Thames Valley and Wessex
SURGERY IN CHILDREN
Operational Delivery Network

Best Practice Recommendations

SUSPECTED APPENDICITIS IN CHILDREN

SETTING

Thames Valley & Wessex Surgery in Children Operational Delivery Network (TV&W SIC ODN)

FOR STAFF

Staff involved in the pathways for children (under 18 years) with suspected appendicitis

PATIENTS

Children who are being considered for appendicectomy procedures in organisations across the TV&W SIC ODN region

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Guidance

Summary

In 2021, GIRFT's Paediatric General Surgery & Urology report[1] made recommendations on the treatment of appendicitis in children based on concerns at variation in practice and a nationally high negative appendicectomy rate.

- Following demonstration that the negative appendix rate in the UK was too high (based on HES data and national audit data), the GIRFT report requested that regional pathways be introduced to reduce this towards 5% [1,4]
- As a result, in order to ensure timely assessment and treatment, every hospital managing children must have an approved pathway for children with suspected appendicitis which meets existing published standards [1,2]
- All children aged 5 years and above should expect to have their appendicectomy surgery delivered at their local provider [1,2,3]
- Children under 5 years with **suspected appendicitis** should be discussed with the specialist centre and transferred for assessment and surgery where it is felt clinically appropriate [1,2,3,13]
- The TV&W 'Surgical Abdomen Referral Pathway' should be used to support any discussion and/or referral to the specialist tertiary centre[13].
- All surgical outcomes must be coded appropriately and codes for non-specific outcomes should be avoided to support improvements in clarity of outcomes (anticipated 95% of procedures should be accurately coded and the use of 'unspecified coding' avoided). [1,4]

Further to this, in 2022 GIRFT developed the Paediatric Acute Abdominal Pain and Appendicectomy: Best practice pathway guidance [12] which provided a detailed summary of recommendations throughout the patient pathway.

Assessment

- All children presenting with acute abdominal pain/suspected appendicitis should undergo a documented, structured clinical assessment and examination
- In non-specialist centres, paediatricians should lead clinical decisions and care and be responsible for children under 5 years of age and general surgeons should have shared care with paediatricians of children 5 years and older[12]
- All children should be assessed using a nationally approved Paediatric Early Warning Score (PEWS) system,[5] which should include a pain score using an appropriate children's pain tool
- A period of active monitoring is appropriate in children where the diagnosis is unclear. Serial bloods should be performed where a period of monitoring has been decided[6]
- Where criteria is met, ultrasound is considered the gold standard imaging tool to diagnose appendicitis and should form part of the patient assessment (see *Appendix C*)[12]
- Imaging findings suggestive of appendix mass or appendix abscess should prompt discussion with the specialist centre[13]. It should be remembered that conservative management or interventional drainage may be the most suitable management in these cases
- If appendicitis is diagnosed, the patient should receive intravenous antibiotics within one hour (see *Appendix A*), IV and fluids and analgesia initiated and the patient booked for theatre[8] unless non-operative treatment is being implemented.

Operative Period

- Following the decision to operate, ideally all children should have undergone surgery within 12 hours, but certainly within 24 hours [12]
- Laparoscopy is the preferred technique in the majority of cases nationally and has been shown to reduce post-operative pain [8,10]
- Where complex appendicitis is found at operation, it is important to ensure appropriate samples for microbiology are taken and antibiotic therapy adjusted accordingly (see *Appendix A*) [8]
- Where complex appendicitis is found, a conversation should occur between the surgeon and anaesthetist regarding the most appropriate vascular access to leave the child with at the end of the operation; insertion of a PICC or mid-line should be considered where prolonged intravenous access is anticipated (e.g. for antibiotics).

Definitions:

Normal appendix: No macroscopic evidence of inflammation

Simple appendicitis: Inflamed appendix

Complex appendicitis: Gangrenous appendix, perforated appendix +/- visible faecolith

Source: GIRFT Paediatric acute abdominal pain and appendicectomy: Best practice pathway guidance (2022) [12]

Post-operative Period

Where a normal appendix or simple appendicitis is diagnosed:

- Antibiotic treatment should be stopped after the operation
- Prescribe simple analgesics.

