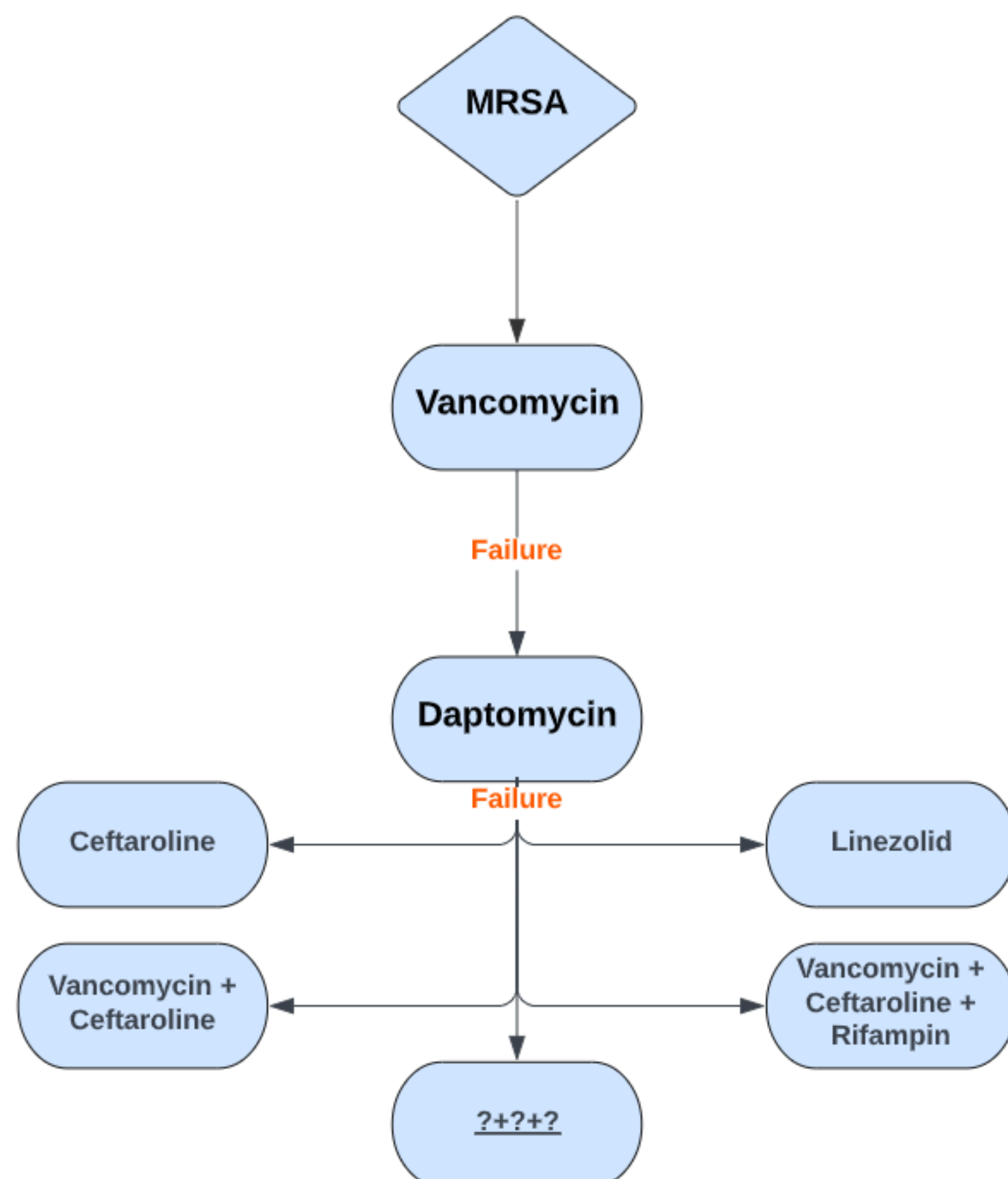


Introduction

- MRSA is the most common cause of hospital-acquired sepsis and is associated with high rates of mortality.¹
- Current IDSA guidelines recommend vancomycin and daptomycin as first and second-line therapy for MRSA.²
- However, beyond that, there is no clear consensus on what salvage therapy is when vancomycin or daptomycin fails or is contraindicated.²
- MRSA is considered non-susceptible to vancomycin when MIC > 2 or when bacteremia persists after 3 days of treatment.³
