Commissioning guide:
Paediatric Emergency Appendicectomy
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The Royal College of Surgeons of England, 35-43 Lincoln's Inn Fields, London WC2A 3PE
Introduction

Annually in England around 12,000 emergency appendicectomies are performed\(^1\) in children under 18 years of age. The majority, 80%, are admitted and managed at DGH’s the remaining 20% being admitted to Specialised Paediatric Units\(^1\).

Many other children present acutely with non-specific abdominal pain requiring in-patient assessment, outnumbering those with acute appendicitis by a ratio of 4:1\(^2,3\).

This is not intended as a comprehensive guide for the management of paediatric patients presenting with abdominal pain.

1. High Value Care Pathway for acute appendicitis

1.1 Primary care

- Acute pain of recent onset associated with localised peritonism is a good predictor for secondary referral \(^4,5\).
- Children under 5 years of age often present with peritonitis\(^6\) and should be referred to a specialised Paediatric Surgical Unit
- If there is abdominal pain associated with diarrhoea persisting longer than 5 days consider referral for assessment to exclude a pelvic collection secondary to appendicitis
- The differentiation of appendicitis from non-specific abdominal pain can be challenging \(^2,3,5,7\), the table below summarises the differences, but if there is uncertainty the patient should be referred to secondary care for assessment\(^8\).
- Rectal examination should not be carried out in primary care

<table>
<thead>
<tr>
<th>Appendicitis</th>
<th>Non-specific abdominal pain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presentation</td>
<td>• Acute</td>
</tr>
<tr>
<td>Symptoms</td>
<td>• Central to RIF pain/anorexia/vomiting</td>
</tr>
<tr>
<td></td>
<td>• Dysuria &amp; diarrhoea may mimic UTI or gastroenteritis</td>
</tr>
<tr>
<td>Examination</td>
<td>• Flushed/pyrexial/avoids moving</td>
</tr>
</tbody>
</table>
Paediatric Emergency Appendicectomy

- Raised respiratory rate, tachycardia
- Tender RIF with peritonism
- Findings non-focal/not reproducible
- Observe & refer to local hospital for assessment if ongoing concerns

1.2 Secondary and Tertiary Care

- Care should be provided within a managed clinical network of secondary and tertiary care providers\textsuperscript{9,10,12,20}
- Triage and measurement of vital signs should be completed on arrival in an appropriate setting \textsuperscript{10,11}
- The senior surgical decision maker should assess all children on admission to agree and action appropriate management with the on call consultant surgeon\textsuperscript{12,13,17}
- There must be 24 hour access to a named consultant paediatrician \textsuperscript{19}
- An unwell child under 5 years, with suspected peritonism should be referred urgently to a specialised Paediatric Surgical Unit
- Appropriate radiology\textsuperscript{14} and laboratory services must be available.
- Children must be cared for in an appropriate child friendly environment
- Children undergoing surgery must have a pain management plan which includes post-operative and discharge analgesia \textsuperscript{12,13,18}
- Trusts must ensure they have protocols and procedures in place to identify a deteriorating child and alert appropriately trained personnel \textsuperscript{12,15,17}
- All staff who come into contact with children and young people are trained in safeguarding to an appropriate level as defined in the intercollegiate framework: \textit{Safeguarding Children and Young people: roles and competences for health care staff} \textsuperscript{16,18}
- There should be defined arrangements for emergency transfer if required \textsuperscript{12,15}
  
  The decision on whether the appendicectomy should be done via an open or laparoscopic route is dependent on the individual patient and should be decided by the operating surgeon.
  
  Appropriate information in a range of formats and support must be available to parents/children to enable them to fully participate in decisions about the care of their child.
1.3 Flow diagram for children requiring surgical intervention

**CHILD PRESENTING AS AN EMERGENCY WITH SUSPECTED APPENDICITIS**

1. **Resuscitate**
2. **Triage within 15 minutes of arrival in appropriate environment**
3. **Is the child seriously ill?**
   - **YES**
   - **NO**
4. **Do they require extensive resuscitation?**
5. **Are they under 5 years of age?**
   - **YES**
   - **NO**
6. **Are there appropriate local facilities?**
7. **A surgeon competent to undertake surgery?**
   - **YES**
   - **NO**
8. **An anaesthetist competent to anaesthetise?**
9. **Appropriate ward facilities and nursing staff with paediatric competencies?**
10. **Theatre staff competent to undertake the procedure with the appropriate equipment?**
   - **YES**
   - **NO**
11. **Consider URGENT transfer to tertiary paediatric surgical unit**
12. **Consultant review**
13. **Arrange surgery locally**
2. Procedures explorer for acute appendicitis

Users can access further procedure information based on the data available in the quality dashboard to see how individual providers are performing against the indicators. This will enable CCG’s to start a conversation with providers who appear to be ‘outliers’ from the indicators of quality that have been selected.

