UNCOMPLICATED APPENDICECTOMY

PRACTICE GUIDELINE ©

DOCUMENT SUMMARY/KEY POINTS

- This Practice Guideline assists with the care of a child after diagnosis of an uncomplicated appendicitis.
- Surgeons can 'opt in' to use the Guideline based on clinical judgement.
- Post-operative care emphasises early mobilisation, feeding and regular simple analgesia.
- The child can be discharged from six hours post-surgery with or without a medical review as specified in the post-operative instructions.
- Discharge criteria needs to be completed by nursing staff prior to criteria-led discharge.
- Information sheet for parents on discharge.

CHANGE SUMMARY

- Not applicable – new document

READ ACKNOWLEDGEMENT

- Any health professional providing clinical care to children with uncomplicated appendicitis.
- This document is not appropriate for parents and families – please refer to Appendicitis Factsheet

This document reflects what is currently regarded as safe practice. However, as in any clinical situation, there may be factors which cannot be covered by a single set of guidelines. This document does not replace the need for the application of clinical judgement to each individual presentation.

Approved by:	SCHN Policy, Procedure and Guideline Committee	
Date Effective:	1st March 2024	**Review Period**: 3 years
Team Leader:	Clinical Nurse Specialist	**Area/Dept**: Surgical & Anaesthetics

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1 Introduction

Children with appendicitis are treated at the Sydney Children's Hospital Network (SCHN). This Practice Guideline outlines elements of the pre-operative, intra-operative and post-operative care for children with uncomplicated appendicitis. Surgeons can 'opt in' to using this Practice Guideline according to their clinical judgment of the child's condition. The surgeon can also opt for a criteria-led discharge or discharge after medical review.

1.1 Purpose

This Practice Guideline outlines key elements of care for children from diagnosis of uncomplicated appendicitis to discharge from hospital.

1.2 Scope

This Practice guideline applies to all Surgical staff (medical and nursing) across SCHN who are involved in the care of children with uncomplicated appendicitis.

1.3 Outcomes

Compliance with this Practice Guideline standardises care to improve patient safety, optimise health care efficiency and promote engagement with consumers.

1.4 Definitions

Term	Definition
Uncomplicated Appendicectomy	An appendicectomy performed where is there is no visible pus, appendiceal perforation or fecalith. The appendix may be inflamed or appear normal.
Pre-operative phase	Diagnosis of appendicitis to admission to operating theatres
Intra-operative phase	Admission to operating theatre to admission to recovery
Post-operative phase	Admission to recovery to ward discharge

2 Appendicitis

Appendicitis is inflammation of the appendix caused by infection or blockage in the appendix. Complicated appendicitis occurs when the appendix is suppurative, ruptured and/or gangrenous. This results in local or generalised peritonitis. As a result, the child requires antibiotics post-operatively to treat the infection[1].

In uncomplicated appendicitis the appendix can be inflamed or appear normal. About 5% of children who have an appendicectomy have no appendiceal abnormalities detected[2]. Children with an uncomplicated appendicitis usually recover quickly without further antibiotics[3].

3 Guideline for children with uncomplicated appendicitis

Algorithm of the Guideline can be found in Appendix 2.

3.1 Pre-operative phase

- Child is to be nil-by-mouth as ordered by the anaesthetist.
- Intravenous antibiotics and fluids to be administered as prescribed.
- Adequate analgesia to be administered as prescribed.
- Child is booked and consented for surgery.
- Child needs to be changed into clean and loose clothing for theatre.
- Child must attempt to urinate <1 hour prior to theatre to prevent accidental bladder perforation by the laparoscopic trocar[4].
- The Appendicitis Factsheet can be given to parent if appropriate (English version available). This helps to explain appendicitis and manage the parent/carers expectations post operatively.

