

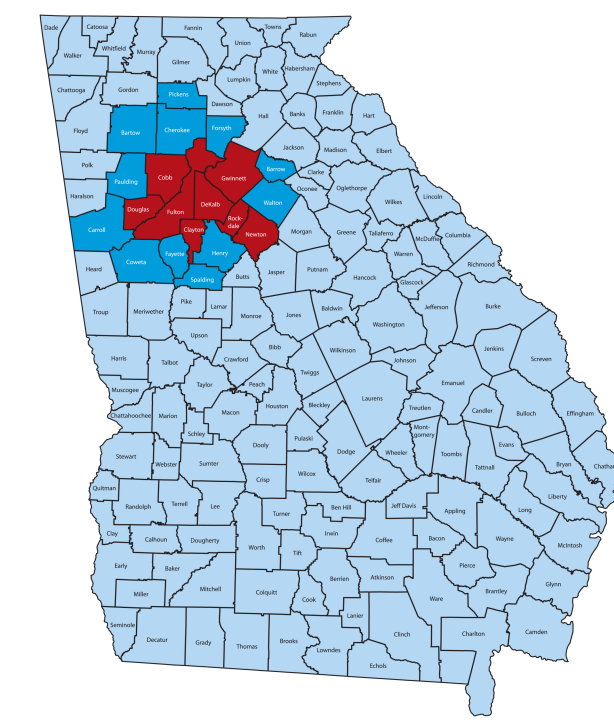
Introduction

Carbapenem resistant Enterobacterales (CRE) infections are an urgent public health threat

Objectives: Identify risk factors for mortality in patients with **invasive CRE infections** and assess the association between **indwelling devices** and **mortality**

Methods

Population: Using the Georgia Emerging Infections Program's active, population-based surveillance of CRE in the Atlanta metropolitan area, we created a cohort of patients with invasive CRE infections between 2012-2019



Definition of Carbapenem-resistant Enterobacterales

Organisms	Antibiotic Susceptibility Based on Minimum Inhibitory Concentration (MIC)	
	Resistant to:	AND Resistant to:
<i>Escherichia coli</i>	Imipenem (MIC ≥ 4) or Meropenem (MIC ≥ 4) or Doripenem (MIC ≥ 4)	Ceftazidime (MIC ≥ 16) and Ceftriaxone (MIC ≥ 4) and Cefotaxime (MIC ≥ 4) (if tested)
<i>Klebsiella pneumoniae</i>		
<i>Klebsiella oxytoca</i>		
<i>Klebsiella aerogens</i>		
<i>Enterobacter cloacae</i>		