- Vancomycin can also cause side effects such as nephrotoxicity and red man syndrome, while daptomycin can cause myopathy and is contraindicated in pneumonias.⁴
- Salvage therapies include mono or combination therapies of drugs such as ceftaroline or linezolid.⁵

Aims and Objectives

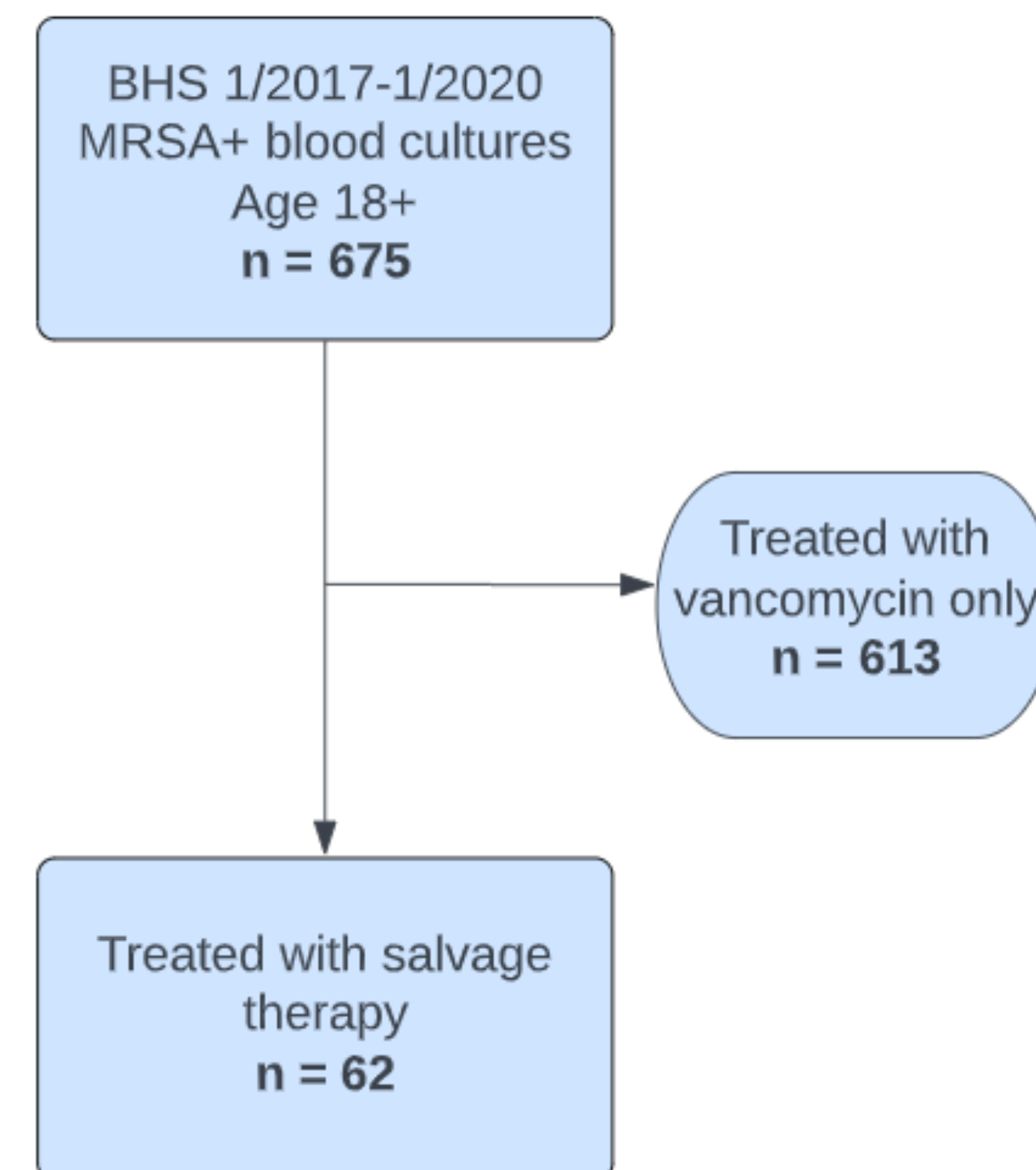
- The goal of this study is to showcase the salvage therapies of choice for patients with MRSA bacteremia at Beaumont Health System.
- We anticipate usage of multiple different regimens for patients with MRSA bacteremia depending on the clinical situation.



