

# Reducing Inpatient Antimicrobial Treatment Duration for Febrile Infants through Implementation of Rapid Diagnostic Testing and Clinical Risk Definition

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## Background

- The management approach to febrile infants remain challenging. Despite new advances in rapid diagnostic testing, febrile infants with a viral infection could receive prolonged antimicrobial treatment due to concerns for co-existing serious bacterial infection (SBI).
- We sought to decrease the duration of antibiotic treatment in febrile infants less than 8 weeks of age hospitalized on inpatient infectious disease service following sepsis evaluation, who have enterovirus, parechovirus, or respiratory viruses detected, from average 29.4 hours to 24 hours and sustain for six months.

## Methods

- A new management guideline that defined “low-risk” infants, as well as inclusion and exclusion criteria, was created and steps were taken to accurately determine the duration of parenteral antibiotic treatment and length of hospitalization.
- Respiratory viruses were detected by a multiplex PCR assay (Biofire). In-house PCRs for HSV, parecho- and enteroviruses for superficial sites and meningitis encephalitis infection array (Biofire) for CSF were used.
- We created a QlikSense App for further clinical characterization of patients and follow-up. This management guideline was adapted as a quality improvement division initiative. Control charts were used to assess the impact of the interventions.

### Febrile Infant Antimicrobial Treatment

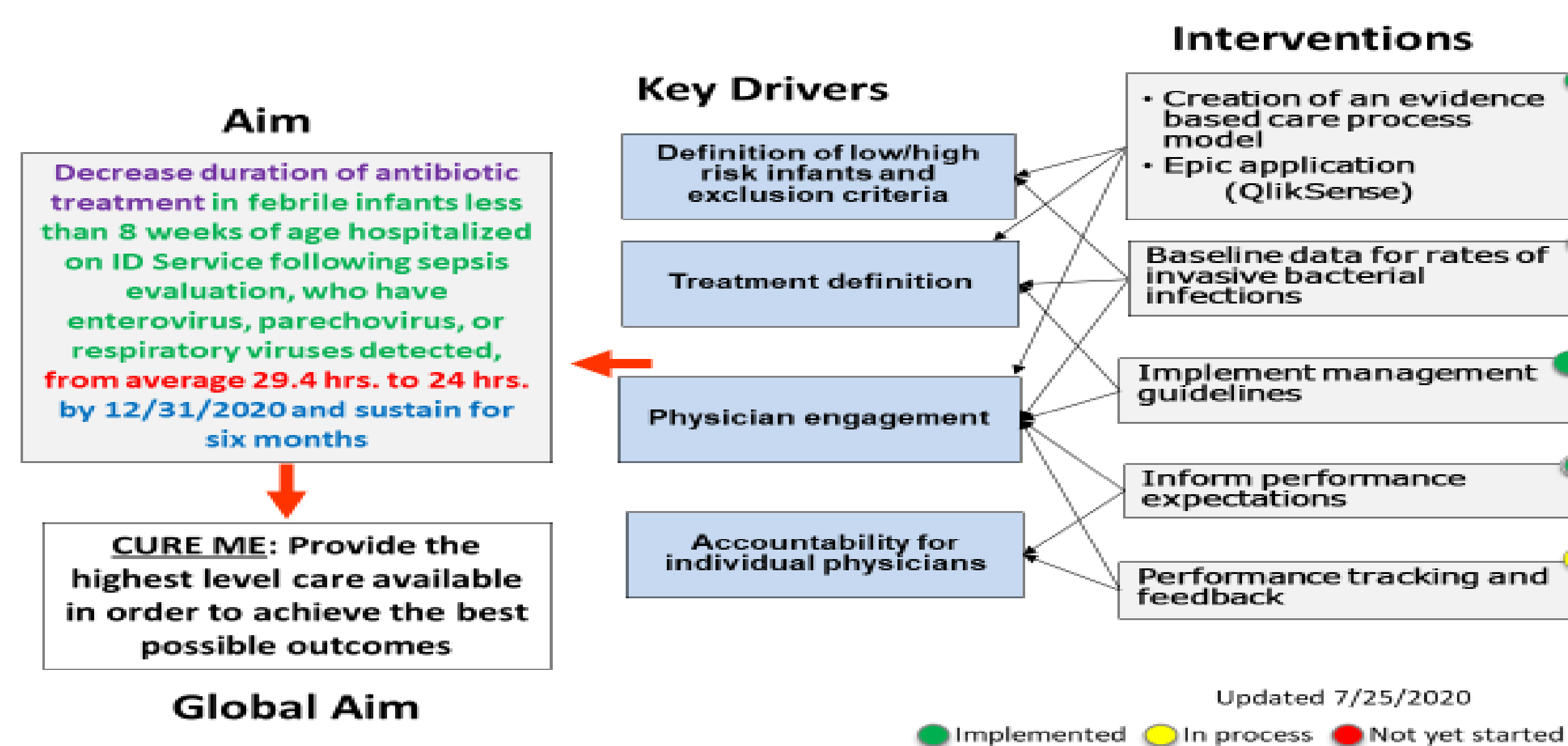


Figure 1. Key driver diagram

Febrile infants < 8 weeks of age were included if they had both documented viral infections and sepsis evaluation.

