

## Children and Infants with Acute Abdominal Pain - Acute Management

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**Author Branch** Primary Health and Community Partnerships

**Branch contact** Dr Elisabeth Murphy 9391 9475

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### Director-General

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**CIRCULAR**

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<b>Contact</b>	Ms Mary Crum (02) 9391 9100 Clinical Policy Branch Dr Elisabeth Murphy (02) 9391 9475 Primary Health and Community Partnerships Branch

**Acute Management of Infants and Children with Acute Abdominal Pain**

The attached clinical practice guideline applies to all facilities where paediatric patients are managed and were prepared for the NSW Health Department by an expert clinical reference group under the auspice of the Statewide Paediatric Steering Committee. Area Health Services are required to have local guidelines in place in all hospitals and facilities likely to be required to assess or manage children with acute abdominal pain. In developing local guidelines other relevant Departmental circulars should also be considered eg. *NSW Health Department Guidelines for the Hospitalisation of Children Revised July 1998* (State Health Publication SWS 980088).

It should be noted that this document reflects what is currently regarded as a safe and appropriate approach to care. However, as in any clinical situation there may be factors which cannot be covered by a single set of guidelines. This document should be used as a guide, rather than as a complete authoritative statement of procedures to be followed in respect of each individual presentation. It does not replace the need for the application of clinical judgment to each individual presentation.

In early 2004 the NSW Institute of Clinical Excellence commenced a Children's Emergency Care Project, which involves working with a number of pilot sites to implement the clinical practice guidelines. Contact details are: Marilyn Cruickshank, Project Manager, Children's Emergency Care Project, NSW Institute for Clinical Excellence, GPO Box 1614, SYDNEY 2001, Phone: (02) 9382 7658, Fax: (02) 9382 7615.

Robyn Kruk  
**Director-General**

Distributed in accordance with circular list(s):

<b>A</b> 61	<b>B</b>	<b>C</b> 58	<b>D</b> 11	<b>E</b> 7	73 Miller Street North Sydney NSW 2060
<b>F</b> 18	<b>G</b>	<b>H</b> 43	<b>I</b>	<b>J</b> 42	Locked Mail Bag 961 North Sydney NSW 2059
<b>K</b>	<b>L</b> 11	<b>M</b>	<b>N</b>	<b>P</b> 11	Telephone (02) 9391 9000 Facsimile (02) 9391 9101

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# Acute management of infants and children with acute abdominal pain

*Clinical Practice Guidelines*



## **NSW DEPARTMENT OF HEALTH**

73 Miller Street

NORTH SYDNEY NSW 2060

Tel. (02) 9391 9000

Fax. (02) 9391 9101

TTY. (02) 9391 9900

**[www.health.nsw.gov.au](http://www.health.nsw.gov.au)**

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Better Health Centre – Publications Warehouse

Locked Mail Bag 5003

Gladesville NSW 2111

Tel. (02) 9816 0452

Fax. (02) 9816 0492

TTY. (02) 9391 9900

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December 2004

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# Introduction

These Guidelines are aimed at achieving the best possible paediatric care in all parts of the State. The document should not be seen as a stringent set of rules to be applied without the clinical input and discretion of the managing professionals. Each patient should be individually evaluated and a decision made as to appropriate management in order to achieve the best clinical outcome.

The formal definition of clinical practice guidelines comes from the National Health and Medical Research Council:

*'systematically developed statements to **assist** practitioner and patient decisions about appropriate health care for specific clinical circumstances.'* (National Health and Medical Research Council A Guide to the Development, Implementation and Evaluation of Clinical Practice Guidelines, Endorsed 16 November 1998, available from [www.nhmrc.gov.au/publications/synopses/cp65syn.htm](http://www.nhmrc.gov.au/publications/synopses/cp65syn.htm))

It should be noted that this document reflects what is currently regarded as a safe and appropriate approach to care. However, as in any clinical situation there may be factors which cannot be covered by a single set of guidelines, this document should be used as a guide, rather than as a complete authoritative statement of procedures to be followed in respect of each individual presentation. It does not replace the need for the application of clinical judgment to each individual presentation.

