Hasbro Children's Hospital, Pediatric Emergency Department Evidence-Based Guidelines for Management of Abdominal Pain Concern for Appendicitis

Goals:
-To expedite care and reduce testing of patients at low risk for appendicitis
-To standardize evaluation of patients presenting with the concern of acute appendicitis

Metrics:
-Time to diagnostic study & time to patient disposition
-Percentage of negative studies
-Returns with appendicitis within 7 days

References:
Macco, S., et al. Evaluation of scoring systems in predicting acute appendicitis in children. Surgery. 2016 Dec;160(6):1599-1604.
Rothrock, S.G., et al. Acute appendicitis in children: emergency department diagnosis and management. Annals of Emergency Medicine. 2000 Jul;36(1):39-51.

Begin to Assign Pediatric Appendicitis Score(PAS)*:Triage

Laboratory Studies: CBC, IV, POCT urinalysis, HCG (pubertal females), Complete PAS

Concern for Sepsis , see Sepsis guidelines
Consult Pediatric Surgery

Potential pathway exclusion conditions:
- Prior Abdominal Surgery
- Chronic Medical Condition
- Positive Pregnancy

*PAS (Scoring range 0-10)	Points
Pain Migrating to RLQ	1
Anorexia	1
Nausea/Vomiting	1
Fever>100.4 F	1
RLQ tenderness	2
Pain with cough/percussion/hopping	2
WBC >8K	1
ANC > 7.5K	1

PAS 0-3
Low Risk/Clinical Concern

- PO challenge
- Symptomatic treatment of pain and nausea
- Reassess
- Surgical consultation or imaging not routinely required
- Consider Discharge with next day follow up ***

PAS 4-7
Indeterminate Risk/Clinical Concern

- NPO
- **Ultrasound Imaging Recommended**
- If not available consider CDU Admit with surgical consult or Next Day Ultrasound if patient meets Discharge criteria*** or develop alternative imaging plan (See IMAGING TABLE)
- IV treatment of pain and nausea
- IV fluids, NS 20 ml/kg bolus

PAS 8-10
Higher Risk/Clinical Concern

- NPO
- **Ultrasound Imaging Recommended**
- If not available develop alternative imaging plan with surgical consultation (See IMAGING TABLE)
- IV treatment of pain and nausea
- IV fluids, NS 20 ml/kg bolus

IMAGING COMPLETE

Appendix Normal

Consider discharge if meets criteria*** or pursue an alternative diagnosis +/- admission or CDU observation**

Equivocal or Appendix not seen

- Consider further imaging MRI, CT, repeat US next day
- Consult Pediatric Surgery
- Consider Admit to pediatric surgical team or CDU for serial exams and observation**

Diagnosis of Appendicitis or other surgical condition

Consult Pediatric Surgical Team
Inpatient admission**

IMAGING			
Imaging Study	**Times Available**	**Days**	**Other Info**
US Abdomen w/ Appendix	8a-5p 8a-3p	Mon-Sat Sun	Next Day ultrasound ordered as Referral in EPIC Disposition
US Pelvis Complete w/doppler (females)	All times	All days	Consider for all with concern for ovarian pathology
MRI Pelvis w/o IV contrast	All times based on MRI availability	All days	Consider in patients not requiring sedation if: Ultrasound unavailable, rad unable to visualize appendix by US, patient specific characteristics (e.g. BMI)
CT Pelvis w/ IV contrast	All times	All days	Only consider if MRI not available within 2 hours

**Admission Criteria		
Clinical Decision Unit (CDU)	Inpatient Unit	Intensive Care Unit (ICU)
No evidence of peritonitis Meets criteria for ultrasound imaging in am Does not meet any exclusion criteria (see CDU exclusion criteria) Does not meet discharge criteria***	Likely to require hospitalization > 24hrs Concern for Peritonitis Meets CDU exclusion criteria Does not require ICU level of care Does not meet Discharge criteria***	Clinical concern for sepsis (hypotension, poor perfusion, altered mental status…)

***** Discharge Criteria**
-Follow up w PMD within 24 hours arranged
-Able to tolerate clear liquids
-No social or transportation barriers to return next day or appropriate follow-up
- No insurance barriers to return for outpatient ultrasound
-Pain controlled with OTC medications

NOTE: This evidence based guideline was developed for educational purposes and for use in the Division of Pediatric Emergency Medicine at Hasbro Children's Hospital. Decisions about evaluation and treatment are the responsibility of the treating clinician and should always be tailored to the individual clinical circumstances. Developed 05/2017.

Atypical Presentations, Role of CRP, PAS Sensitivity

Atypical Presentations:

Consider imaging in patients with longer duration of illness and those in whom early scheduled follow-up cannot be assured.

CRP:

Atypical presentation could be perforated appendicitis/abscess: In those with fever, prominent vomiting, longer duration of illness, sending a CRP has been shown to be useful to identify patients with perforated appendicitis.

PAS Sensitivity with WBC 10K

PAS score < 4

Goldman reported 6% (5/83) had appendicitis.

Bachur found 6.8% (11/162) had appendicitis.