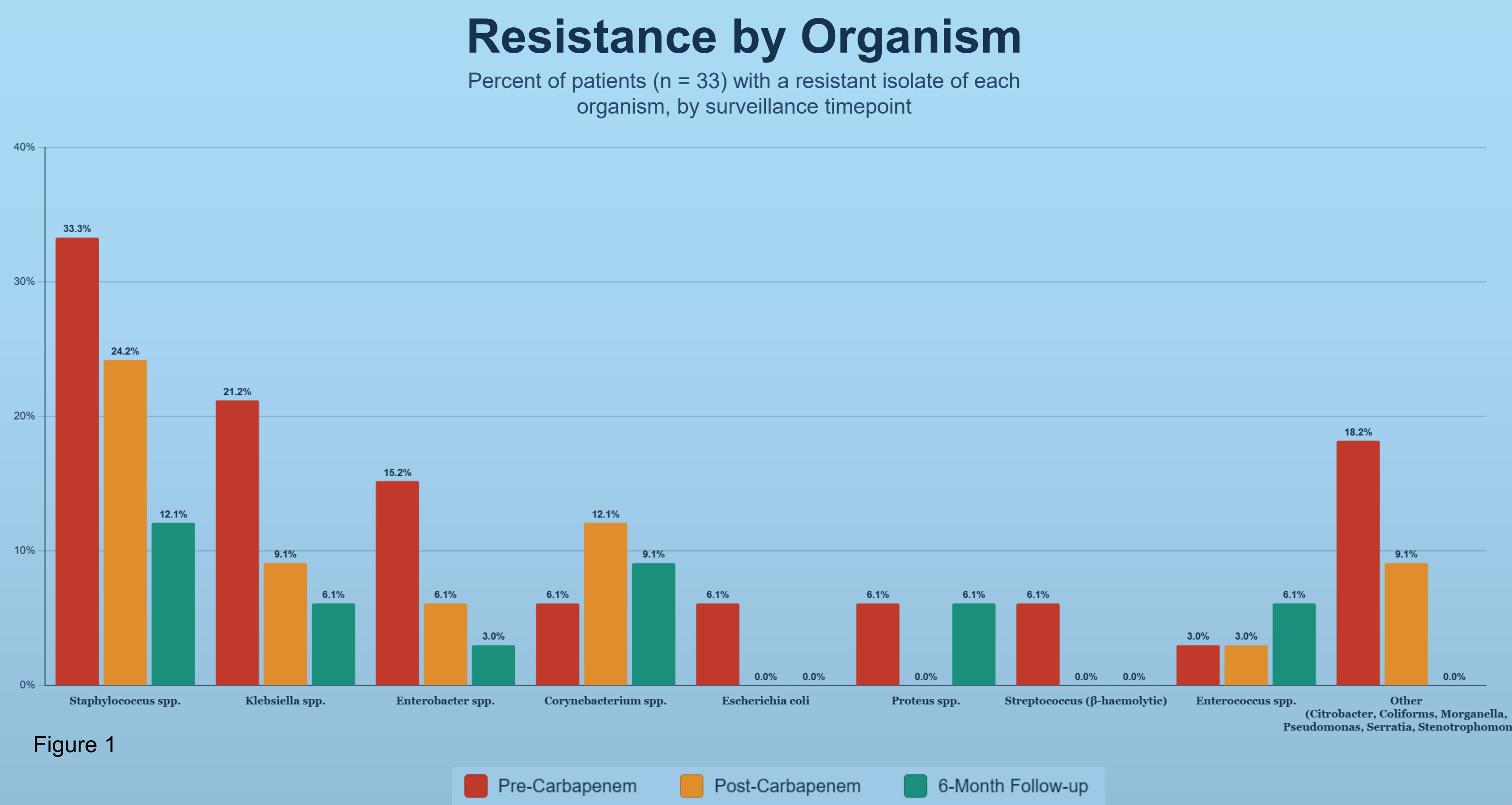
Microbiology data collected at a 3 time points



Results

Patient Demographics and Clinical Characteristics (n=33)		
 68 Mean age, years	 81% Male (n=27)	 96% Type 2 diabetes (mean HbA1c 61 mmol/mol, n=32)
 94% Prior antibiotic exposure documented (n=22)	 36% Reported penicillin allergy (n=12)	 51% History of antibiotic intolerance (n=17; 8 also had allergy)
 5 Median SINBAD score	 88% Treated with confirmed osteomyelitis	 2 Previous C. difficile infection

Forefoot involvement occurred in 75% and 88% were treated with confirmed osteomyelitis. Angioplasty was performed in 52% of patients. 55% following hospital discharge. Nineteen microbial species were isolated of which 14 (74%) demonstrated antimicrobial resistance. The commonest were *Staphylococcus spp.* (n=9) and *Klebsiella spp.* (n=7). 76% of DFIs were polymicrobial.