This document represents basic clinical practice guidelines for the acute management of abdominal pain. Further information may be required in practice; suitable widely available references are listed throughout this document.

Each Area Health Service is responsible for ensuring that local protocols based on these guidelines are developed. Area Health Services are also responsible for ensuring that all staff treating paediatric patients are educated in the use of the locally developed paediatric guidelines and protocols.

In the interests of patient care it is critical that contemporaneous, accurate and complete documentation is maintained during the course of patient management from arrival to discharge.

**Parental anxiety should not be discounted: it is often of significance even if the child does not appear especially unwell.**

# Overview

A child presenting with abdominal pain may be suffering from any of a wide range of conditions. Most will be benign, **however the small percentage of children with a life-threatening condition need to be treated with greater urgency than adult patients with equivalent conditions because they often have fewer physiological reserves.** This guideline focuses primarily on the rapid identification of those conditions and appropriate management.

The assessment of a child with a possible complaint of acute abdominal pain may be challenging to a doctor who primarily sees adult patients. In the pre-verbal child, the presence of abdominal pain can only be inferred from the child's behaviour and/or from distension and/or tenderness on examination. **If in doubt or confused about a child's clinical condition, signs or symptoms, consult with someone more experienced.** Paediatric specialists are very approachable and prefer to be called too early rather than too late.

**Specialist referral** means consultation with a local paediatrician and/or surgeon experienced in managing paediatric surgical patients (in some hospitals this may be done through their registrars). If such a specialist is not available, call **NETS**, the Newborn (And Paediatric) Emergency Transport Service, on **1300 362 500**. They will set up a conference call which includes a paediatric surgeon and other relevant paediatric specialist as well as organise urgent transfer of a child to a paediatric centre if necessary.

# Assessment and management

## Initial approach to the child with acute abdominal pain

The assessment of the child with possible abdominal pain can follow the pattern of:

1. Primary survey and stabilisation
  - **A**irway
  - **B**reathing
  - **C**irculation
  - **D**isability (neurological)
  - **E**xposure
  - (**DEFG** = **D**on't **E**ver **F**orget **G**lucose).
2. Consider pain relief.<sup>1,2</sup>
3. A targeted history (See the flowchart on page 5).
4. Detailed examination.
5. Appropriate investigations.
6. Treatment/disposition/follow-up.

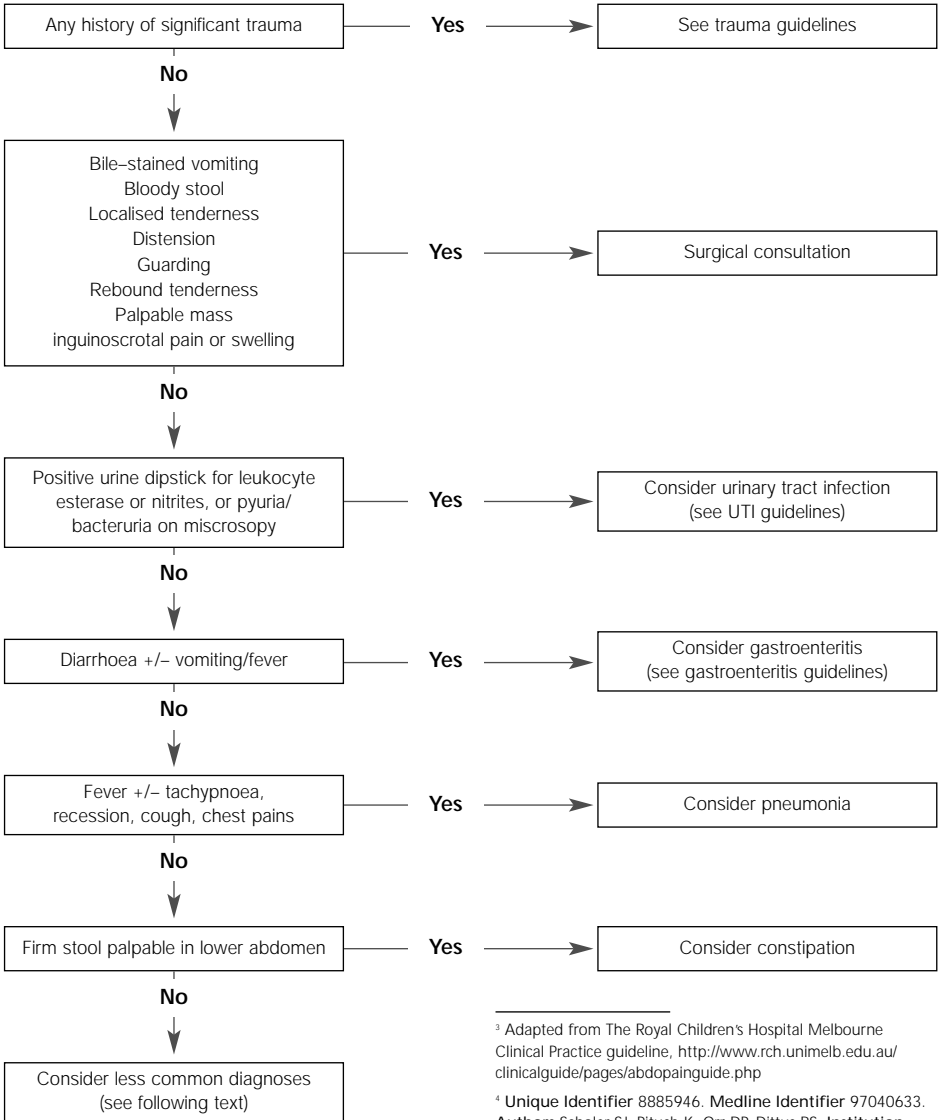
The answers to the questions in the following flowchart should be found during the assessment.