3.2 Intra-operative phase

- Appropriate intravenous antibiotics prophylaxis as per Appendix 1, then cease antibiotic orders in consultation with surgeon[3].
- Anaesthetists will ask for an update from the surgical registrar performing the procedure within 30–60minutes from surgery start time. The anaesthetist will escalate to the treating team consultant about progress as required.
- Local infiltration of anaesthetic agent in the wounds by the surgeon.
- Anaesthetists to avoid prescribing opioid infusions unless clinically indicated[5].
- Oral analgesia/anti-emetic ordered for postoperative use.
- Registrars to document in the post operative instructions if the child is to remain on the uncomplicated appendicitis guideline. Some surgeons may also document that the child is to remain on the Guideline with a medical review prior to discharge. The exact wording of this order may vary.

3.3 Post-operative phase

- Routine post-operative observations and wound care as per policy.
- Disconnect intravenous fluids and cap intravenous cannula if there are no intravenous medications order for the post-operative period.

If intravenous antibiotic/s and/or opioids are ordered for the post-operative period, then the child is NOT on the Uncomplicated Appendicitis Guideline regardless of any documentation stating otherwise.

- A surgeon speaks with the parents/carers after surgery to update them and explain the expected recovery of their child.
- Child ambulates to toilet to void. Urinary retention is managed in accordance with Urinary Management Policy[6].
- Child should mobilise early, if usually ambulant, especially whilst the local anaesthetic remains effective[6].
- Child can have trial of fluids and then upgrade to foods and/or formula as tolerated[7,8].
- Simple analgesia is administered with Oxycodone administered as required for breakthrough pain[5].
- If the child is staying overnight then wake before 7am for a paracetamol dose, encourage them to walk to the toilet and have breakfast.
- Ask if parents/carers need a medical certificate as soon as possible and notify the treating team to complete one as necessary.

3.4 Discharge

- The surgeon may document that the child is to remain on the Guideline without criteria-led discharge. The child will need a medical review prior to discharge and the discharge criteria is not utilized.
- If the surgeon documents that a child is on the Uncomplicated Appendicectomy Guideline, then they can be discharged by all nursing staff using the discharge criteria. Nursing staff can consider discharging a child from 6 hours post admission to the ward[9,10,11].
- The discharge criteria can be found in Ad hoc Charting – Inpatient Forms - Appendicitis (Uncomplicated) Discharge Criteria (see Appendix 3). If the discharge criteria is NOT met then DO NOT DISCHARGE the child and notify the treating team. If the discharge criteria is met then continue the following steps.
- Remove intravenous cannula.
- Complete nursing discharge documentation as per policy. There is no need to document discharge instructions as these are outlined on the Uncomplicated Appendicectomy Discharge instructions Infosheet.
- Ensure that the parents/carers are given the *Uncomplicated Appendicectomy Discharge instructions Infosheet* (located in Clinical Resources on the Intranet) and clarify that they understand the instructions.