Where complex appendicitis is diagnosed:[11]

- Continue antibiotics for 72hrs (48hrs intravenously as a minimum) then review (see *Appendix A*)
- Prescribe appropriate, regular analgesia for moderate severe pain which could include a PCA (see *Appendix B*).

Children should be discharged once discharge criteria are met:

- Mobile, eating and drinking, afebrile, pain controlled with simple analgesics.

Where the clinical condition is not improving or is deteriorating post-operatively[12]:

- Repeat blood tests
- Undertake ultrasound imaging if patient is still pyrexial after 5-7 days
- Ensure the patient receives appropriate PEWS scoring and resuscitation
- Consultation with the specialist centre should be made to ascertain whether transfer is necessary, or if treatment can be continued locally.

Audit and Service Review

As part of the TV&W SIC ODN, centres should participate in audits of their suspected appendicitis pathway for children against these recommendations to identify opportunities to improve safety, quality and performance. Key performance and outcome measures such as negative appendix rate, coding quality, percentage of laparoscopic procedures undertaken, collection rate, re-intervention rate, and length of stay should be considered at local and network level.

Appendix A – Antibiotic Prescribing

Antibiotic Guidance:

Pathway Reference	Relevant Timeframe	Antibiotic Guidance
At point of appendicitis diagnosis	One hour	IV antibiotics
Pre-operative	Within 1-hour prior to skin incision	IV antibiotics
Children with complex appendicitis	Minimum overall duration of 72 hours after appendicectomy	IV antibiotics for at least 48hrs then consider switching to orals
Children with macroscopically normal appendix or normal appendicitis with no peritoneal contamination	No antibiotics required	N/A

Source: GIRFT Paediatric acute abdominal pain and appendicectomy: Best practice pathway guidance (2022) [12]

- Once appendicitis is diagnosed, antibiotics should be commenced in a timely manner as outlined in the above table
- Each Trust within the Thames Valley & Wessex network should have a guideline/policy outlining local antibiotic protocols for the management of appendicitis in children and young people.

Appendix B – Analgesic Recommendations

- Children should have their pain assessed throughout their admission and appropriate analgesia should be prescribed and administered to manage pain
- Where complex appendicitis is found at surgery, consider a PCA for post-operative analgesia if appropriate protocols exist and appropriately trained staff are able to review regularly.

Appendix C - Ultrasound Imaging

- Ultrasound is the gold standard diagnostic modality for diagnosing appendicitis in children
- It is particularly helpful in post-menarche female when assessing for ovarian pathology
- Therefore, there should be access to ultrasound within day-time hours, 7 days a week
  Where this is not available, ultrasound provision should be available within a network with other centres.

Diagnostic imaging for appendicitis:

Imaging is recommended for children with suspected appendicitis who have:

1. An intermediate risk score using the children's appendicitis score

2. A high risk score and diagnostic uncertainty

3. A low risk score whose symptoms are not resolving

First-line imaging of all children with suspected appendicitis requiring imaging should be ultrasound scan.

Source: GIRFT Paediatric acute abdominal pain and appendicectomy: Best practice pathway guidance (2022) [12]

References

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11. Cameron D et al. (2018) Development and Implications of an Evidence based and Public Health-relevant Definition of Complicated Appendicitis in Children. Ann of Surg

12. GIRFT (2022) Paediatric acute abdominal pain and appendicectomy: Best practice pathway guidance

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For information: RIFT Study Group: Appendicitis risk prediction models in children presenting with right iliac fossa pain (RIFT study): a prospective, multicentre validation study. Lancet Child Adolesc Health. 2020 Apr;4(4):271-280

Authorising Body

This document was ratified by members of the TVW Paediatric Surgery Clinical Forum and approved at the TVW SiC Board on 9th June 2026. For further information regarding this group please contact the TVW SIC ODN team on the details below.

Queries & Contact

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