## Results

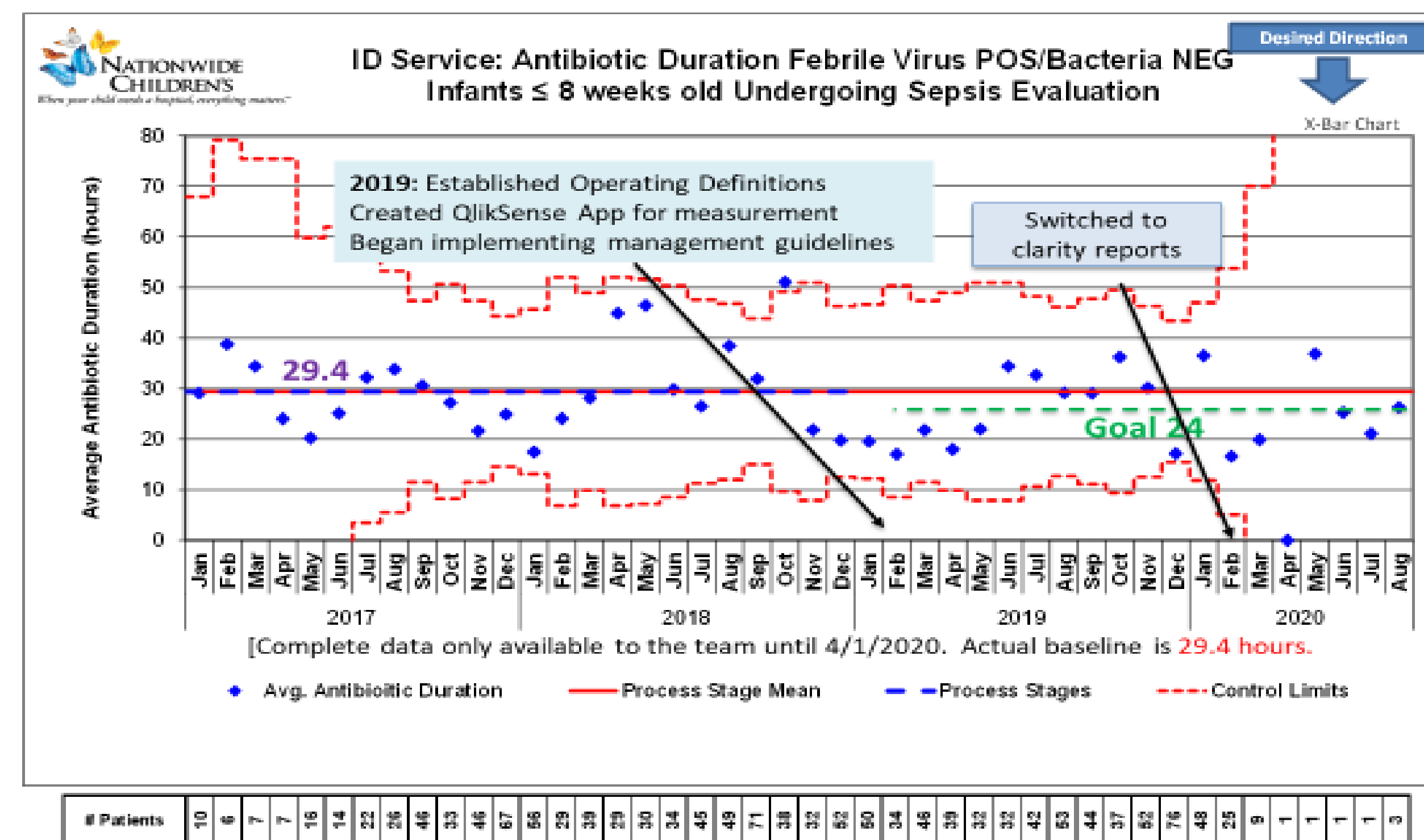


Figure 2. Antibiotic duration in febrile infants with viral infections

- The created QlikSense App was replaced with Clarity Database after observing problems with real time data review.
- 178 infants were admitted with fevers in 2018 and 148 infants were admitted in 2019.
- Admissions of febrile infants with viral infections decreased in 2020 as a result of the COVID-19 pandemic.
- The mean inpatient antibiotic treatment duration decreased to 24.9 hours in 2019 (Figure 2).