Appendix 1: Antibiotic prophylaxis dosage intervals

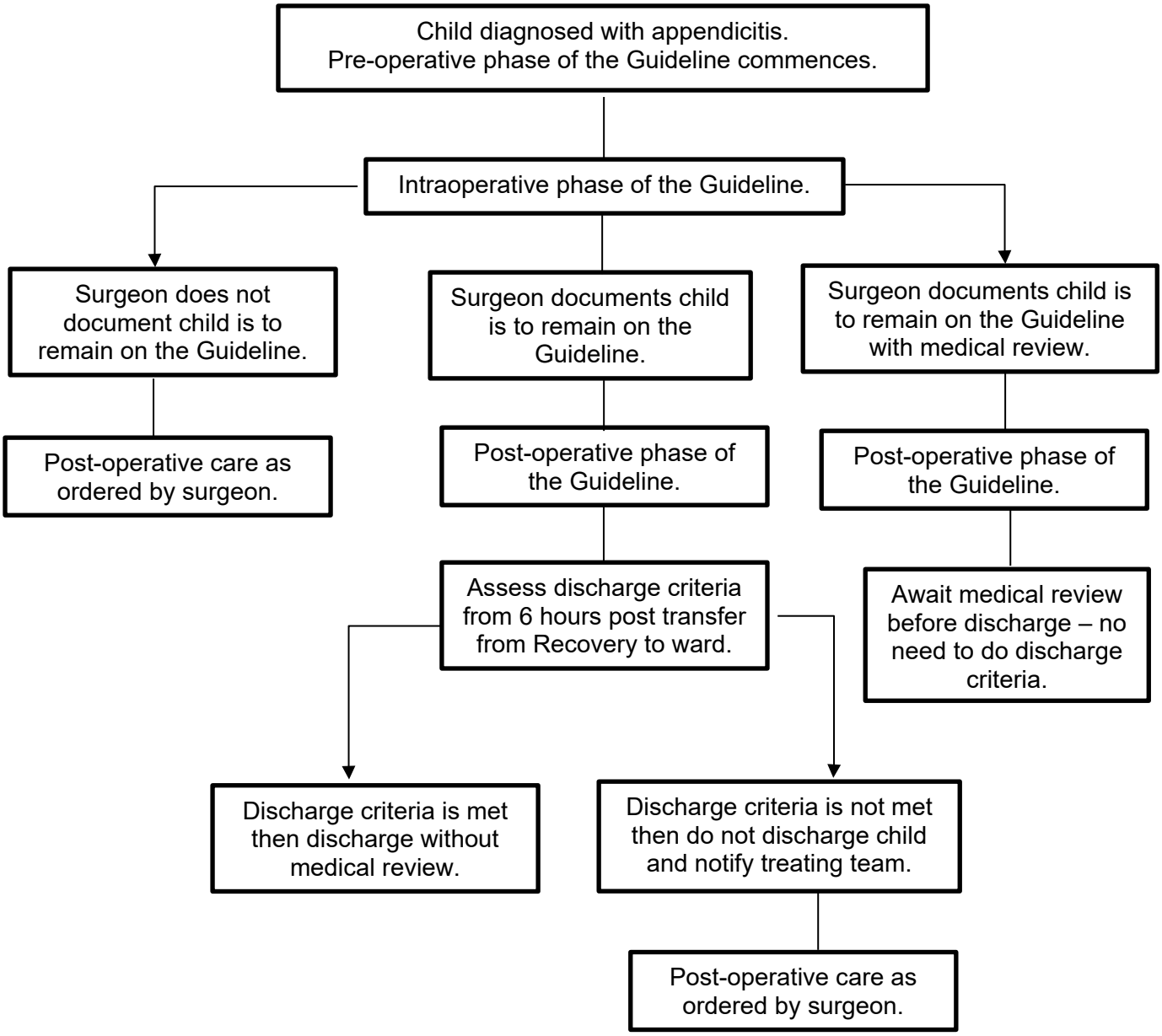
Antibiotics have a half-life with associated reduced effectiveness for adequate surgical prophylaxis[12]. The redosing intervals for antibiotic use in appendicitis cases are as follows:

Antibiotic	Minimum interval between pre-op and intra-op dosing
Piperacillin tazobactam (Tazocin)	2 hours
Amoxicillin clavulanic acid (Augmentin)	2 hours
Cefazolin	4 hours
Metronidazole	12 hours
Gentamicin	24 hours
Ceftriaxone	24 hours

These intra-operative intravenous antibiotic prophylaxis recommendations have been ratified by the SCHN Infectious Disease Departments and Antimicrobial Stewardship in 2023.

See Surgical Antibiotic Prophylaxis Guideline for further information[12].

Appendix 2: Uncomplicated appendicitis guideline algorithm



Appendix 3: Discharge Criteria in eMR

All fields are mandatory except the Comments section. If 'No' is selected in response to a question, then an alert will pop up that the child is not for discharge and to notify the treating team. The Comments section allows nursing staff to document any discharge notes without having to document them again elsewhere.