Methods

- This was a retrospective chart review of Beaumont Health System using EPIC.
- Data was de-identified and extracted from EPIC and was analyzed on the SharePoint database.
- All Beaumont hospitals in Michigan were included to be as representative of the general population in Michigan as possible.
- Only patients in the inpatient setting were considered to exclude non-septic MRSA patients such as cellulitis.
- 3 pre-COVID years were chosen as our timeframe to avoid any confounding factors.
- Only adults were included, as children have other factors, such as toxicities, to consider when choosing medications.

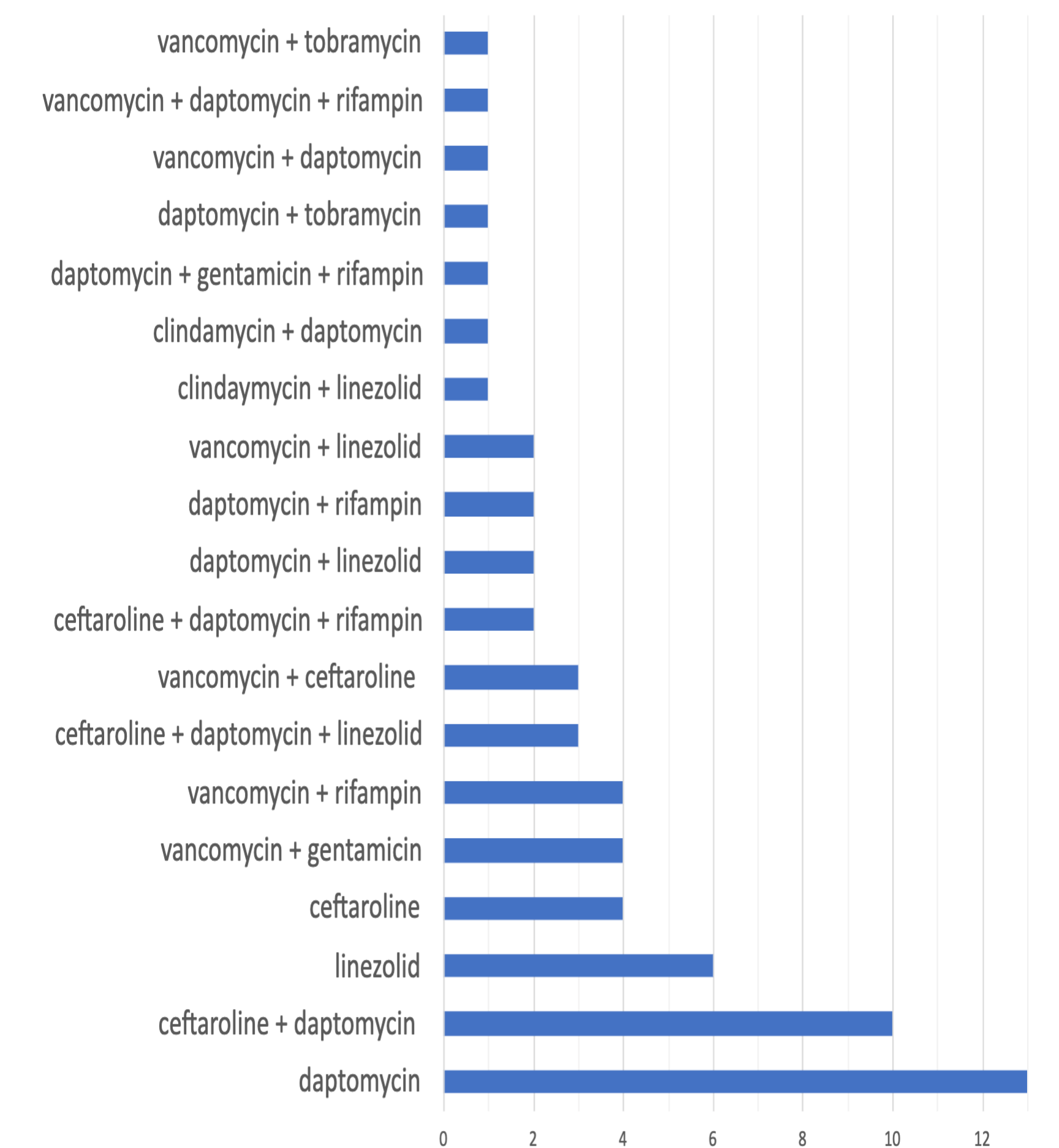
Inclusion and Exclusion Criteria



- Other variables of interest that were collected were MIC to MRSA and infectious disease (ID) consult notes to identify reason for switching from vancomycin.

