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Contents

Northwest, North Wales and Isle of Man, Abdominal pain in children best practice guidance

Executive summary

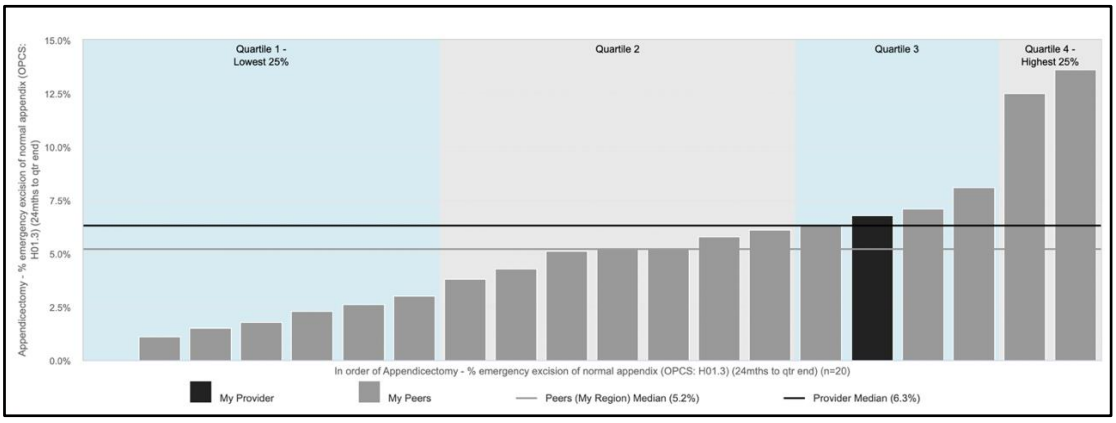
1. The Northwest of England has some of the lowest negative appendicectomy rates in the country.
2. There is significant variation within the region which is multifactorial.
3. In non-tertiary centres, general paediatricians should lead clinical decisions for children under five, and general surgeons should undertake shared care with general paediatricians with all children aged five and over.
4. Emergency abdominal surgery on children aged under 5 should only be performed in a tertiary centre unless lifesaving.
5. Appendicectomy should be performed within 24 hours of decision to operate.
6. All hospitals should have a paediatric pain guideline that is used consistently.
7. Radiology support for imaging in children is essential and further work is required to ensure timely access for all children within the region.
8. Antibiotics should be timely and consistently applied with interoperative swabbing and follow up of results.

Introduction

Appendicectomy is one of the most common operations children will undergo with around 10,000 operations performed each year.

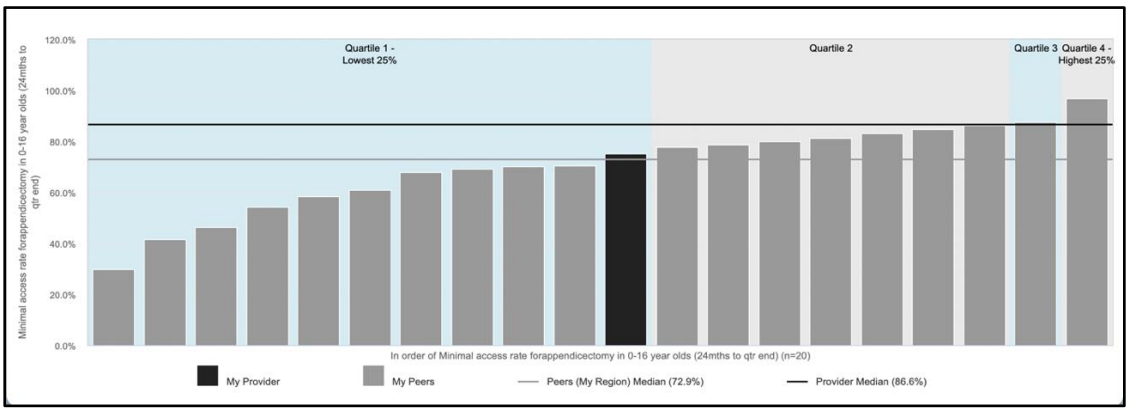
GIRFT has highlighted variations in care that children receive who present with acute abdominal pain and have recommended measures to reduce the rates of negative appendicectomy and increase the rate of minimal access surgery.

The northwest region as a whole has one of the lowest negative appendicectomy rates in the country of 4.8%. There is a variation between providers within the region in the rate of negative appendicectomy using data from model hospital.



*Appendicectomy - % emergency excision of normal appendix – regional variation

The minimal access rate in the north west is below the national average at 72%, see below for regional distribution, but it is recognised that timely surgery is more important than the surgical approach.