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<sup>1</sup> **Unique Identifier** 12520567. **Medline Identifier** 22407320. **Authors** Thomas SH, Silen W. **Institution** Department of Surgery, Harvard medical School, Massachusetts General Hospital, Boston, Massachusetts 02114–2696, USA. Thomas.Stephen@mgh.harvard.edu. **Title** Effect on diagnostic efficiency of analgesia for undifferentiated abdominal pain. [Review] [23 refs]. **Source** British Journal of Surgery. 90(1): 5–9, 2003 Jan.

<sup>2</sup> **Unique Identifier** 1393034. **Medline Identifier** 93006372. **Authors** Attard AR; Corlett MJ; Kidner NJ; Leslie AP; Fraser IA. **Institution** Department of General Surgery, Walsgrave Hospital, Coventry. **Title** Safety of early pain relief for acute abdominal pain.[comment]. **Comments** Comment in: BMJ. 1992 Oct 24; 305(6860):1020–1; PMID: 1296649. **Source** BMJ. 305(6853): 554–6, 1992 Sep 5.

### Abdominal pain<sup>3,4</sup>



<sup>3</sup> Adapted from The Royal Children's Hospital Melbourne Clinical Practice guideline, <http://www.rch.unimelb.edu.au/clinicalguide/pages/abdopainguide.php>

<sup>4</sup> Unique Identifier 8885946. Medline Identifier 97040633. Authors Scholer SJ, Pituch K, Orr DP, Dittus RS. Institution Department of Pediatrics, Indiana University School of Medicine, Indianapolis, USA. Title Clinical outcomes of children with acute abdominal pain. Source Pediatrics. 98(4 Pt 1): 680-5, 1996 Oct.

## Background on questions asked in the flowchart

### Is there evidence of trauma?

- If there is a known history of trauma then local trauma guidelines should be followed.
- If the child is a victim of non-accidental injury then the history may be misleading. One must consider this diagnosis and look for telltale bruising and/or fractures and/or burns.

### Is the child in shock or severely dehydrated?

A shocked infant/small child will usually have pallor, lethargy, tachycardia and peripheral shut down (ie capillary refill > two seconds, cold mottled peripheries). **Hypotension is a late and preterminal sign of shock in children. Do not wait for this before commencing fluid therapy.**

### Is there bile-stained vomiting?

This means a definite green colour in the vomit. Sometimes gastric contents can have a yellow tinge. This is not bile staining.