The Procedures Explorer Tool is available via the Royal College of Surgeons website.

The screenshot above shows the activity in CCGs for operative treatment of right iliac fossa pain, for the year ending September 2013, in patients under 17 years.

See Appendix 1 for the OPCS and ICD-10 codes used to capture data on management of right iliac fossa pain.

3. Quality dashboard for acute appendicitis

The quality dashboard provides an overview of activity commissioned by CCGs from the relevant pathways, and indicators of the quality of care provided by surgical units.

The quality dashboard is available via the Royal College of Surgeons website.
4. **Levers for implementation**

4.1 **Audit and peer review measures**

The following measures and standards are those expected. Evidence should be available to commissioners if requested.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Member of local GPS Network</td>
<td>Provider can demonstrate participation in the Network</td>
</tr>
<tr>
<td>Compliance with network audits</td>
<td>Involvement and provision of audit data to the Network</td>
</tr>
<tr>
<td>Appraisal</td>
<td>General paediatric surgery activity/training should be included in annual appraisal and revalidation</td>
</tr>
</tbody>
</table>

4.2 **Quality Specification/CQUIN**

Commissioners may wish to include the following measures in the Quality Schedule with providers. Improvements could be included in a discussion about a local CQUIN.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Description</th>
<th>Data specification (if required)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timely intervention</td>
<td>Percentage of appendicectomies within 12 hours of decision to operate</td>
<td>&gt;90%</td>
</tr>
<tr>
<td>Diagnostic accuracy</td>
<td>Percentage of negative appendicectomies</td>
<td>&lt;15%</td>
</tr>
<tr>
<td>Length of stay</td>
<td>Provider demonstrates median length of stay</td>
<td>HES</td>
</tr>
<tr>
<td>28 day readmission</td>
<td>Provider reports numbers</td>
<td>HES</td>
</tr>
<tr>
<td>Transfer</td>
<td>Provider reports numbers and receiving unit</td>
<td>HES</td>
</tr>
<tr>
<td></td>
<td>Number of patients transferred post surgery</td>
<td></td>
</tr>
<tr>
<td>Admission following discharge without surgery</td>
<td>% admitted following discharge when previously seen but not admitted</td>
<td>&lt;1%</td>
</tr>
</tbody>
</table>
# 5. Directory

## 5.1 Patient Information

<table>
<thead>
<tr>
<th>Name</th>
<th>Publisher</th>
<th>Link</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information for parents/carers on appendicectomy</td>
<td>British Association of Paediatric Surgeons (BAPS)</td>
<td><a href="http://www.baps.org.uk/resources/documents/appendicectomy/">www.baps.org.uk/resources/documents/appendicectomy/</a></td>
</tr>
<tr>
<td>Acute appendicitis in children</td>
<td>Patient.co.uk</td>
<td><a href="http://www.patient.co.uk/doctor/Acute-Appendicitis.htm">www.patient.co.uk/doctor/Acute-Appendicitis.htm</a></td>
</tr>
<tr>
<td>Parent/carer information on anaesthesia</td>
<td>Royal College of Anaesthetists (RCoA)</td>
<td><a href="http://www.rcoa.ac.uk/childrensinfo">http://www.rcoa.ac.uk/childrensinfo</a></td>
</tr>
<tr>
<td>Parent/carer information on appendicitis</td>
<td>NHS Choices</td>
<td><a href="http://www.nhs.uk/conditions/Appendicitis/Pages/Introduction.aspx">www.nhs.uk/conditions/Appendicitis/Pages/Introduction.aspx</a></td>
</tr>
<tr>
<td>Local trust patient/carer information</td>
<td>Local trust or network</td>
<td>Should be available via local trust website and in hard copy</td>
</tr>
</tbody>
</table>

## 5.2 Clinician information

<table>
<thead>
<tr>
<th>Name</th>
<th>Publisher</th>
<th>Link</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgery for Children: Delivering a First Class Service</td>
<td>Children’s Surgical Forum (RCSEng)</td>
<td><a href="http://www.rcseng.ac.uk/publications/docs/CSF.html">www.rcseng.ac.uk/publications/docs/CSF.html</a></td>
</tr>
<tr>
<td>Guidance for Provision of Paediatric Anaesthesia</td>
<td>Royal College of Anaesthetists (RCoA)</td>
<td><a href="http://www.rcoa.ac.uk/gpas2013">www.rcoa.ac.uk/gpas2013</a></td>
</tr>
</tbody>
</table>
## 6. Benefits and risks of implementing this guide