*Minimal Access rate for Appendicectomy in 0-16 year olds – regional distribution

It is recognised that the negative appendicectomy data is based on operative findings rather than on histological data. A region wide audit of histological findings is planned.

<u>Recommendations:</u>

Triage assessment & Stabilisation Recommendations

- Triage within 15 minutes of arrival
- A sick child of any age admitted with a time critical surgical problem requires urgent joint surgical and general paediatric review with consideration of transfer to tertiary centre.
- Non tertiary centre
    - All paediatric patients should have a named consultant general paediatrician during admission.
    - If the child is aged <5 then they should be admitted under general paediatric team. If a surgical cause for abdominal pain is considered likely, then they should be referred for surgical management to a tertiary centre with input from the local surgical team as required.
    - If age 5 years old and above and thought to be a surgical cause, the patient should be admitted under a general surgeon with care provided jointly by general paediatrics and general surgical teams.
- Tertiary centre
    - Children should be admitted under a paediatric surgical consultant.

- Urine dipstick -? DKA or pregnant
- FBC, U&E, LFT, Amylase/lipase, CRP
- If WCC or CRP are abnormal apply a clinical risk score e.g. shera
- Low risk of appendicitis – ambulatory management
- Intermediate risk – Consider imaging.
- High risk – treat as appendicitis – see below
- All hospitals treating children should have a paediatric pain guideline and at every step of a child's pathway should be regularly assessed and appropriate analgesia given. See appendices for examples.

Intermediate risk cases

- Intermediate risk cases may require imaging and include:
    - Cases with diagnostic uncertainty
    - Female patients aged 12 and over, or who have begun menstruation.
    - Patients who re-present or who's symptoms are non-resolving.
    - Patients who present late
    - Who score as intermediate on a risk scoring system.
- First line method is ultrasound
- If ultrasound is equivocal then an MR scan should be considered over a diagnostic laparoscopy

Treatment

Pre and peri operative care recommendations

- Appendicectomy within 24 hours of decision to operate.
- If an appendix mass is present, consider percutaneous drainage
- Discuss Iv Access requirement.
    - A cannula for most patients is appropriate.
    - Consider mid line venous access for peritoneal contamination or if resection/anastomosis or stoma formed.
    - Consider a PICC for gross peritoneal contamination.
    - A CVC if physiologically unstable or a PICC cannot be inserted.

Antibiotic therapy

- Choice as per local guidance
- Send abdominal pus for MC&S
- Post op –
    - Normal or simple appendicitis – no antibiotics
    - Complex – 72 hours antibiotics as a minimum
    - If the child is still pyrexial at 5-7 days, then investigate for an intra-abdominal collection.

Post operative care

- Review every 24 hours by senior decision maker
- Start parenteral nutrition if ileus after 5 days
- If an intra-abdominal collection is present then IV antibiotics are first line. If large and near the surface then consider drainage after discussion with a tertiary surgeon/radiologist.

Non-operative management

- Recent studies have shown that non operative management of simple appendicitis in children is a valid option. If this is considered an option for a child, then operative vs non operative management should be discussed with the parents and the child reviewed regularly by a senior surgeon.
- For cases where an appendix mass is found, antibiotics are first line therapy. Cases requiring percutaneous drainage or surgery should be discussed with a tertiary surgeon/radiologist.

Discharge and follow up

- Discharge when eating, mobile, afebrile and with pain controlled
- All histology should be reviewed
- No routine follow up except if non operative management

Appendicectomy Guideline flowchart

Abdominal Pain Pathway

Exceptions to this pathway:

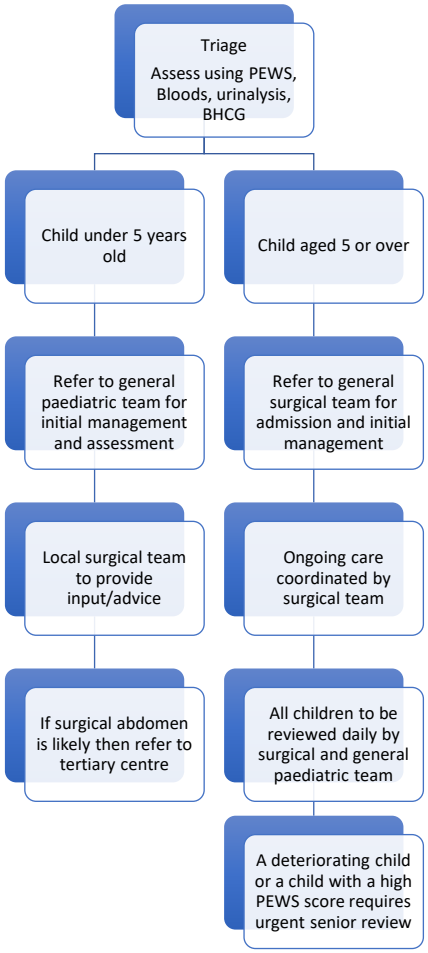
A sick child in the Emergency Department with:

