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Assessment Strategy for Implementation of Evidence-Based Protocol for Antibiotics in Appendicitis

Alexa Golden, Alia Aunchman MD, Gary An MD
Background—Implementation Science

- Evidence-based protocols (EBP) exist to guide clinicians in decision-making.
- EBP implementation is often delayed or not optimum [1].
- Taking on average 17 years to be incorporated into routine general practice in health care [2].
- Only approximately half of EBP reach widespread clinical utilization [1].
- Antibiotic stewardship is heavily guided by EBP and is highly relevant to surgical practice [3].
- Antibiotic regimens for acute appendicitis, one of the most common surgical diseases, can be highly variable.
Background—Appendicitis

- Post-op antibiotics (POA) have been shown to be largely non-beneficial and potentially harmful in uncomplicated, unperforated cases of acute appendicitis [4].
- 4 days of POA has been shown to be non inferior to commonly-prescribed longer courses in complicated cases where source control is obtained [5].
- Long duration antibiotic courses have been associated with increased incidence of Clostridium difficile infection, postoperative diarrhea, and urinary tract infections and concomitant increased length of hospital stay [4].
Goal:

To evaluate antibiotic usage in patients in the acute care surgery service with acute appendicitis prior to implementation of an institutional evidence-based protocol.
Methods

- Literature review was used to develop an institutional EBP for antibiotic use in acute appendicitis (implemented January 1, 2020)
- Assessment strategy was designed characterizing historical practice patterns and development of data structure to classify patient outcomes
- 18 month pre- and post-adoption was chose for assessment
- Retrospective chart review was performed of all cases of acute appendicitis June 2018-December 2019
- Primary aim was to establish pre-implementation antibiotic use
  - Antibiotic choice
  - Duration of antibiotic treatment
Results

Total: 330

Complicated: 79
• Plan for op: 48

Uncomplicated: 251
• Plan for non-op: 31

Complicated:
• >72 hour history
• Abscess/phlegmon
• Perforation on CT
Antibiotic Duration (all complicated)

- > 7 days
- 0-4 days
- 5-7 days
Complicated (non-operative)

- Mode duration was 14 days
- >58% received antibiotics for >7 days
Complicated (op)

Antibiotic Choice (op)

- cefazolin, metronidazole
- ceftriaxone, metronidazole
- augmentin
- piperacillin-tazobactam
- complicated

Antibiotics at Discharge

- yes
- no

Post-op Antibiotic Duration

- ≤4 days
- >4 days
Conclusions

- Although the goal of EBP is improvement in patient care, this goal cannot be met without implementation of these practices
- Formal categorization of patient condition based on measurable metrics can help place them on an appropriate treatment trajectory
- Appropriate treatment trajectory is hypothesized to lead to shorter duration of antibiotic and fewer complications associated with prolonged antibiotic course
- There is room for improvement of our antibiotic prescribing practices in both complicated and uncomplicated cases of acute appendicitis
Future Direction

- Compare pre-implementation antibiotic usage to post-EBP implementation
  - Are we following protocol?
  - Are we using less antibiotic
- Design an implementation tool to support best antibiotic practice
- Investigate if there is correlation between antibiotic use and complications
References


