

# Staphylococcus aureus Prophylaxis in Cystic Fibrosis Infants (SAP-CF)

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## Background

- Staphylococcus aureus (S aureus):
  - Often the first pathogen to colonize the respiratory tract of patients with Cystic Fibrosis (CF).
  - Has been implicated in the development of lung inflammation and tissue destruction.
  - 48% of Canadians with CF grew S aureus in 2010.
- North American and European CF Treatment Guidelines differ in their recommendations regarding need for prophylaxis of S aureus.
- Since the Fall of 2009, at British Columbia's Children's Hospital (BCCH), neonates diagnosed with CF have been initiated on S aureus prophylaxis for their first year of life.
  - Cloxacillin 50 mg/kg po BID (first month of life)
  - Sulfamethoxazole/trimethoprim (SMX/TMP) 40 mg/kg SMX and 8 mg/kg TMP po BID
- SMX/TMP was chosen due to its spectrum of activity and relative ease of administration.
- Currently no studies evaluating the use of SMX/TMP for prevention of S aureus acquisition.
- The purpose of this study is to describe the effectiveness and safety of antibiotic prophylaxis of S aureus in infants with CF.

## Outcomes

### Primary:

- Number of infants who develop positive cultures for S aureus

### Secondary:

- Types of bacteria grown
- Presence of antibiotic resistance
- Number of hospitalizations for pulmonary exacerbations
- Adverse events

## Methods

- Retrospective review
- Institutional Research Ethics Board Approved
- Population:
  - Neonates diagnosed with CF between November 2009 and June 2012 and received care from the BCCH CF Clinic.
- Statistical Analysis:
  - Descriptive statistics

## Results

Sex: Male (%)	6 (46)
Ethnicity (%)	
Caucasian	12 (92)
South Asian	1 (8)
Genotype delta F508 (%)	
δδ	6 (46)
δ	7 (54)
Age at initiation of S aureus prophylaxis, days (median (range))	36 (16 - 93)
Number of infants who received cloxacillin	5
Duration of antibiotics, months (median (range))	1 (0 - 5)
Number of infants who received SMX/TMP	13
Duration of antibiotics, months (median (range))	11 (2.5 - 12)
Total duration of antibiotic prophylaxis, months (median (range))	12 (2.5 - 12)
Time to positive S aureus culture, days (median (range))	256 (-14 - 358)
Number of cultures per infant (median (range))	14 (9 - 28)
Number of positive cultures per infant (median (range))	3 (0 - 19)
Number of unique organisms per infant (median (range))	2 (0 - 8)

Figure 1: Cultures in the 1<sup>st</sup> year of life (N=13)

