

Antibiotic Escalation and Early Infectious Complications Following Anti-thymocyte Globulin (ATG) and Post-Transplant Cyclophosphamide (PTCy)-Based Haploidentical Stem Cell Transplantation



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Introduction

Haploidentical stem cell transplantation (haplo-SCT) with ATG and PTCy has become a widely adopted platform. While overall infection rates and survival have been characterized in this setting, antibiotic escalation as a clinical endpoint and the impact of antimicrobial resistance on clinical burden remain poorly defined.

Objective

To evaluate antibiotic escalation and early infectious complications in patients undergoing ATG/PTCy-based haplo-SCT.

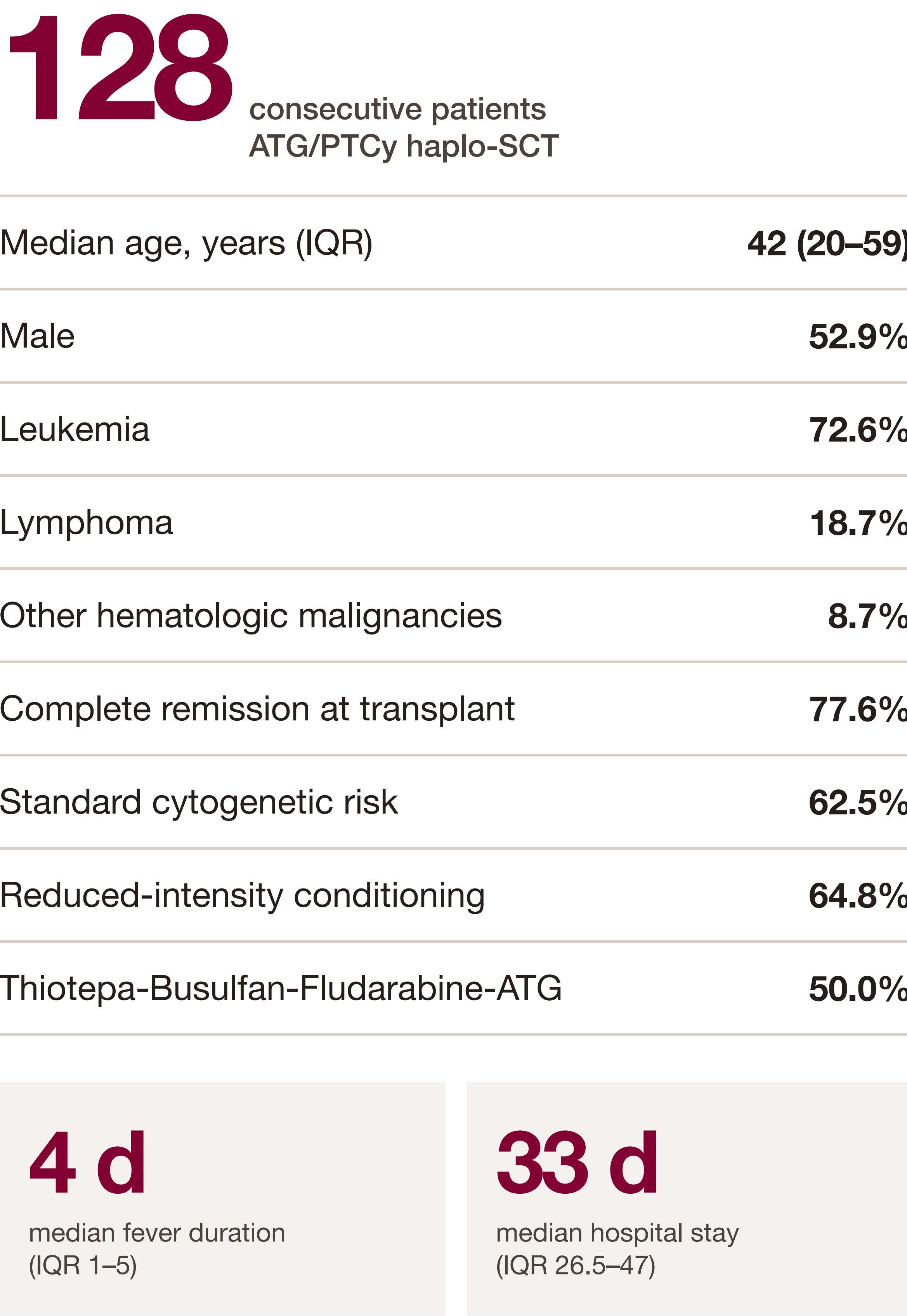
Methods

Design. Single-center retrospective cohort study conducted between 2018 and 2025.

