Improving Pediatric Sepsis Outcomes: Reducing Time to First Appropriate Antibiotic in Cases of Non-Severe Sepsis

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Methodology

Improvement Science
- The IPSO Antibiotic Workgroup used the Model for Improvement and rapid plan-do-study-act (PDSA) cycles
- Key drivers were used to determine a plan of action and prioritize the testing of the multiple PDSA cycles
- The care team made up of ordering physician, bedside nurse, and pediatric pharmacist was the target of intervention

Tests of Change

Rationale
- Three areas for improvement were identified:
  - Provider education
  - Nursing workflow
  - Care team communication

Change Ideas
- Sepsis Awareness Month – September 2018
- Sepsis Morning Report – January and February 2019
- Pediatric Sepsis Checklist Cycle #1 – March 2019
- Pediatric Sepsis Checklist Cycle #2 – May 2019
- CHIPS monthly email reminder – June 2019

Quantifiable Results

Figure 2. Control chart of average time from antibiotic order to administration in pediatric cases of NSS at LCH. Annotations are included to highlight various tests of change. Data are provided from baseline Fall 2018 and updated Spring 2019.

Figure 3. Run chart of percentage of antibiotics given within 60 minutes in pediatric cases of NSS at LCH. Data are provided from October 2018 and April 2019 for reference.

Conclusions

- It is possible to decrease the average time to the first appropriate antibiotic in pediatric cases of NSS
- There was an early reduction in time to first appropriate antibiotic near the goal of 60 minutes in Fall 2018
- The time has increased and been more variable since then with a current average of 95 minutes
- Implementing changes across a multidisciplinary care team of providers and staff has proven difficult
- There are multiple pitfalls in the sepsis workflow that make it difficult to sustain timely administration

Future Plans

Next Steps
- Evaluate the effectiveness of the Pediatric Sepsis Checklist and the CHIPS reminder email
- Review antibiotic data and care team feedback 1-3 months after implementation

Potential Changes
- Create automatic alerts in Cerner to notify nurses and providers at the 30-minute mark if a STAT antibiotic for suspected sepsis has not been administered
- Post the Sepsis reminder in the CHIPS and physician workrooms as a real-time reference

Future Directions
- Rearrange the Pharmacy priority list as it relates to STAT antibiotic orders for suspected sepsis
- Increase the care team’s sense of urgency when it comes to the initial management of septic patients

References