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**National Health and
Medical Research Council**

PAIN MEDICATION FOR ACUTE ABDOMINAL PAIN

**A summary of best available
evidence and information on
current clinical practice**

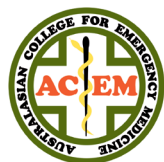
Emergency Care
Evidence in Practice Series 2008

National Institute of Clinical Studies
Emergency Care
Community of Practice

About this brochure

This brochure was developed for clinicians by the NHMRC's National Institute of Clinical Studies Emergency Care Community of Practice. It aims to highlight best available evidence to inform best practice and identify potential opportunities to improve the quality of care. The content of this brochure is based on published information available at June 2007. For information on how we developed the content of this brochure, see www.nhmrc.gov.au/nics and follow the links to Emergency Care Community of Practice.

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Why this is important

Abdominal pain is the most common reason for presentation to emergency departments in Australia⁽¹⁾ and internationally⁽²⁾ with over 22,000 non-specific abdominal pain presentations in Victoria in 2001-02 alone.⁽¹⁾ It accounts for around one third of all pain presentations to emergency departments,⁽³⁾ a significant proportion of surgical admissions, and is a common presentation in general practice.⁽⁴⁾ Given this large number of presentations, optimal use of analgesia for acute abdominal pain has considerable potential for beneficial impact on patient care.⁽⁵⁾

Acute abdominal pain is a symptom of many conditions, ranging from benign to life-threatening. Establishing the cause of abdominal pain and formulating a definitive diagnosis can be difficult. Assessment often involves diagnostic imaging investigations and consecutive examinations by more than one clinician.

Opioid analgesics can be safely given before full assessment and diagnosis in acute abdominal pain, without increasing the risk of errors in diagnosis or treatment. (Level I evidence)

Recommendations dating back to the 1920s discouraged the use of analgesics, particularly opioids, until the need for surgery was ruled out and a 'reasonable' diagnosis made.⁽⁶⁾ This recommendation was based on concerns that analgesia may mask important symptoms and lead to misdiagnosis and delayed or inappropriate treatment.⁽⁷⁾

An opposing view was that opioid analgesia had little effect on the reflex contractions of the abdominal wall muscles that occur in conditions such as peritonitis and hence was unlikely to affect the presence of key diagnostic signs. Supporters of this view argued that administering analgesia eased unnecessary suffering and may even facilitate clinical examination.^(8,9) The first trials to test the clinical application of these theories didn't occur until the 1980s.⁽⁷⁾

Best available evidence

The Australian and New Zealand College of Anaesthetists 2005 publication, *Acute Pain Management: Scientific Evidence*, clearly states that provision of pain relief does not interfere with the diagnostic process in acute abdominal pain in adults or children.⁽¹⁰⁾

This recommendation is consistent with two systematic reviews and an additional randomised controlled trial that examined the effect of opioid analgesia on diagnosis and management of patients with acute abdominal pain, while awaiting definitive diagnosis and final treatment decisions.⁽¹¹⁻¹³⁾

The Cochrane systematic review examined six adult studies^(9, 14-18) and found no difference between opioid and control groups in changes in the physical examination, errors in treatment or diagnosis, or morbidity.⁽¹¹⁾ However, it found significant reduction in pain intensity and improved patient comfort for those receiving opioids.

The second systematic review⁽¹²⁾ examined data from three paediatric^(8,19,20) and nine adult^(9, 14-18, 21-23) randomised and quasi-randomised controlled trials. On combining the results of all these trials, this review found an increased frequency of changes in the symptoms noted during physical examination of those patients who had received opioid analgesia. Identified changes included both increases