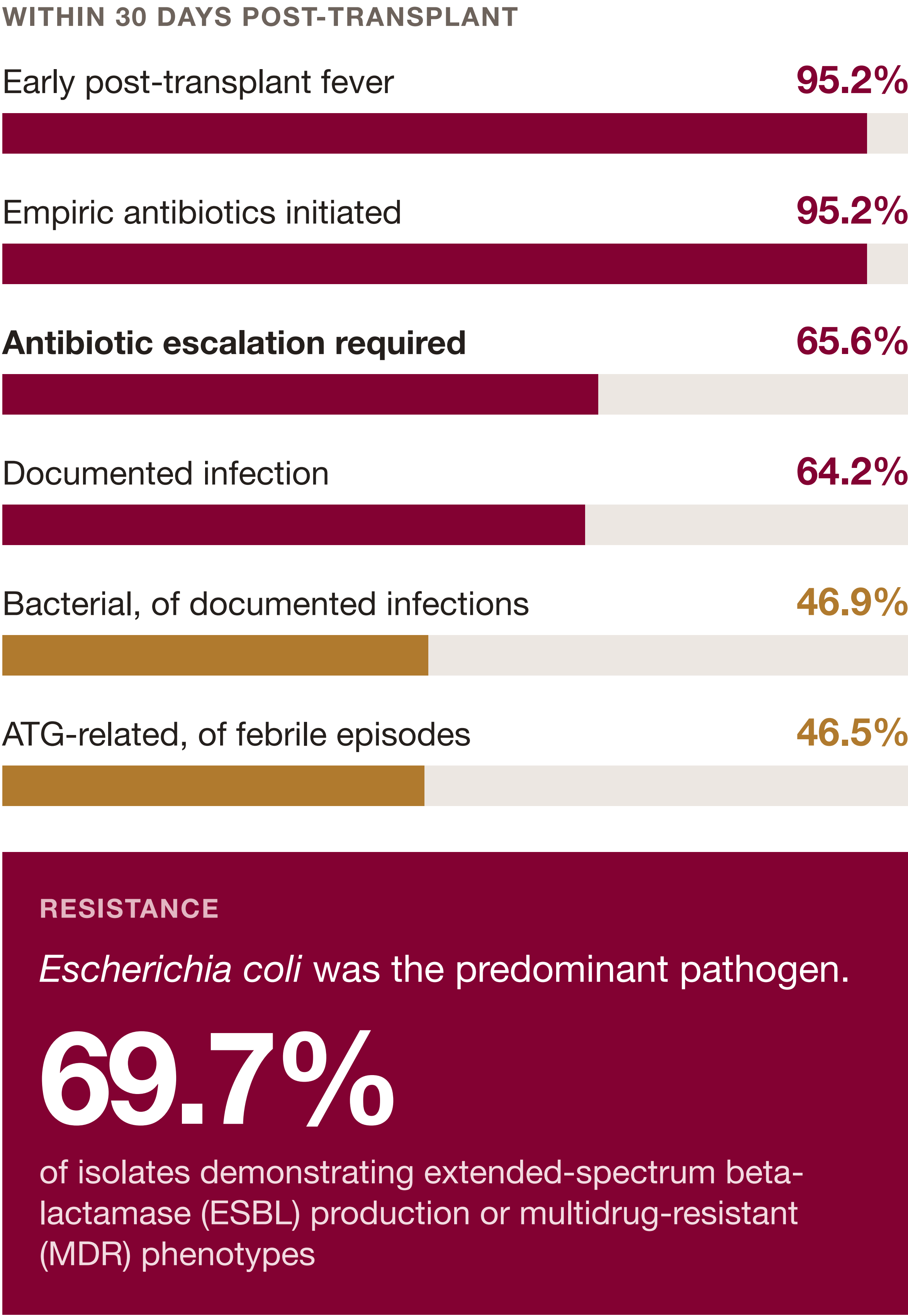
Setting. Tertiary academic referral center, American University of Beirut Medical Center (AUBMC), Lebanon.

Interventions. ATG/PTCy-based haplo-SCT. Reduced-intensity conditioning (RIC) was used in 64.8%; Thiotepa-Busulfan-Fludarabine-ATG was the most common regimen (50.0%). PTCy was administered universally.