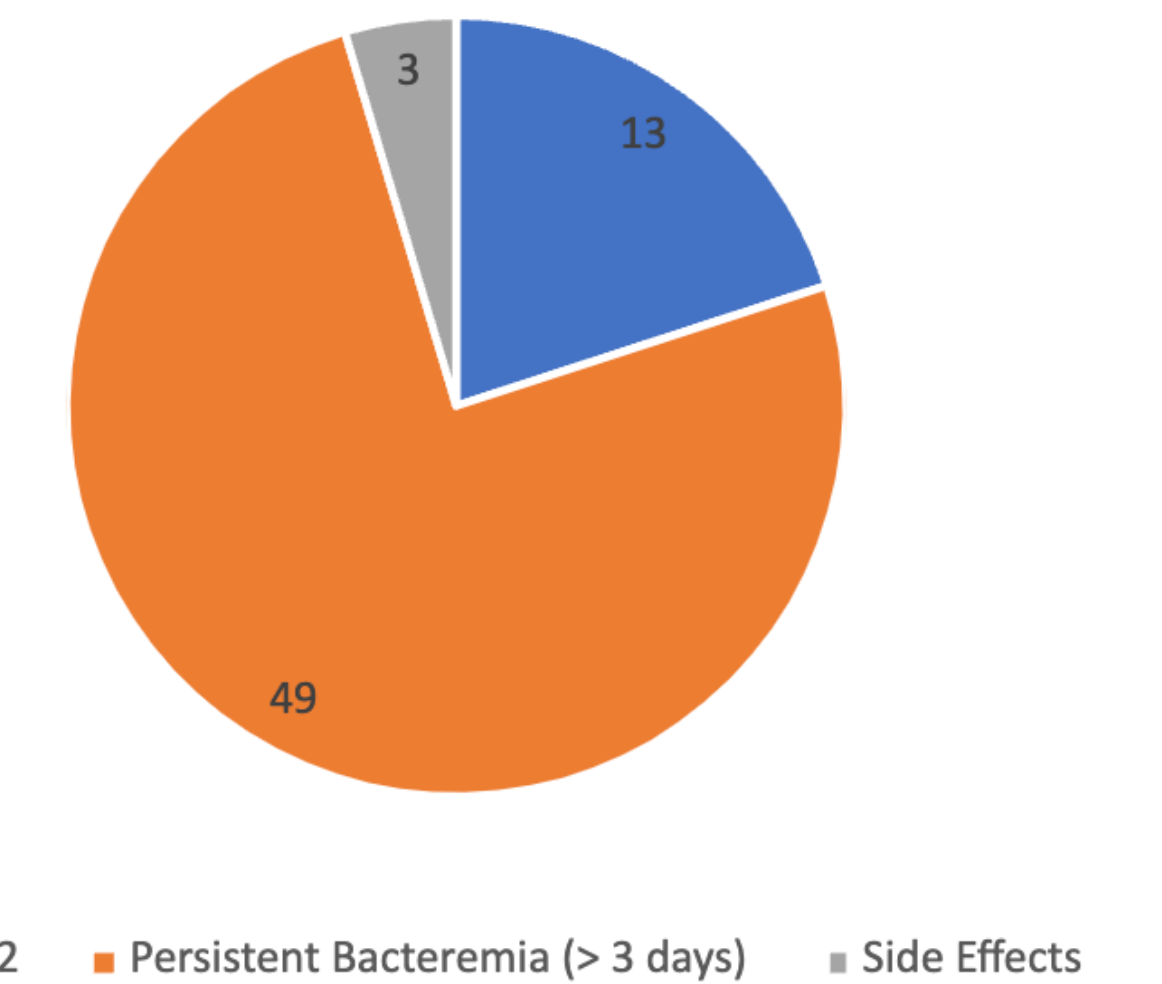
Results

- From the 62 enrolled patients, there were 19 unique variations of MRSA bacteremia therapy after vancomycin failure.
- Daptomycin was the most commonly used drug at 13 times, while ceftaroline and daptomycin were used as a combination 10 times.
- Other medications were used in a variety of single, double, and triple combination therapies anywhere from 1 to 6 times.



Graph 1: Number of times each regimen was used for MRSA bacteremia

- Per ID notes, the most common reason for switching from vancomycin is persistent bacteremia, defined as positive blood cultures 3 days after 1st line therapy.
- After that, salvage therapy was utilized when MIC to MRSA was greater than 2.
- Side effects were also a cause, which included pancytopenia and AKI.



Graph 2: Reasons for switching to salvage therapy

Conclusions

- With 19 different therapeutic regimens utilized for 62 patients, it is clear that there is no consensus on salvage therapy for MRSA bacteremia at Beaumont Health System.
- Further research on patient outcomes associated with each drug could help unify and guide physicians to effectively treat MRSA bacteremia.