Discharge Criteria

Has a doctor documented that the child is eligible for criteria led discharge?	○ Yes ○ No
A doctor has discussed the surgery with the family post op	○ Yes ○ No
Has the child had at least 6hrs of post-operative observation?	○ Yes ○ No
Does the team leader agree with you that the child is eligible for discharge?	○ Yes ○ No
If a doctor has approved any variance to the discharge criteria has it been documented?	○ Yes ○ No ○ N/A
Have the observations remained BTF? (Note: if obs are in the blue zone the child can be discharged with Team leader approval)	○ Yes ○ No ○ Variance approved
Has the Temperature remained under 37.5 deg and is not trending upward for the entire post-operative period?	○ Yes ○ No ○ Variance approved
Is oral simple analgesia adequate for pain relief?	○ Yes ○ No
Is the child tolerating diet without further anti-emetic medication?	○ Yes ○ No
Has the child voided post operatively?	○ Yes ○ No
Is the child mobilising in an age appropriate manner?	○ Yes ○ No
Are the wounds clean and dry?	○ Yes ○ No
Have the concerns of the patient/parent/carer been addressed?	○ Yes ○ No
Is the discharge destination within 2 hours of the hospital in normal traffic?	○ Yes ○ No
Has the discharge information sheet been given to the parent/carer?	○ Yes ○ No
If the child has met all the criteria is the child suitable for discharge without medical review?	○ Yes ○ No
Comments	

Related Information

- SCHN Appendicitis Factsheet
- Uncomplicated Appendicectomy Discharge instructions Infosheet (located in Clinical Resources on the Intranet)

References

1. Ingram MC, Harris CJ, Studer A, Martin S, Berman L, et al. Distilling the Key Elements of Pediatric Appendicitis Clinical Practice Guidelines. Journal of Surgical Research. 2021; 258: 105-112.
2. National Surgical Quality Improvement Program (NSQIP) Pediatric. January 2023 Semiannual Report Targeted Appendectomy Report. Sydney Children's Hospital and The Children's Hospital at Westmead. Jan 1, 2022 – Dec 31, 2022. American College of Surgeons. 2023: 1-25.
3. Somers KK, Eastwood D, Liu Y, Arca MJ. Splitting hairs and challenging guidelines: Defining the role of perioperative antibiotics in pediatric appendicitis patients: Perioperative antibiotics in children with appendicitis. Journal of Pediatric Surgery. 2020; 55 (3): 406-413.
4. Bence C.M., Wu R., Somers K.K., Szabo A., Arca M.J., Calkins C.M., Gourlay D.M., Oldham K.T., Sato T.T., Siddiqui S.M., Densmore J.C. A tiered approach to optimize pediatric laparoscopic appendectomy outcomes. Journal of Pediatric Surgery. 2019; 54 (12): 2539-2545.
5. Kelley-Quon L, Ourshalimian S, Lee J, Russell K, Kling K, et al. Multi-Institutional Quality Improvement Project to Minimize Opioid Prescribing in Children after Appendectomy Using NSQIP-Pediatric. Journal of American College of Surgeons. 2022; 234(3): 290-298.
6. The Sydney Children's Hospital Network. Catheters (Urinary) Management Procedure. 2020; Accessed 15/8/2023 http://webapps.schn.health.nsw.gov.au/epolicy/policy/4990
7. Cundy TP, Sierakowski K, Manna A, Cooper CM, Burgoyne LL, Khurana S. Fast-track surgery for uncomplicated appendicitis in children: a matched case-control study. ANZ Journal of surgery. 2017; 87 (4): 271-276.
8. Khan S, Siow VS, Lewis A, Butler G, Narr M, et al. An Evidence-Based Care Protocol Improves Outcomes and Decreases Cost in Pediatric Appendicitis. Journal of Surgical Research. 2020; 256: 390-396.
9. Benedict LA, Sujka J, Sobrino J, Aguayo P, St. Peter SD, Oyetunji TA. Same-day discharge for nonperforated appendicitis in children: an updated institutional protocol. Journal of Surgical Research. 2018; 232: 346-350
10. Do-Wyeld M, Rogerson T, Court-Kowalski S, Cundy TP, Khurana S. Fast-track surgery for acute appendicitis in children: a systematic review of protocol-based care. ANZ journal of surgery. 2019; 89 (11): 1379-1385.
11. Cheng O, Cheng L, Burjonrappa S. Facilitating factors in same-day discharge after pediatric laparoscopic appendectomy. Journal of Surgical Research. 2018; 229:145-149.
12. The Sydney Children's Hospital Network. Surgical Antibiotic Prophylaxis Guideline 2019; Accessed 15/8/2023 http://webapps.schn.health.nsw.gov.au/epolicy/policy/4425