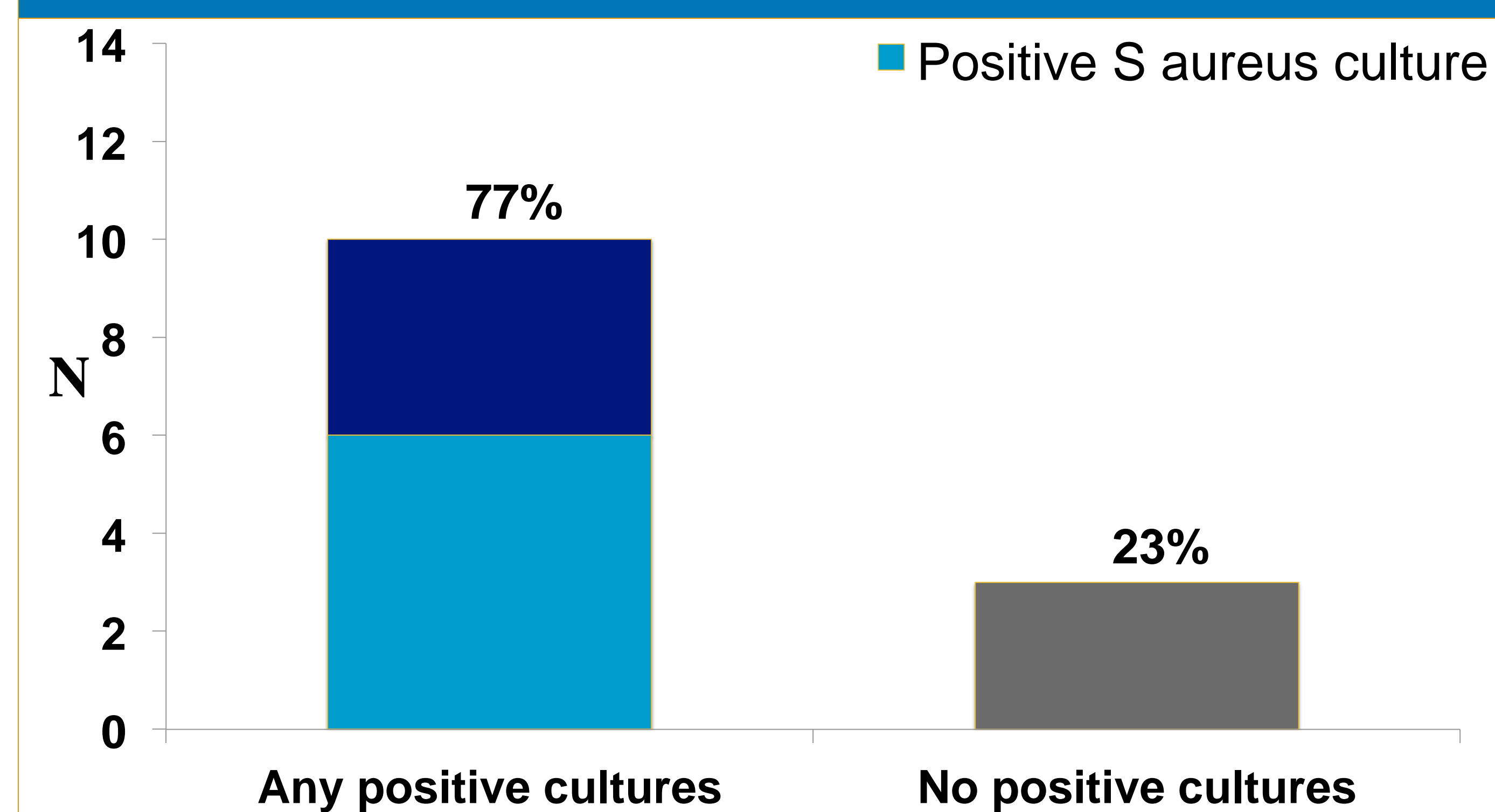


Figure 2: Prevalence and resistance rates of bacterial isolates cultured in the first year of life (n=107 isolates)

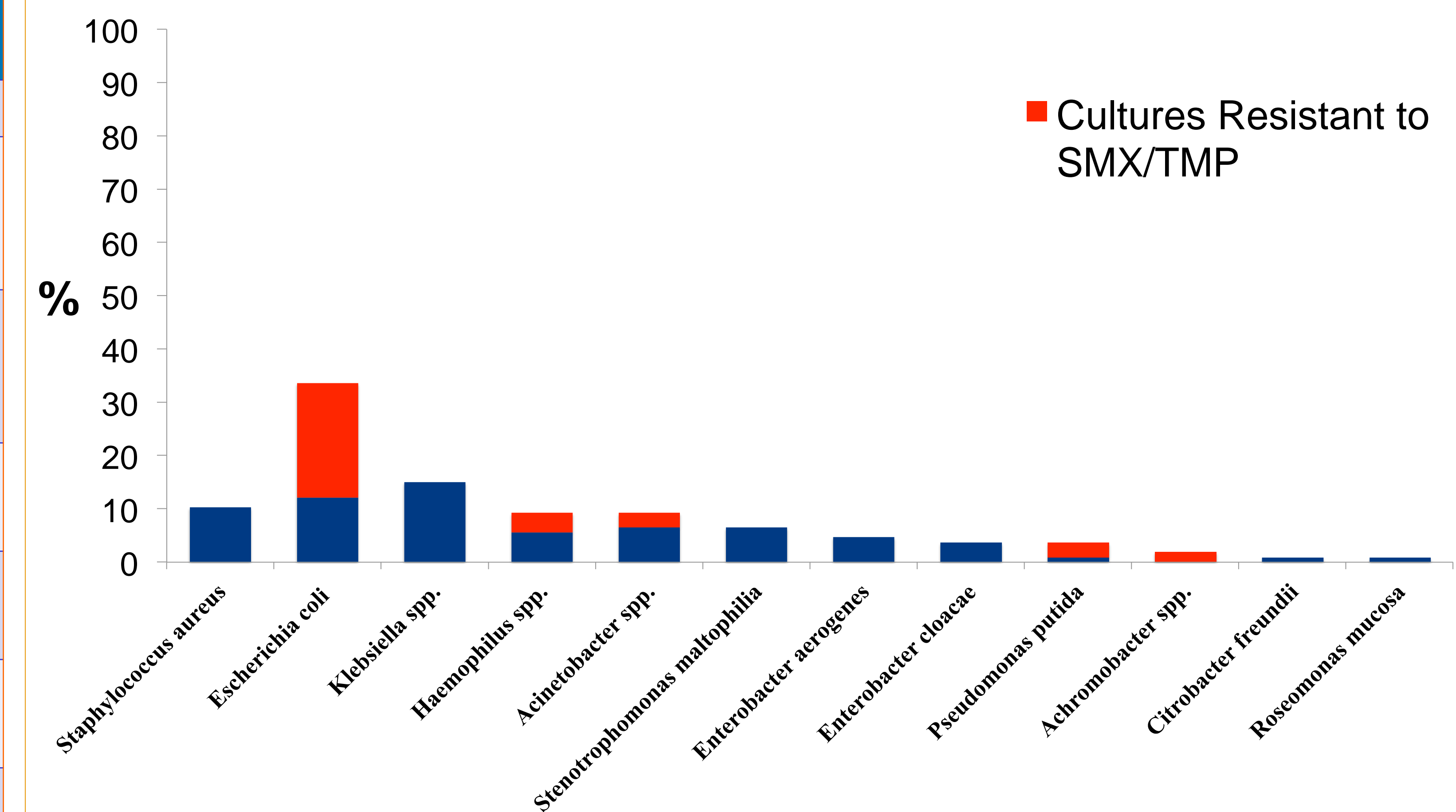


Table 2: Adverse events

Events	Antibiotic	Frequency N=13	Discontinued Antibiotic
Elevated ALT/AST	SMX/TMP	8	1
Candidal dermatitis	SMX/TMP	1	0
Rash	SMX/TMP	1	0
Severe vomiting	cloxacillin	1	1
Hospitalizations for pulmonary exacerbations	SMX/TMP	3	0

## Conclusion

- The effectiveness and safety of S aureus prophylaxis in the first year of life is questionable.
- Further investigations:
  - To conduct a prospective trial to determine the rates of S aureus infection, resistance patterns, and adverse events in CF infants who do not receive antibiotic prophylaxis.
- To disseminate findings:
  - Share the results of this retrospective review with the CF team and publish results.

