



Improving Antibiotic Timing in Febrile Neutropenia for Pediatric Oncology

Patients with a Central Line

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Introduction

- Pediatric oncology patients are at a high risk for infection related complications due to their immunocompromised state.¹
- Febrile neutropenia is a complication that occurs in up to 30% of pediatric patients undergoing cancer treatment.¹
- Neutropenia limits inflammation within the body and obscures traditional signs and symptoms of infection.²
- The Children's Oncology Group recommends rapid antibiotic administration in febrile neutropenia to improve outcomes and reduce complications for pediatric cancer patients.^{3,4}
- Improper order placement for febrile neutropenia admissions at UISFCH led to delayed antibiotic administration.

Purpose

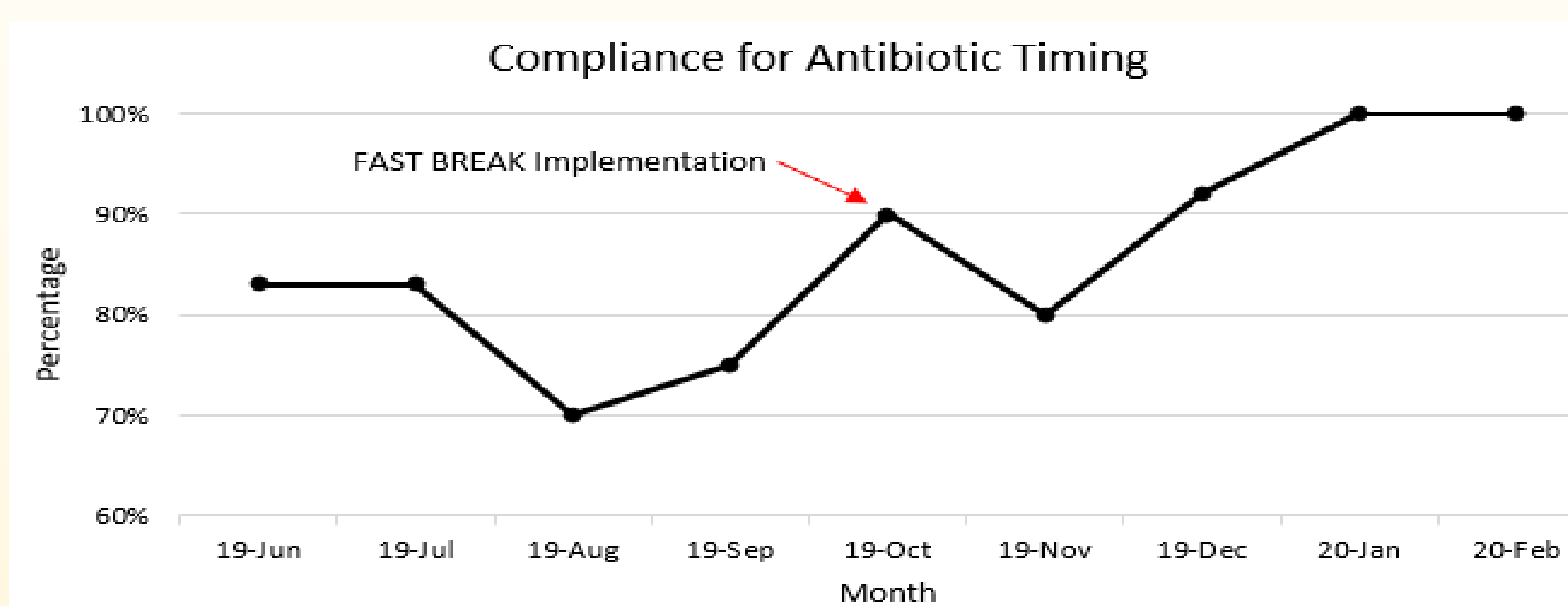
- **Purpose:** Reduce the time from admission to antibiotic administration in pediatric oncology patients presenting with febrile neutropenia in the presence of a central line.
- **Objective 1:** Antibiotic administration will occur within sixty minutes from admission in > 90% of patients presenting with febrile neutropenia in the presence of a central line within three months from implementation of the FAST BREAK order set.
- **Objective 2:** Admitting providers will use the FAST BREAK order set for all applicable fever admissions in pediatric oncology patients at risk for neutropenia within two months from implementation.
- **Objective 3:** A 50% cost reduction in the amount of cefepime wasted per month will be observed within three months from implementation of the FAST BREAK order set.

Methods

- Project was deemed not human subjects research
- **Setting:** Pediatric Cancer Center Inpatient Unit at the UISFCH
- **Population:** Pediatric oncology patients with a central line
- Established, in collaboration with the medical director and nurse manager, orders to be included within the FAST BREAK order set
- Approval of FAST BREAK order set by divisional Standard of Practice Committee, Children's and Hospital-wide Pharmacy and Therapeutics Committee, and EPIC Clinical Support Team
- Met with Informatics Specialist from EPIC Clinical Support Team to finalize order set in the electronic medical record
- Created a guideline titled "Caring for Patients with Fever and Neutropenia in the Pediatric Cancer Center"
- Educated inpatient unit staff at in-services including nurses, residents, fellows, staff physicians, and nurse practitioners
- Collected data to address each objective through manual chart audits and compiled data into spreadsheets
- No funding was required and resources were available on the unit