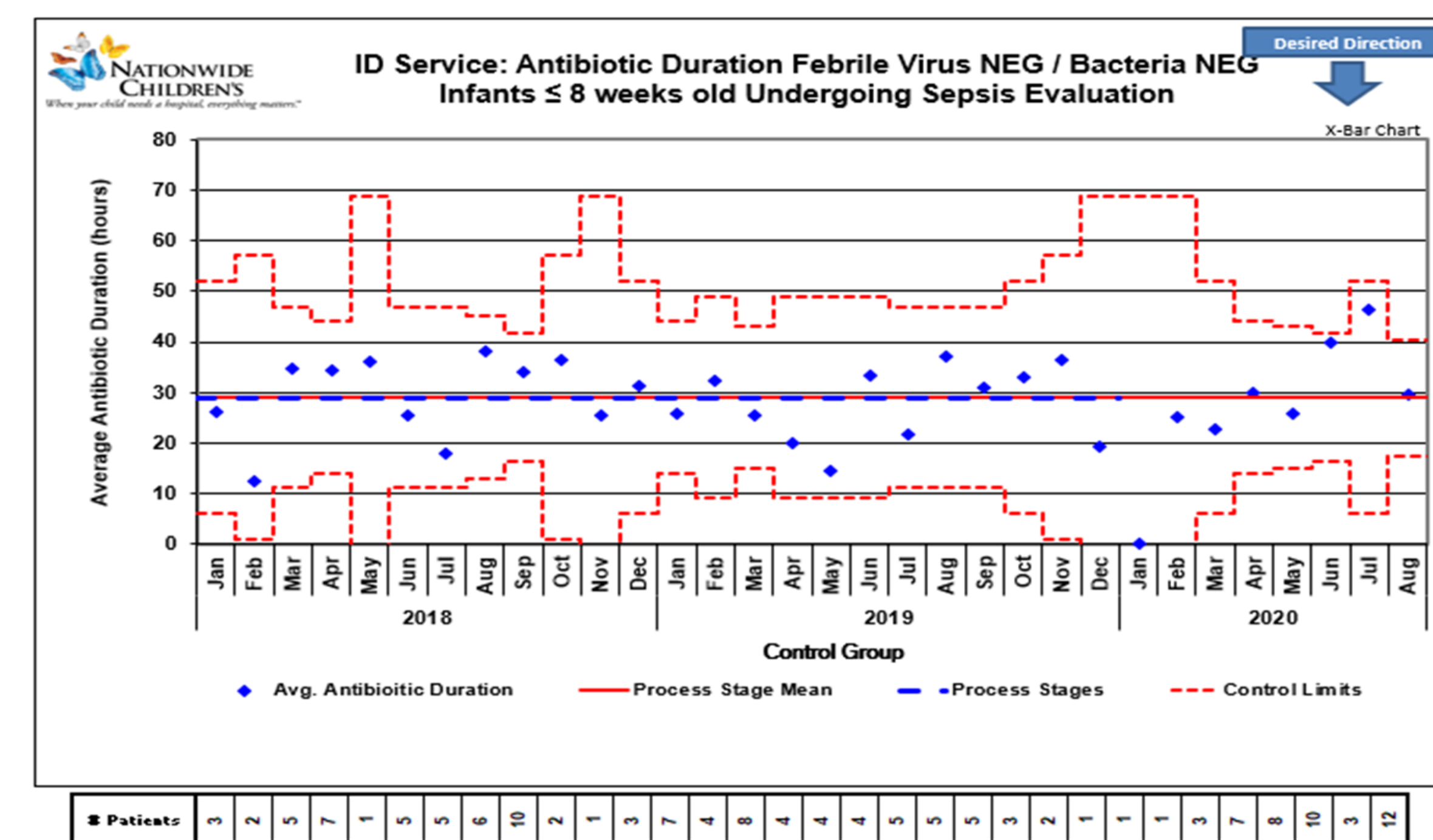


Figure 3. Antibiotic duration in febrile infants without viral infections

## Results

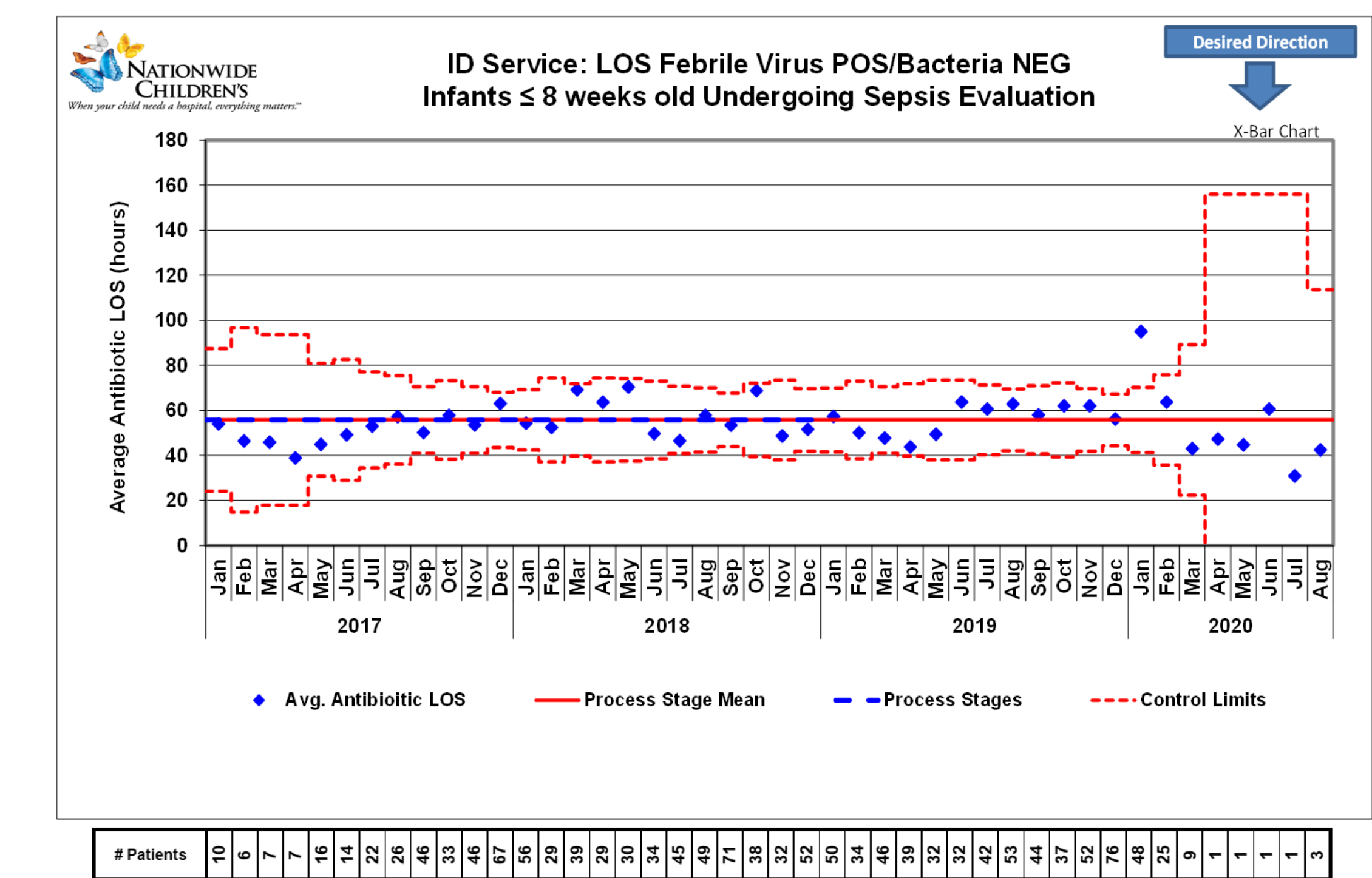


Figure 4. Length of stay in febrile infants with viral infections

- There were no significant difference in length of hospitalization or 30-day readmission rates (Figure 3 and 4). There was no reported readmission for SBI.