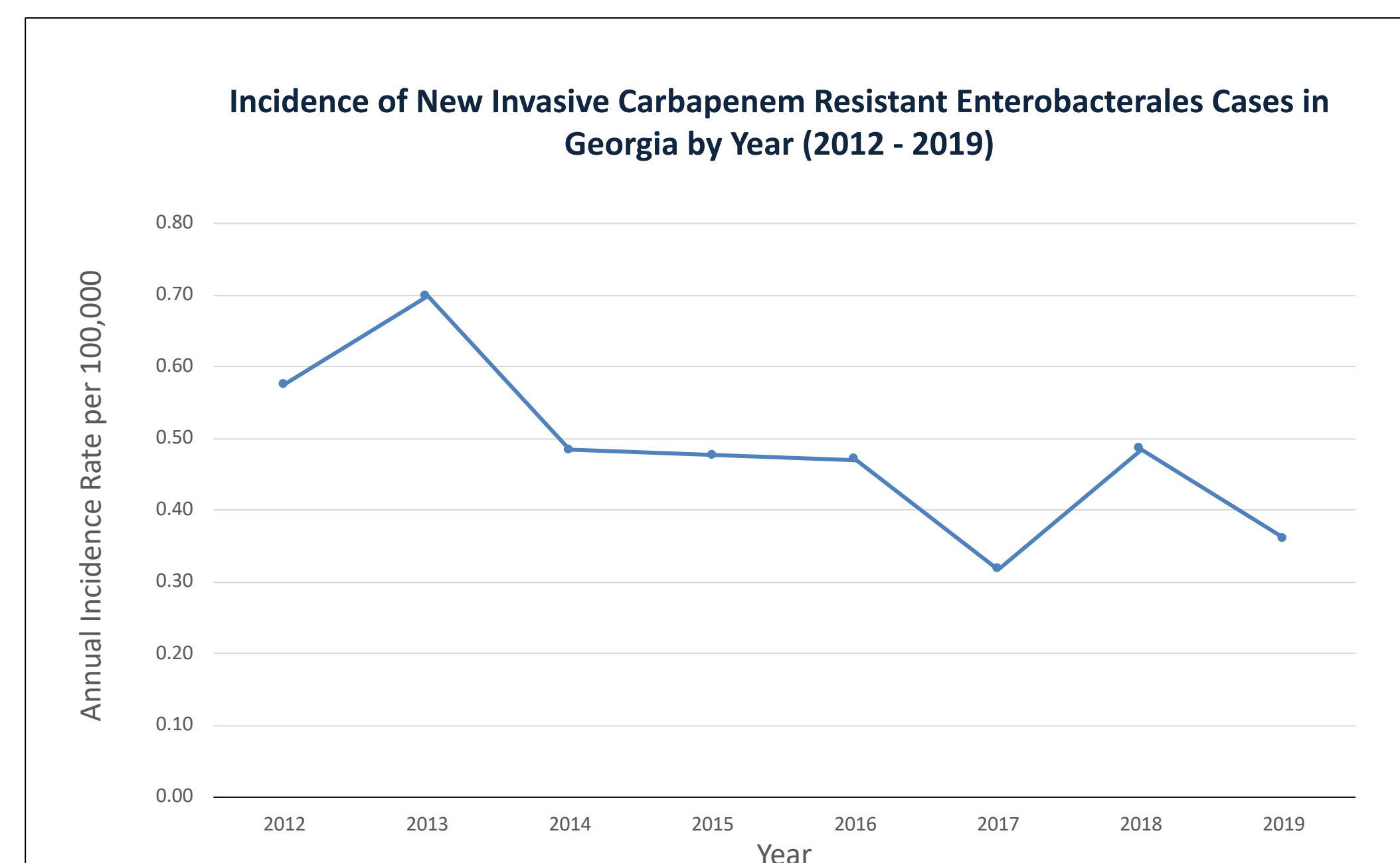
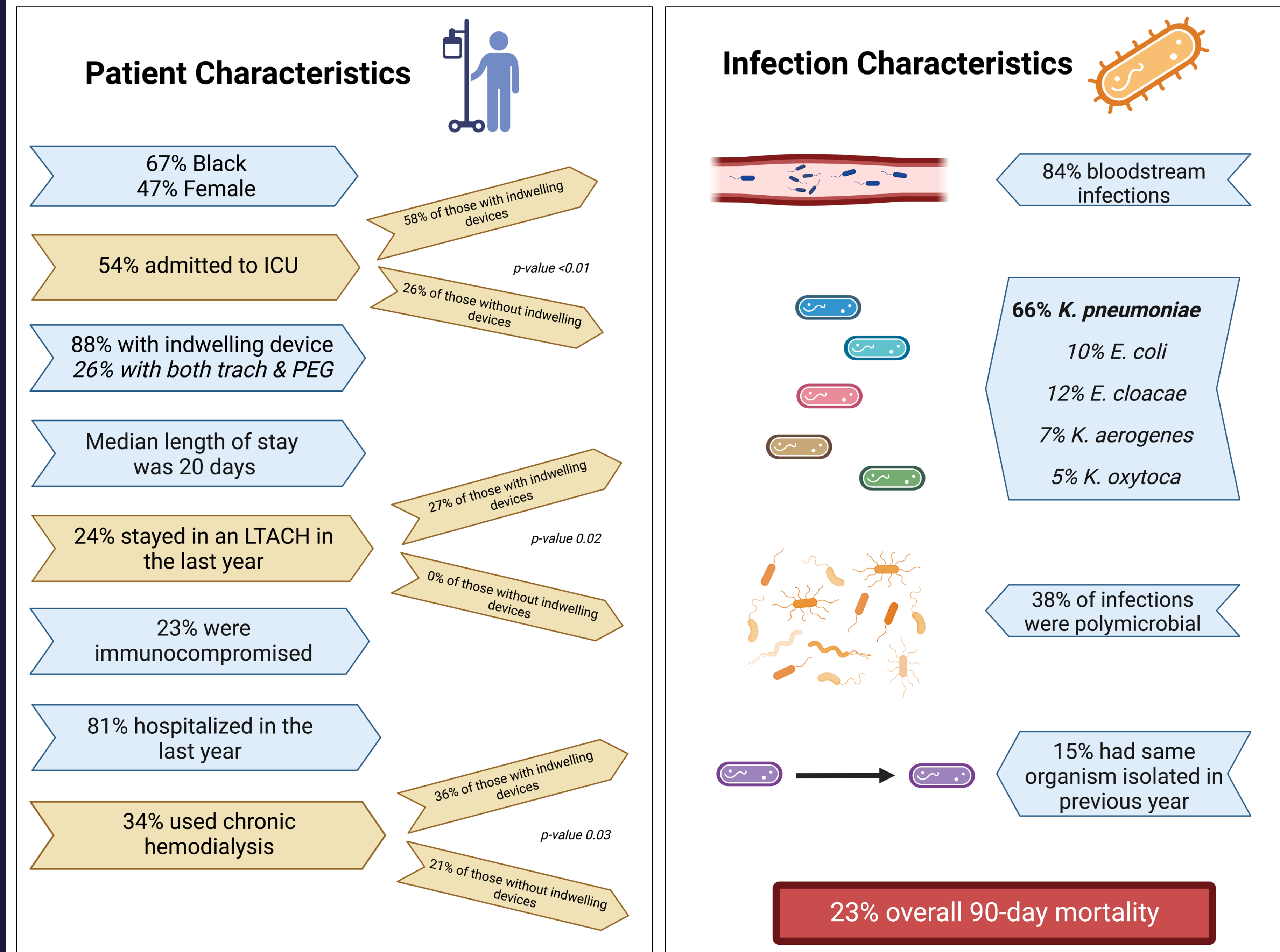
Exposure of Interest: Indwelling medical devices