- More studies can expand on this data to include other hospitals all over the country and better represent the population.

References

1. Lowy FD. Staphylococcus aureus infections. N Engl J Med. 1998;339(8):520-532. doi:10.1056/NEJM199808203390806
2. Liu C, Bayer A, Cosgrove SE, et al. Clinical practice guidelines by the Infectious Diseases Society of America for the treatment of methicillin-resistant Staphylococcus aureus infections in adults and children. Clin Infect Dis. 2011;52(3). doi:10.1093/cid/ciq146
3. Lodise TP, Graves J, Evans A, et al. Relationship between vancomycin MIC and failure among patients with methicillin-resistant Staphylococcus aureus bacteremia treated with vancomycin. Antimicrob Agents Chemother. 2008;52(9):3315-3320. doi:10.1128/AAC.00113-08
4. Deresinski S. Vancomycin in Combination with Other Antibiotics for the Treatment of Serious Methicillin-Resistant Staphylococcus aureus Infections. Clin Infect Dis. 2009;49(7):1072-1079. doi:10.1086/605572
5. Kullar R, Sakoulas G, Deresinski S, Van Hal SJ. When sepsis persists: A review of MRSA bacteraemia salvage therapy. J Antimicrob Chemother. 2016;71(3):576-586. doi:10.1093/jac/dkv368