1. Emergency Demand Coordination Group. Hospital Admission Risk Program (HARP) Background Paper. Melbourne: Victorian Government Dept. of Human Services; 2002.
2. McCaig LF, Nawar EN. National Hospital Ambulatory Medical Care Survey: 2004 emergency department summary. Advance data from vital and health statistics; no 372. Hyattsville, MD National Center for Health Statistics; 2006. Available from: www.cdc.gov/nchs/nhamcs.htm
3. Codde JP, Bowen S, et al. Analysis of demand and utilisation of metropolitan emergency departments in Western Australia Perth: Dept. of Health Western Australia 2006. Available from: www.health.wa.gov.au/publications
4. Britt H, Miller G, et al. General practice activity in Australia 2005-06, General practice series no.19. Canberra: Australian Institute of Health and Welfare; 2007. Available from: www.aihw.gov.au
5. Making Health Care Safer: A Critical Analysis of Patient Safety Practices. Technology Assessment 43. Chapter 37.1. Use of Analgesics in the Acute Abdomen. Rockville, MD: Agency for Healthcare Research and Quality; 2001. Available from: www.ahrq.gov/clinic/ptsafety/
6. Cope Z. The early diagnosis of the acute abdomen. New York Oxford University Press; 1921.
7. McHale PM, LoVecchio F. Narcotic analgesia in the acute abdomen – a review of prospective trials. Eur J Emerg Med. 2001;8(2):131-6.
8. Kim MK, Strait RT, et al. A randomized clinical trial of analgesia in children with acute abdominal pain. Acad Emerg Med. 2002;9(4):281-7.
9. Attard AR, Corlett MJ, et al. Safety of early pain relief for acute abdominal pain. BMJ. 1992;305(6853):554-6.
10. Acute Pain Management: Scientific Evidence. 2nd ed. Australian and New Zealand College of Anaesthetists and Faculty of Pain Medicine. Melbourne; 2005. Available from: www.nhmrc.gov.au
11. Manterola C, Astudillo P, et al. Analgesia in patients with acute abdominal pain. Cochrane Database Syst Rev. 2007;(3):CD005660.
12. Ranji SR, Goldman LE, et al. Do opiates affect the clinical evaluation of patients with acute abdominal pain? JAMA. 2006;296(14):1764-74.
13. Gallagher EJ, Esses D, et al. Randomized clinical trial of morphine in acute abdominal pain. Ann Emerg Med. 2006;48(2):150-60, 60 e1-4.
14. LoVecchio F, Oster N, et al. The use of analgesics in patients with acute abdominal pain. J Emerg Med. 1997;15(6):775-9.
15. Mahadevan M, Graff L. Prospective randomized study of analgesic use for ED patients with right lower quadrant abdominal pain. Am J Emerg Med. 2000;18(7):753-6.
16. Pace S, Burke TF. Intravenous morphine for early pain relief in patients with acute abdominal pain. Acad Emerg Med. 1996;3(12):1086-92.
17. Thomas SH, Silen W, et al. Effects of morphine analgesia on diagnostic accuracy in Emergency Department patients with abdominal pain: a prospective, randomized trial. J Am Coll Surg. 2003;196(1):18-31.
18. Vermeulen B, Morabia A, et al. Acute appendicitis: influence of early pain relief on the accuracy of clinical and US findings in the decision to operate – a randomized trial. Radiology. 1999;210(3):639-43.
19. Green R, Bulloch B, et al. Early analgesia for

and decreases in a range of signs; for example, localisation of the site of tenderness, bowel sounds, and voluntary and involuntary guarding. Most of these studies did not distinguish between potentially beneficial changes and those that were potentially detrimental. Importantly, these changes did not result in an increase in management errors. This second review found no difference in the rate of incorrect management decisions, such as delayed or unnecessary surgery, between opioid and placebo groups. There was a trend toward fewer unnecessary operations for patients who received opioids.⁽¹²⁾ This was true for both adult and paediatric trials.

The randomised controlled trial published after completion of the searches for these reviews found no difference in the accuracy rate of emergency physicians' provisional diagnosis between groups of patients administered morphine or placebo.⁽¹³⁾

These systematic reviews, and an additional Australian review of the available literature⁽²⁴⁾ identified no randomised or quasi-randomised trials that examined the effect of opioids on patient recall and ability to provide a clinical history, the effect of non-opioid pain medications, or the care of children under four years of age.^(12,24)

Current practice

Internationally, surveys in adult⁽²⁵⁻²⁷⁾ and paediatric⁽²⁸⁾ emergency care settings have found that emergency physicians and surgeons commonly prefer to withhold analgesia for acute abdominal pain, even when they do not believe that opiate medication changes important examination findings.⁽²⁵⁾