Outcome: 90-day mortality (via Georgia Vital Statistics)

Analyses:

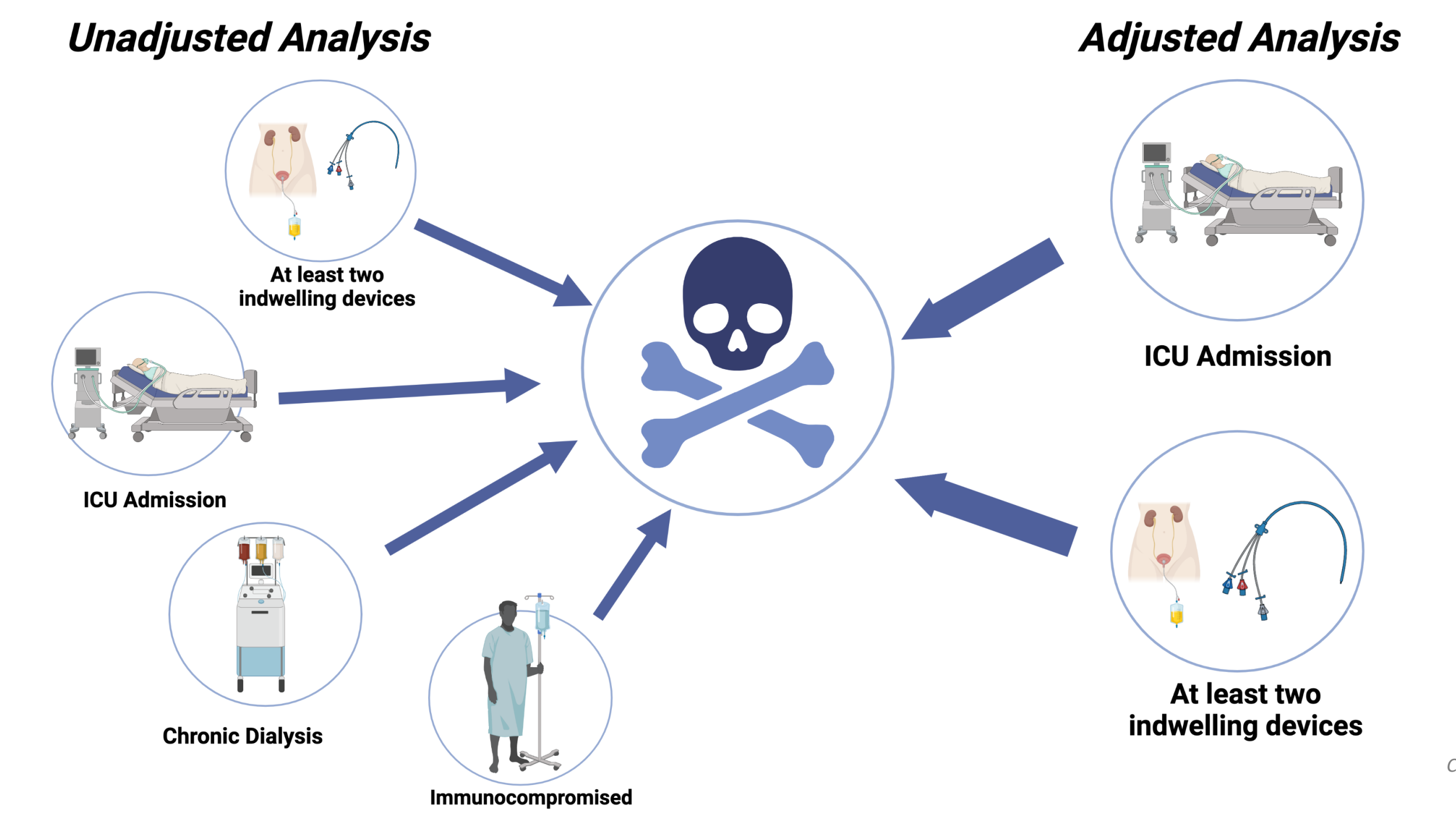
- Bivariate analyses for all covariates
- Multivariable log binomial regression to estimate **adjusted risk ratios** for selected covariates and indwelling devices
- Subgroup analyses:
 - (1) Central venous catheters
 - (2) \geq two devices

Results



Results

Factors Associated with 90-day Mortality



	Unadjusted RR (95% CI)	Adjusted 1 RR (95% CI)	Adjusted 2 RR (95% CI)	Adjusted 3 RR (95% CI)
Indwelling Device Present	1.55 (0.53, 4.56)	1.02 (0.36, 2.89)		
Central Venous Catheter Present	1.71 (0.81, 3.61)		1.13 (0.54, 2.37)	
≥ 2 Indwelling Devices	2.81 (1.16, 6.77)			2.48 (1.02, 5.99)
Charlson Comorbidity Index Score	1.09 (0.98, 1.22)	1.11 (0.38, 3.32)	1.10 (0.98, 1.24)	1.09 (0.97, 1.23)
Intensive Care Unit Admission	3.54 (1.65, 7.59)	3.24 (1.51, 6.95)	3.17 (1.46, 6.85)	
Previous stay in LTACH (1 year)	1.58 (0.88, 2.84)	1.49 (0.51, 4.35)	1.43 (0.81, 2.54)	1.31 (0.75, 2.30)

1 Adjusted for Indwelling device, Charlson comorbidity score, Intensive care admission, previous stay at long term acute care
2 Sensitivity Analysis - adjusted for central venous catheter, Charlson comorbidity score, Intensive care admission, previous stay at long term acute care
3 Subgroup analysis - adjusted for at least two indwelling devices, Charlson comorbidity score, previous stay at long term acute care
Abbreviations: LTACH - Long Term Acute Care hospital

Summary and Conclusions

- Indwelling medical device use was frequent in these acute and chronically ill patients with invasive CRE infections
- Admission to an ICU, requiring chronic dialysis, immunocompromise, and having at least two indwelling devices were associated with increased mortality
- Only **ICU admission** remained statistically significant in multivariable regression when controlling for covariates across models
- Having **at least two devices** increased the risk for mortality in sub-group analysis