Outcomes

Compliance (%) of administering antibiotic within sixty minutes from admission from June 2019 – February 2020:

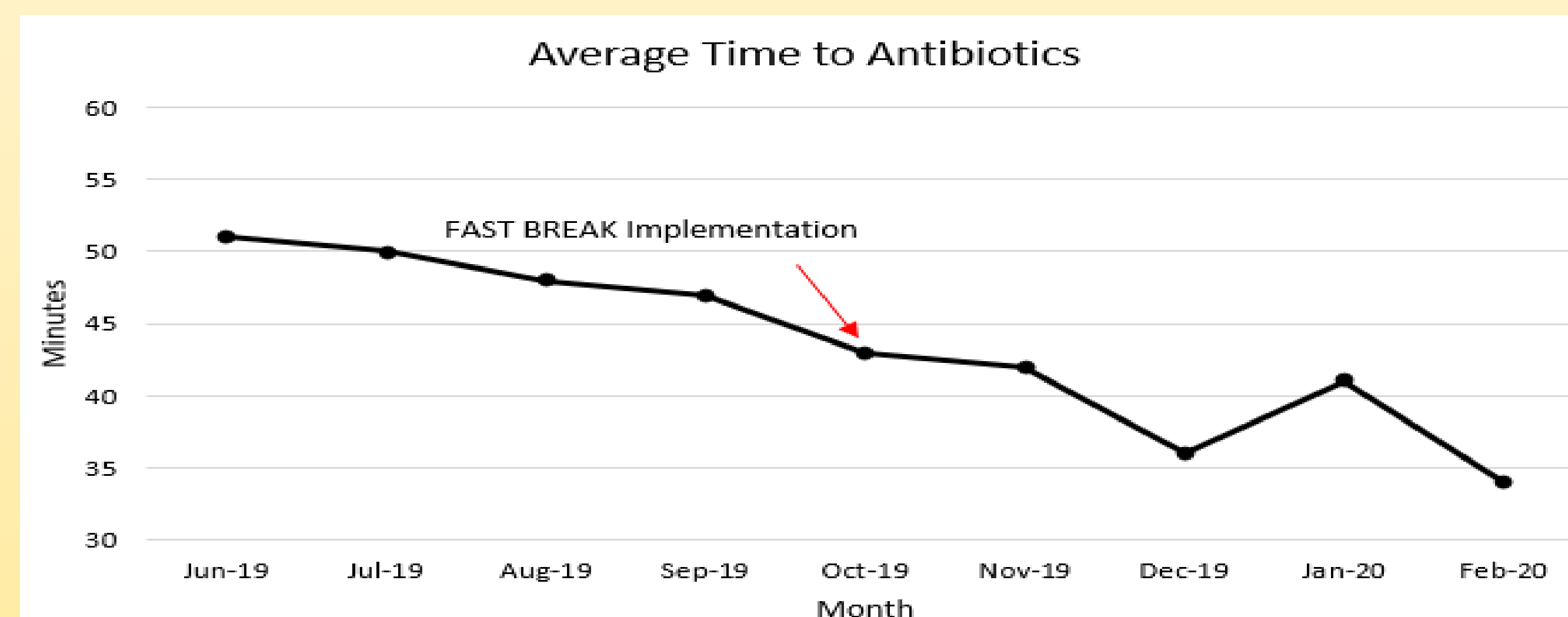


Provider compliance of using FAST BREAK order set when applicable:

- October 2019 – February 2020 = 100%

Cefepime waste per month reduced by 97% with only one dose wasted out of sixty-one inpatient admissions

Average time in minutes from admission to antibiotic administration per month from June 2019 – February 2020:



Evaluation

- **Outcome objective 1:** Following implementation of the FAST BREAK order set, antibiotics were administered within sixty minutes for 90% of admissions in October, 80% in November, 92% in December, 100% in January, and 100% in February.
- **Outcome objective 2:** Ordering providers used the FAST BREAK order set in 100% of applicable admissions since implementation.
- **Outcome objective 3:** Cefepime waste reduced by 97% as FAST BREAK places a one-time dose instead of every eight hours.
- Average time from admission to antibiotic administration decreased from forty-eight minutes pre-implementation to thirty-nine minutes post-implementation.
- FAST BREAK Fever and Neutropenia Admission order set is now standard of care on the Pediatric Cancer Center Inpatient Unit.
- Post-implementation staff surveys indicated satisfaction with the ease of using the FAST BREAK order set and a positive impact on workflow and antibiotic timing.

Conclusions

- The FAST BREAK Fever and Neutropenia Admission order set decreased the time from admission to antibiotic administration.
- Of sixty-one pediatric oncology patients admitted with fever since implementation of FAST BREAK, fifty-six patients received antibiotics within one hour resulting in a 92% compliance rate.
- The FAST BREAK order set improved workflow, eliminated variability in order placement, and standardized lab, blood culture, and antibiotic orders for this patient population.
- Barriers to prompt antibiotic administration such as improper or delayed order placement and pharmacy delays were eliminated.
- Greater awareness about expected care for febrile neutropenia in pediatric oncology patients exists among staff.
- The FAST BREAK order set is sustainable long-term as it is now considered standard of care for all fever admissions.
- Results of this project will be disseminated through the submission of an article for publication in the Journal of Pediatric Oncology Nursing and an abstract for the Nursing Recognition Day Poster event at the University of Iowa Hospitals and Clinics.

References

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