- Bile-stained vomiting means mechanical bowel obstruction until proven otherwise.
- It may be due to volvulus and bowel ischaemia and therefore requires immediate assessment.

### Does the child have any other indicators of intestinal obstruction?

Signs and symptoms of obstruction in children are very similar to those of adults:

- vomiting
- colicky abdominal pain
- absence of normal stooling/flatus

- abdominal distension
- increased bowel sounds.

Through the thin-walled abdomens of infants and small children, one may be able to see

- visible distended loops of bowel
- visible peristalsis.

When thinking about a cause for the obstruction:

- look for scars
- swellings at the site of hernial orifices and of the external genitalia.

**NB: In a child with acute abdominal pain and vomiting, gastroenteritis should be a diagnosis of exclusion.**

### Does the child have peritonitis?

Signs consistent with peritonitis include:

- refusal/inability to walk
- slow walk/stooped forward
- pain on coughing or jolting
- lying motionless
- decreased/absent abdominal wall movements with respiration
- abdominal distention
- abdominal tenderness – localised/generalised
- abdominal guarding/rigidity
- percussion tenderness
- palpable abdominal mass (see question below)
- bowel sounds – absent/decreased (peritonitis)
- associated non-specific signs – tachycardia, fever.

Symptoms and signs of acute abdominal pathology may be masked by an altered level of consciousness/the presence of shock. Repeat examination after resuscitation or an appropriate interval.

### Does the child have other abdominal tenderness?

This is tenderness not associated with peritonitis. Is the tenderness located in the abdominal wall or the abdominal cavity? Is it localised or generalised?

### Is there an abdominal mass?

Signs of an abdominal mass should focus on: site, mobility, tenderness, potential relationship to the intestine, mesentery, liver, spleen, pancreas, kidneys or pelvic organs. Examples of conditions with abdominal masses include intussusception (sausage shaped) or neoplasm (eg neuroblastoma).

### Does the bowel action contain blood?

- Blood mixed with stools may indicate infective diarrhoea. The presence of blood makes it more likely to be bacterial. Ask about travel history and recent antibiotic therapy (pseudomembranous colitis).
- Blood mixed with mucus (redcurrant jelly) suggests intussusception.
- Altered blood (meleana) suggests upper gastrointestinal bleeding.

Other conditions where there can be abdominal pain associated with blood in the stools include:

- Inflammatory bowel disease
- midgut volvulus (shocked child)
- henocho schonlein purpura
- haemolytic uremic syndrome.

### Does the child have a known congenital or pre-existing condition that may be related to the abdominal symptoms and signs?

For example:

- previous abdominal surgery (adhesions)
- nephrotic syndrome (primary peritonitis)
- mediterranean background (familial mediterranean fever)
- hereditary spherocytosis (cholethiasis)
- cystic fibrosis (meconium ileus equivalent)
- cystinuria
- porphyria.

### Is there jaundice?

Hepatitis may present with pain due to liver swelling. Rarely children may have a painful obstructive jaundice (eg choledochal cyst).

### If the patient is a male, could he have torsion of the testis?

This pain can often be referred to the abdomen. This is a surgical emergency and if suspected, the appropriate surgeon should be consulted immediately.

### Is the patient a post-menarchal female?

Has the adolescent started her periods? If so when was the last normal menstrual period?

Is she sexually active? (Ask the patient on her own).

Suggest a pregnancy test. (Ectopic pregnancy is a life threatening disorder).

A post-menarchal adolescent girl is pregnant until proven otherwise.

### **Could there be other gynaecological problems?**

For example, Mittelschmerz, torsion of the ovary, pelvic inflammatory disease, imperforate hymen with hydrometrocolpos.

If the female is sexually active, consideration should be given to speculum vaginal examination to look for signs of pelvic inflammatory disease and other pathology and to take appropriate swabs. Consent may be a difficult issue here especially if a young teenager does not want her parents to know she is sexually active. If in doubt, consult an obstetrician/gynaecologist or STD specialist who is familiar with these issues.

### **Is there an irreducible inguinal hernia?**

The inguinoscrotal region should always be examined in a child presenting with abdominal pain.