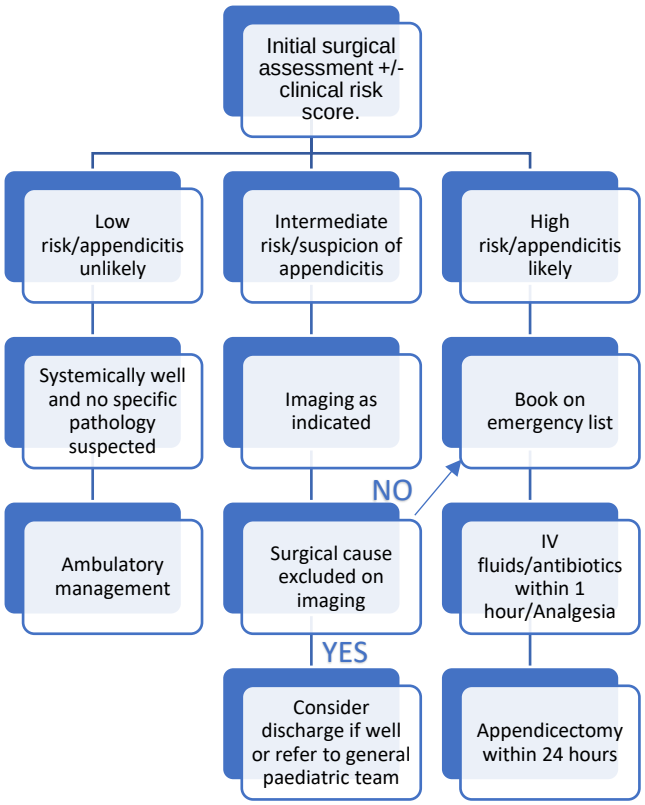
- **Major trauma**
- **High chance of referral to tertiary centre**
- **Time critical Surgical pathology**

Immediate review by:

- General Paediatric team
- Specialty Surgical team +/- Anaesthetic team

A time critical patient transfer is usually undertaken by the referring hospital but discuss cases early with NWTS





Intraoperative Management Recommendations

- SSI prevention
- further dose of antibiotics at induction if not had a dose in previous 1 hour
- if perforated appendicitis found and not already commenced, administer metronidazole and gentamicin in addition to penicillin
- Microbiology
    - Send abdominal pus for MC&S
- Free any interloop abscesses
- Search for and remove faecolith
- Suction free pus / contamination
- Don't routinely irrigate but consider if widespread contamination
- No routine use of drain

Post operative care recommendations.

- Post op antibiotics
    - None for normal or simple appendicitis
    - Complex/perforated appendicitis – 72 hours of antibiotics as a minimum
- Review every 24 hours by senior decision maker, consultant or senior registrar.
- Order TPN early if at risk of prolonged ileus, especially if generalised peritonitis is found.
- Start parenteral nutrition if ileus after 5 days.
- Microbiology results
    - check by day 3 and adjust antibiotic regimen if resistant organism / patient not improving,
    - Streptococcus anginosus - on discharge will need to complete a total 2 weeks co-amoxiclav
- No routine CRP in first 7 days
- check WBC when:
    - resolved peritoneal signs
    - temp < 37.5 C for at least 24 hours
    - GI function returned, ie tolerating oral diet
- WBC results:

- elevated above normal range - continue iv antibiotics
- normal - discharge no further antibiotics

- Further Imaging
  - Ultrasound day 7 if no improvement for post-operative collection i. if inconclusive → MRI/CT
  - large, amenable collections should undergo IR drainage after discussion with tertiary centre.
  - smaller or inaccessible collections - continued antibiotics.

Discharge and follow up

- Discharge when eating, mobile, afebrile and with pain controlled
- All histology should be reviewed
- No routine follow up except if non operative management

Appendices/References

GIRFT Acute Abdominal Pain and Appendicectomy Guidance - link

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Appendicectomy Guidelines from Royal Manchester Children's Hospital, Alder Hey Children's Hospital Trust & Mid Cheshire Hospitals NHS Trust

APPENDIX 1

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