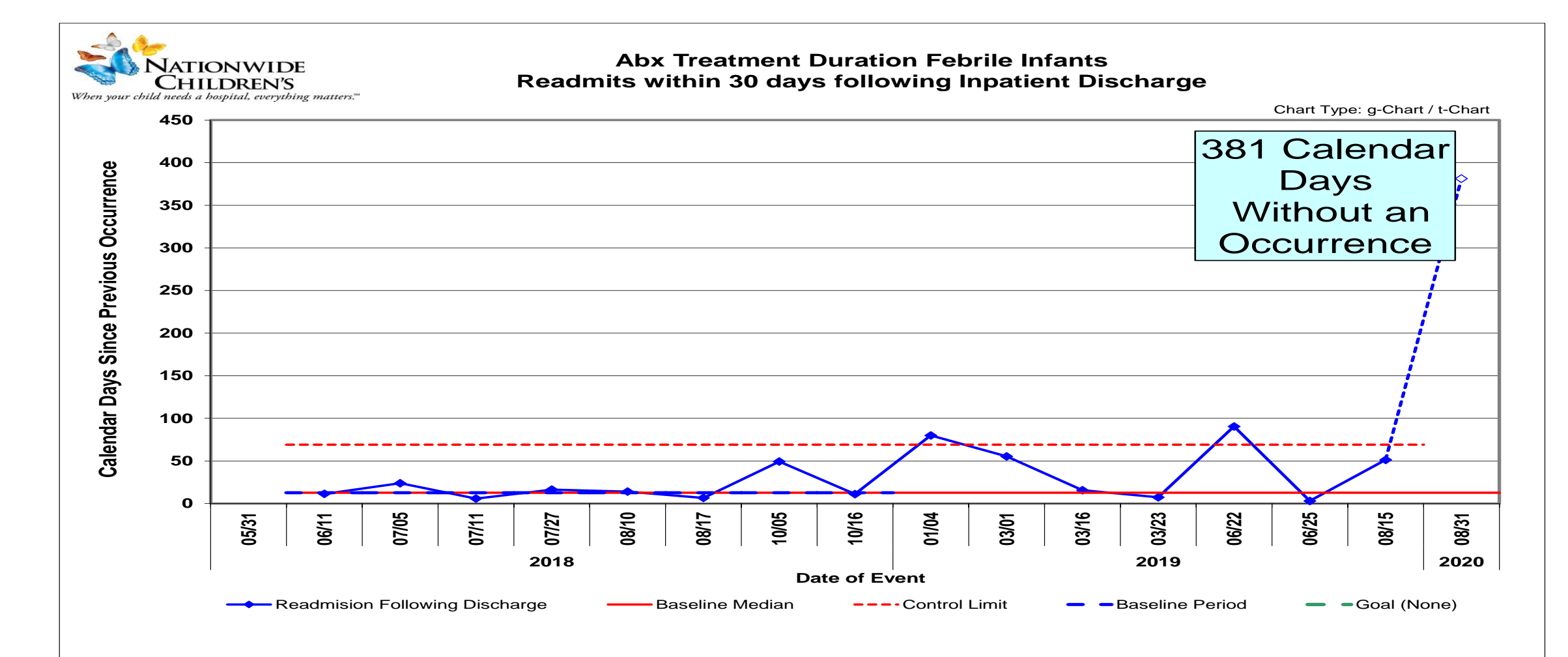


Figure 5. 30-day readmission rates

## Conclusions

- Antibiotic treatment can safely be discontinued in clinically stable infants with a documented viral infection after 24 hours of negative blood, CSF, and urine bacterial cultures so as not to subject them to unnecessary prolonged inpatient treatment that could increase side effects.
- Decreased treatment side effects and treatment costs were additional possible improvements.