<table>
<thead>
<tr>
<th>Consideration</th>
<th>Benefit</th>
<th>Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Patient outcome</strong></td>
<td>• Ensure access to the best quality and timely clinical management</td>
<td></td>
</tr>
<tr>
<td><strong>Patient safety</strong></td>
<td>• Reduce delayed recognition of acute appendicitis &amp; improve management of children</td>
<td>• Reduce risk of complications</td>
</tr>
<tr>
<td><strong>Patient experience</strong></td>
<td>• Improve access to patient information</td>
<td></td>
</tr>
<tr>
<td><strong>Equity of access</strong></td>
<td>• Support access to effective local care</td>
<td>• Selected patients and carers required to travel greater distances to receive care</td>
</tr>
<tr>
<td><strong>Resource impact</strong></td>
<td>• Reduce unnecessary referral and intervention</td>
<td>• Resource required to maintain and establish operational delivery networks</td>
</tr>
<tr>
<td></td>
<td>• Reduce length of stay</td>
<td>• Failure of repatriation to secondary care</td>
</tr>
</tbody>
</table>

## 7. Further information

### 7.1 Research recommendations
- Management of the appendix mass

### 7.2 Other recommendations
- Maintenance and establishment of managed clinical networks
- Standards for engagement with and transfer to tertiary paediatric services
7.3 Evidence base


14. Delivering Quality Imaging Services for Children: A report from the National Imaging Board 2010


Comissioning guide 2014

Paediatric Emergency Appendicectomy


20. The way forward: Strategic Clinical Networks. 2012. NHS Commissioning Board

7.4 Guide development group for appendicitis

A commissioning guide development group was established to review and advise on the content.

<table>
<thead>
<tr>
<th>Name</th>
<th>Job Title/Role</th>
<th>Affiliation</th>
</tr>
</thead>
<tbody>
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<td>Mr Salem Al-Hamali</td>
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<td>Royal College of Surgeons</td>
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<td>Ms Nicole Barnes</td>
<td>Patient representative</td>
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<td>Dr Polly Davies</td>
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<td>Royal College of Anaesthetists</td>
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<td>Dr Emma Fernandez</td>
<td>Clinical and Training Standards Manager</td>
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<td>West Leicestershire CCG</td>
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<td>Royal College of Anaesthetists</td>
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<tr>
<td></td>
<td></td>
<td>Association of Paediatric Anaesthetists of</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Great Britain and Ireland</td>
</tr>
<tr>
<td>Donna Mason</td>
<td>Paediatric Ward Matron</td>
<td>Royal College of Nursing</td>
</tr>
<tr>
<td>Mr Feilim Murphy</td>
<td>Consultant Paediatric Urologist</td>
<td>British Association of Paediatric Surgeons</td>
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<tr>
<td>Mr Nitin Patwardhan</td>
<td>Consultant Paediatric Surgeon</td>
<td>Royal College of Surgeons</td>
</tr>
<tr>
<td></td>
<td></td>
<td>British Association of Paediatric Surgeons</td>
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<tr>
<td>Miss Jane Patterson</td>
<td>Consultant General Surgeon</td>
<td>Royal College of Surgeons</td>
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<tr>
<td>Mr John Quarmby</td>
<td>Consultant General Surgeon</td>
<td>Royal College of Surgeons</td>
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</tr>
</tbody>
</table>
7.5 Funding statement

The development of this commissioning guidance has been funded by the following sources:

- East Midlands Strategic Clinical Network funded the cost of the guideline development group, literature searches and contributed towards administrative costs.

- The Royal College of Surgeons of England and the British Association of Paediatric Surgeons provided staff to support the guideline development.

7.6 Conflict of interest statement

Individuals involved in the development and formal peer review of commissioning guides are asked to complete a conflict of interest declaration. It is noted that declaring a conflict of interest does not imply that the individual has been influenced by his or her secondary interest. It is intended to make interests (financial or otherwise) more transparent and to allow others to have knowledge of the interest.

The following interests were declared by group members: None noted
Appendix 1: The OPCS and ICD-10 codes used to collect data on management of right iliac fossa pain

4. Interventions and Code Sets

4.1. Open Appendicectomy

Primary OPCS:
H01: Emergency excision of appendix
H02: Other excision of appendix
H03: Other operations on appendix

Secondary OPCS: (will be included after any Primary OPSC)
None

Primary ICD-10:
R10: Abdominal and pelvic pain
K35: Acute appendicitis
K36: Other appendicitis
K37: Unspecified appendicitis
K38: Other diseases of appendix

4.2. Laparoscopic Appendicectomy

Primary OPCS:
H01: Emergency excision of appendix
H02: Other excision of appendix
H03: Other operations on appendix

Secondary OPCS: (will be included after any Primary OPSC)
Y75.1: Laparoscopically assisted approach to abdominal cavity
Y75.2: Laparoscopic approach to abdominal cavity NEC

Primary ICD-10:
R10: Abdominal and pelvic pain
K35: Acute appendicitis
K36: Other appendicitis
K37: Unspecified appendicitis
K38: Other diseases of appendix
4.4. Non Operative - Observation

Primary OPCS:
None

Secondary OPCS: (will be included after any Primary OPSC)
None

Primary ICD-10:
R10: Abdominal and pelvic pain