

Assessment of Children Presenting with Acute Abdominal Pain (Supporting Tool)

Common Causes of Abdominal Pain by Age

<2yr	2 to 12yr	12 to 16 years
Gastroenteritis Constipation Intussusception Infantile colic UTI Incarcerated Inguinal Hernia Trauma Pneumonia Diabetes	Gastroenteritis Mesenteric adenitis Constipation UTI Onset of menstruation Psychogenic Trauma Pneumonia Diabetes	Mesenteric adenitis Acute appendicitis Menstruation Mittelschmerz Ovarian Cyst Torsion UTI Pregnancy Ectopic Pregnancy Testicular Torsion Psychogenic Trauma Pneumonia Diabetes

Notes for the Assessment Tool

Who is it intended for: As a reference highlighting features that a clinician should consider when assessing a child presenting with acute abdominal pain, it is useful for any clinician.

Background on questions asked in the Tool

Is there evidence of trauma?

If there is a history of trauma associated with abdominal pain, this tool should not be used. Speak to the on-call paediatric team for advice.

Where there child presents in the community: if there is any evidence of depressed consciousness or cardio-respiratory compromise, a 999 ambulance should be called immediately.

Where a child presents in A&E or on the ward: if there is any evidence of depressed consciousness or cardio-respiratory compromise, the child should be discussed with a senior paediatrician and the trauma team immediately.

Note: 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.

Vomiting / Diarrhoea

Documenting the number of times a child has had each of these symptoms in the last 24 hours and in the last 8 hours can give a measure of the progression of the illness, and therefore help guide future management. Bile stained vomiting is a very specific medical term.

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

What is meant by bile-stained vomiting?

Often the stomach contents have yellowish or light green tinge to them, which is commonly referred to as bile. However, bile results in a definite green colour to the vomit.

The presence of bile stain vomiting indicates mechanical bowel obstruction (eg volvulus, intussusception) until proven otherwise. Therefore patients with bile stain vomiting should be referred immediately to 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.
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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 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.
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Other conditions where there can be abdominal pain associated with blood in the stools include:

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

Anorexia

This is used in the true generic term, that is: loss of appetite. It is not used to imply anorexia nervosa or bulaemia. It would be worth commenting in the free text whether anorexia is still present or whether it has been a transient feature.

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 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?
 - 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 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.

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. Adder (*Vipera berus*) envenomation can result in abdominal pain and vomiting. Adders can be found in Northumberland (particularly Kielder forest) but are generally placid. Bites are rarely fatal but should be dealt with promptly (particularly in March / April when the venom is more potent following hibernation)

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.

Examination

General Examination

NICE recommends (see Feverish Child Guidelines) that respiratory rate, heart rate and temperature should be assessed and documented in all acutely unwell children. Where facilities exist, and this will depend on location of assessment and age of the child, a BP should also be done. If there is any respiratory involvement (symptoms or signs), or the heart rate or BP are outside the normal parameters, the an oxygen saturation should also be undertaken and recorded.

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.

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).

Is there an irreducible inguinal hernia?

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

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 there jaundice?

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

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.

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

A urinalysis should be routine in children with abdominal pain.

Other questions in the diagnosis and management of abdominal pain

When and how should I relieve significant pain?

- Severe abdominal pain should be relieved as soon as possible.
- Severe pain is best relieved by intravenous narcotics in small aliquots titrated to effect. IV analgesia is normally inappropriate in the community unless the clinician has recent and adequate experience and monitoring is available.
- 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).