### **Is there any diarrhoea?**

Copious amounts of loose stools suggest gastroenteritis but do not exclude other conditions (eg intussusception, pelvic appendicitis, pelvic abscess and inflammatory bowel disease)

### **Is the child constipated?**

Constipation is defined as the progressive accumulation of hard faeces within the rectum associated with increasing difficulty and ultimate failure of the passage of stool. It may occasionally cause bowel obstruction (for example: hirschsprungs disease) and/or severe abdominal pain. It may be caused by acute perianal pathology. It may be associated with an identifiable mass in the left iliac fossa.

### **Is the problem outside the abdomen?**

The chest is not far from the abdomen in children. A lower lobe pneumonia should be considered if there is fever, cough, tachypnoea, desaturation or consistent clinical signs (NB: clinical chest signs are often absent in pneumonia of small children). Viral myocarditis causing cardiac failure often causes painful hepatomegaly.

### **Does the child have a urinary tract infection (UTI)?**

A urinalysis should be routine in children with abdominal pain.

### **Is the child feeding normally?**

Poor feeding is a nonspecific indicator of serious illness.

### **Has the child been poisoned or envenomed?**

Many toxic agents and some envenomations will cause abdominal symptoms. Some can cause acute abdominal pain (eg iron). It is important to ask about a history of possible ingestion and what drugs and other toxic agents are available at home. Some agents will cause characteristic syndromes called toxidromes (eg anticholinergics), while others can be measured in the blood (eg paracetamol, lithium). It is also important to ask about possible bites and stings. A knowledge of the local venomous creatures is necessary.

### **Is there a rash?**

Scarlet fever, enteroviruses and many other conditions can cause rashes and acute abdominal pain.

### **Is there an upper respiratory tract infection?**

This may cause mesenteric lymphadenitis or non-specific abdominal pain.<sup>5</sup>

### **Other questions in the diagnosis and management of abdominal pain**

#### **When is it necessary to do a rectal examination?**

In the majority of cases the rectal examination should not be performed without first consulting the appropriate surgeon who may wish to perform it himself/herself to avoid repeatedly distressing a child. However an inspection of the anal and perineal area should be performed, looking for signs of infection, fissures or worms, among other things.

#### **When and how should I relieve the pain?**

Severe abdominal pain should be relieved as soon as possible.<sup>1,2</sup>

Severe pain is best relieved by intravenous narcotics in small aliquots titrated to effect (See pain guidelines).

If unable to establish IV access obtain urgent specialist consultation.

A faces pain scale may be used to determine the magnitude of the effect

All children who receive narcotics must be closely monitored for hypoventilation

Minimum monitoring should be pulse oximetry with the lower limit alarm set to 93 per cent

NB Infants are particularly prone to hypoventilation when given narcotics. They should be under direct observation and have full cardiorespiratory monitoring in place when the narcotics are given. The correct dose of naloxone should be calculated and readily available

Less severe pain may be treated with oral or rectal analgesics (eg paracetamol).

Pain is also relieved by treating the underlying condition (eg constipation).

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<sup>5</sup> Unique Identifier 8301487. Medline Identifier 94133040. Authors Achong DM, Oates E, Harris B. Institution Division of Nuclear Medicine, Tufts University School of Medicine, Boston, MA. Title Mesenteric lymphadenitis depicted by indium 111-labeled white blood cell imaging. Source Journal of Pediatric Surgery. 28(12):1550-2, 1993 Dec.

# Acute abdominal pain clinical expert group

- Dr Richard Lennon (*Chair*).....Emergency staff specialist, Royal North Shore Hospital
- Dr John Harvey.....Paediatric surgeon, Children's Hospital Westmead and  
Royal North Shore Hospital
- Dr Susan Adams.....Paediatric surgeon, Sydney Children's Hospital
- Dr Gerard Roy .....Paediatric surgeon, John Hunter Children's Hospital
- Dr John Preddy.....Paediatrician, Wagga Wagga
- Ella Scott .....Clinical nurse consultant, paediatric emergency
- Vivienne Begg .....Consumer







