

# Reducing Time To Antibiotics in Children with Possible Febrile Neutropenia

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### Purpose Febrile neutropenia (FN) is a potentially life-

threatening complication of immunocompromising chemotherapy in children with cancer. It is widely accepted

that prompt antibiotic administration reduces morbidity and mortality associated with this condition and time to antibiotic

#### **Clinical Problem**

(TTA) administration is used as a quality

benchmark by many institutions.

Oncology patients with fever are at significant risk for increased morbidity and mortality (1,2)

Prompt administration of antibiotics suggests a reduction in ICU admission and mortality (3,4)

There is increased emphasis on improving TTA of antibiotics as a quality measure (5); with a goal time < 60 minutes.

## **Background**

2011: Pathway & order-set initiated Average TTA: 115 → 59.9 minutes

% less than 60 minutes: 46

2014:

< 60 minutes

Average TTA: 66.6 minutes % less than 60 minutes: 60.2

#### Goals of Initiative:

Decrease mean TTA to 54 minutes (10% improvement)

80% of eligible patients with TTA



- Audit and feedback Weekly quality rounds

### Population:

Inclusion: Pediatric Oncology Patients < 19 years old with fever, reported or measured in the Pediatric ED (>38.3C once or >38C x 2 in 24 hours) Exclusion: Pediatric Oncology patients receiving antibiotics at an outside facility



**Results: TTA** Pre: 66 (66-73) Post: 46 (38-53) Maint: 47 (43-50)

## **Implications for Emergency Nursing Practice**

- Interdisciplinary collaboration (pharmacy, nursing, PEM physicians, oncology team, and quality team) on quality initiatives, such as this, helps minimize morbidity and mortality.
- Evidenced based pathways and delegated order-sets helps with emergency nursing autonomy and efficiency, but in this vulnerable population it is key to continually assess and re-assess for signs of septic shock, dehydration, and/or respiratorydistress.
- Continuous family education on the importance of CLABSI prevention and TTA and seeking emergent care when neutropenic is key.

#### Discussion/Conclusion

- PDSA cycles may be used effectively to decrease TTA to < 60 minutes for the large majority of patients with possible febrile neutropenia. We successfully decreased TTA to 46.5 minutes from 66 minutes and increased the overall percentage of patients receiving antibiotics in <60 minutes.
- Layers of redundancy help achieve and maintain success—maintained our gains in TTA and % receiving antibiotics in <60 minutes; consistency of pre-ordering is varied and about 40% Limitations: QI initiative at a single center, academic medical center, where
- referral calls of in-coming patients is routine practice.
- **Next Steps:** Pediatric oncology patients with an indwelling central line are at increased risk for sepsis and central-line associated infections (CLABSI) and the risk increases with neutropenia. To help ensure a standard, evidenced based approach is being followed within our TTA time frame, our hospital developed a K-card based upon the hospital CLABSI Bundle. The K-card is done by a second nurse during every central-line or port-a-catheter access.

#### References

- 1. Hann I, et al. A comparison of outcome from febrile neutropenic episodes in children compared with adults: Results from four eortc studies. International antimicrobial therapy cooperative group (jatcg) of the European organization for research and treatment of cancer (eortc) Br J Haematol. 1997;99:580-588 2. Klastersky J, Ameye L, Maertens J, et al. Bacteraemia in febrile neutropenic cancer patients, Int J Antimicrob Agents, 2007, vol. 30 Suppl 1(pg. S51-9)
  - 3. Fletcher M, Hodgkiss H, Zhang S, Browning R, Hadden C, Hoffman T, Winick N, McCavit TL. Prompt administration of antibiotics is associated with improved outcomes in febrile neutropenia in children with cancer
  - Pediat Blood Cancer, 2013:60:1299-1306 4. Salstrom JL, Coughlin RL, Pool K, et al. Pediatric patients who receive antibiotics for fever and neutropenia in
- less than 60 min have decreased intensive care needs. Pediatric Blood & Cancer. 2015;62(5):807-815. doi:10.1002/pbc.25435. 5. McCavit TL, Winick N. Time-to-antibiotic administration as a quality of care measure in children with febrile
  - neutropenia: A survey of pediatric oncology centers, Pediatr Blood Cancer,