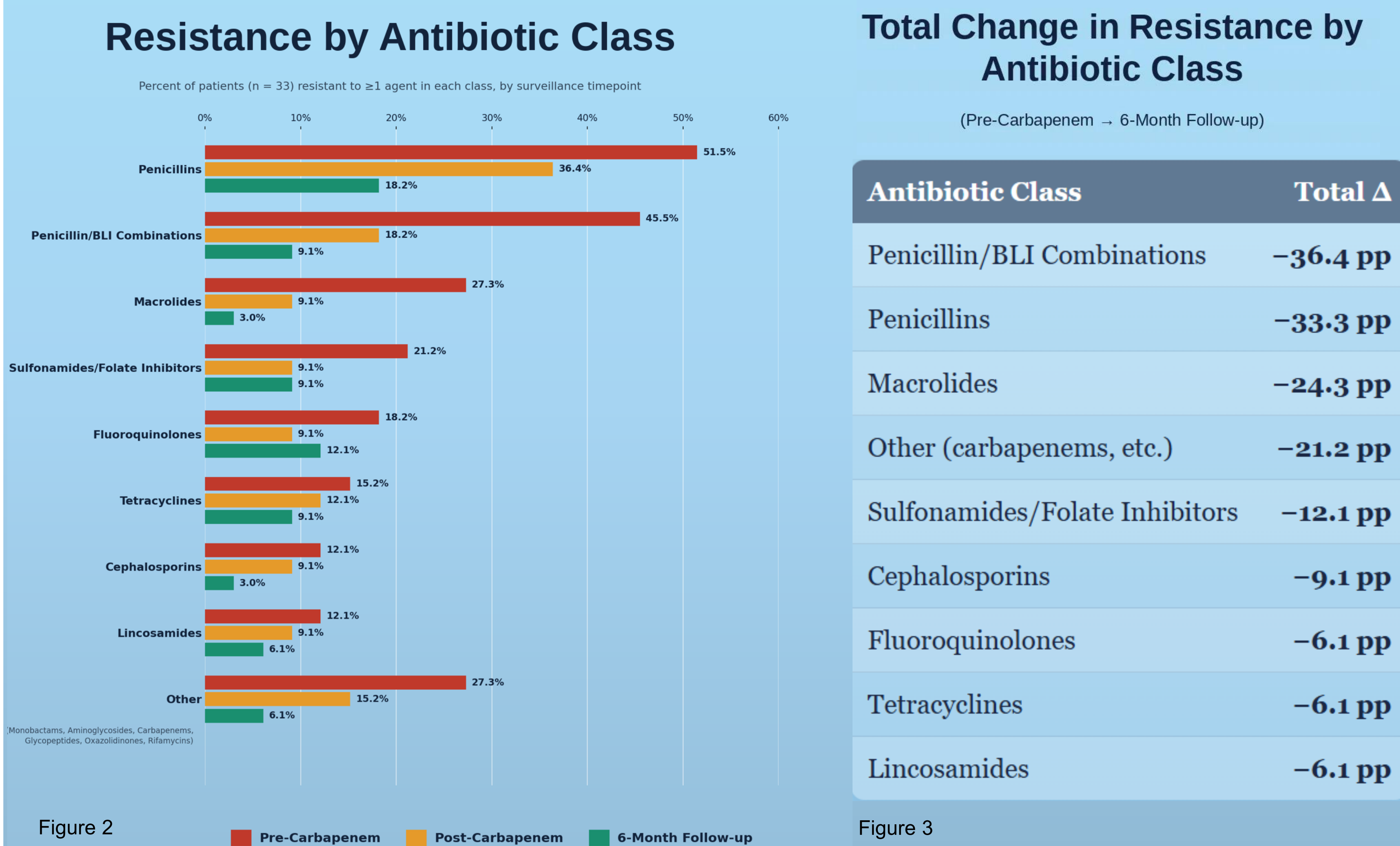


Resistance to at least one antibiotic was observed in 85% isolates and 60% demonstrated multidrug resistance. Three patients discontinued carbapenem therapy due to adverse effects and one due to OXA-48 carbapenamase detection. Median carbapenem duration was 4 weeks.



Discussion

At 6 months follow-up, 45% achieved healing. Non-healing wounds (55%) showed a shift in microbial profile, with *Staphylococcus spp.* predominating and 6 isolates exhibiting multidrug resistance. 11 patients grew new resistant organisms not present on initial culture.



Conclusion

Carbapenem-treated DFIs demonstrated high rates of polymicrobial infection and multidrug resistance, with frequent emergence of new organisms during follow-up.

More than half of patients failed to achieve wound healing at 6 months, underscoring the complexity of managing severe DFIs and the need for strengthened antimicrobial stewardship, early vascular optimisation, and close microbiological surveillance.