Patients



Results



ENDPOINTS

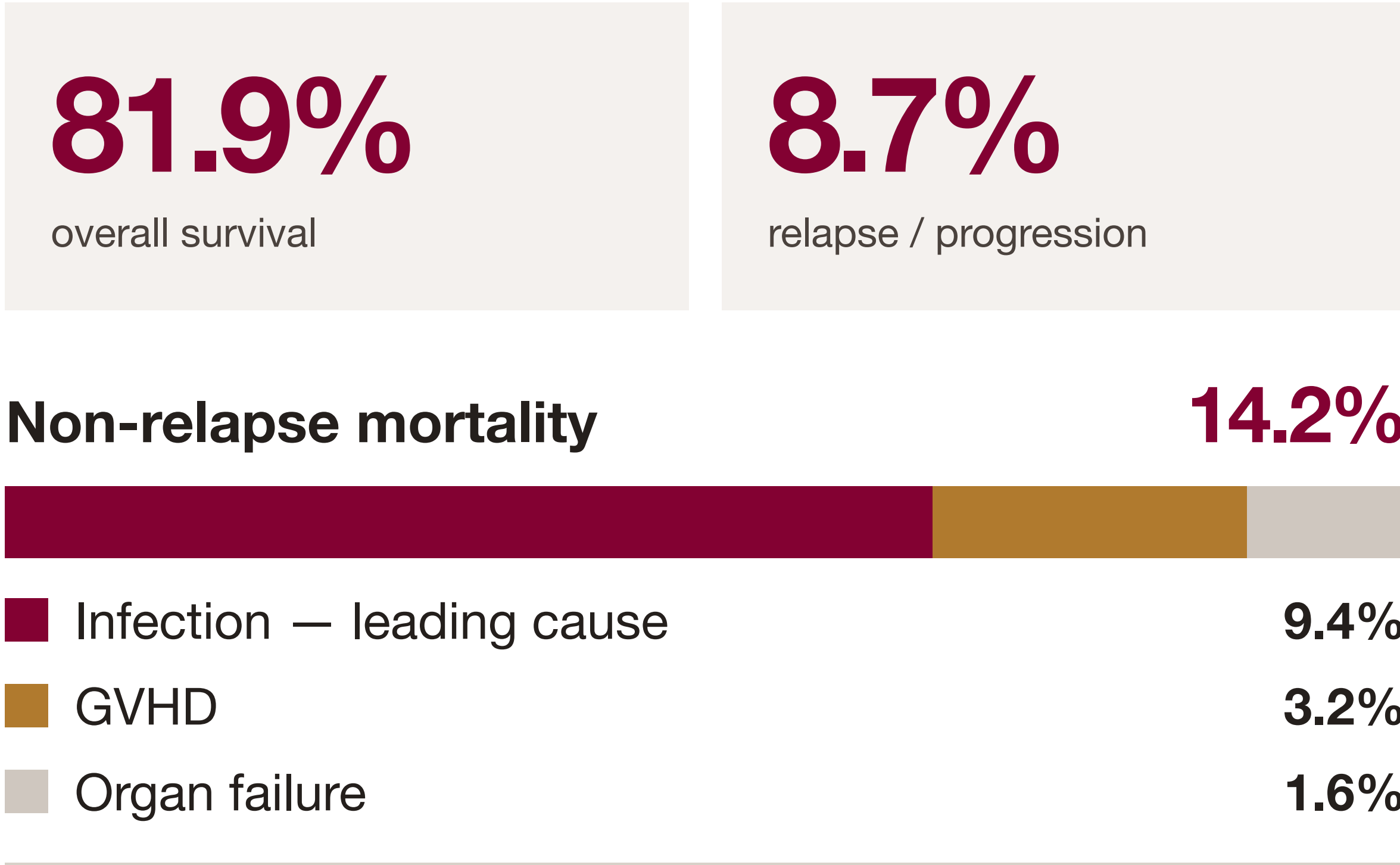
Primary.

Antibiotic escalation within 30 days post-transplant, defined as addition or switch to a broader-spectrum regimen following initiation of empiric therapy for febrile neutropenia.

Secondary.

Fever characteristics, microbiological findings, resistance patterns, and survival outcomes.

Outcomes at Day 100



Acute GVHD occurred in 26.6% of patients (Grade III–IV: 9.2%).

Conclusions

Antibiotic escalation is highly prevalent following ATG/PTCy-based haplo-SCT, driven by MDR organisms. Infections represent the leading cause of NRM, highlighting an urgent need for early targeted protocols and MDR surveillance programs.