Audits of emergency care practice have found that less than one third of adult or paediatric patients with acute abdominal pain received opioids^(29,30) or any analgesic medication.^(31,32) Where analgesia is given, it may not be adequate to provide relief from pain. One study in paediatric emergency care found that the analgesics were administered at sub-therapeutic doses in 14 per cent of patients.⁽³¹⁾ These studies did not comment on what the ideal rates of analgesia use should have been. Another study found use of opioid analgesia for adults with acute abdominal pain more than doubled from 23 per cent in 1998 to 53 per cent in 2003, along with a dramatic increase in pain score documentation, following intensive campaigns about the importance of managing pain symptoms.⁽³⁰⁾

Practice audits have also identified delays in the time taken for patients to receive pain medication.^(26,30,33) Delay is especially likely for patients admitted to hospital wards from the emergency department, for whom average times to receive analgesia of between five and six hours have been identified.^(26,34) One study found that only around 10 per cent of those patients who had seen a general practitioner received analgesia prior to coming to the emergency department.⁽²⁶⁾

Preliminary results from a 2007 retrospective audit of 36 Australian emergency departments and 10 Australian and New Zealand paediatric emergency departments suggest there is variation between departments in the practice of withholding pain medication and the average time taken to administer pain relief.⁽³⁵⁾

Implications for practice

- There is no evidence to support withholding analgesia for acute abdominal pain in adults or children.
- Opioid analgesics improve patient comfort, without increasing the risk of errors in diagnosis or treatment, and can be safely given before full assessment and diagnosis in acute abdominal pain. (Level I evidence)

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- children with acute abdominal pain. *Pediatrics*. 2005;116(4):978-83.
- Kokki H, Lintula H, et al. Oxycodone vs placebo in children with undifferentiated abdominal pain: a randomized, double-blind clinical trial of the effect of analgesia on diagnostic accuracy. *Arch Pediatr Adolesc Med*. 2005;159(4):320-5.
 - Zoltie N, Cust MP. Analgesia in the acute abdomen. *Ann R Coll Surg Engl*. 1986;68(4):209-10.
 - Garyfollou G, Grillo A, et al. A controlled trial of fentanyl analgesia in emergency department patients with abdominal pain: can treatment obscure the diagnosis? [abstract]. *Acad Emerg Med*. 1997;4:424.
 - Wolfe JM, Smithline HA, et al. Does morphine change the physical examination in patients with acute appendicitis? *Am J Emerg Med*. 2004;22(4):280-5.
 - Reid J, Rumbold G, et al. Evidence Review: Analgesic use in acute abdominal pain. Melbourne: Centre for Clinical Effectiveness 2007. Available from: www.mihsr.monash.org/cce/evidence.html
 - Wolfe JM, Lein DY, et al. Analgesic administration to patients with an acute abdomen: a survey of emergency medicine physicians. *Am J Emerg Med*. 2000;18(3):250-3.
 - Tait IS, Ionescu MV, et al. Do patients with acute abdominal pain wait unduly long for analgesia? *J R Coll Surg Edinb*. 1999;44(3):181-4.
 - Graber MA, Ely JW, et al. Informed consent and general surgeons' attitudes toward the use of pain medication in the acute abdomen. *Am J Emerg Med*. 1999;17(2):113-6.
 - Kim MK, Galustyan S, et al. Analgesia for children with acute abdominal pain: a survey of pediatric emergency physicians and pediatric surgeons. *Pediatrics*. 2003;112(5):1122-6.
 - Lee JS, Stiell IG, et al. Adverse outcomes and opioid analgesic administration in acute abdominal pain. *Acad Emerg Med*. 2000;7(9):980-7.
 - Neighbor ML, Baird CH, et al. Changing opioid use for right lower quadrant abdominal pain in the emergency department. *Acad Emerg Med*. 2005;12(12):1216-20.
 - Goldman RD, Crum D, et al. Analgesia administration for acute abdominal pain in the pediatric emergency department. *Pediatr Emerg Care*. 2006;22(1):18-21.
 - Pagel JM, Kerr K, et al. Retrospective analysis of a guideline for evaluating nontraumatic abdominal pain in older patients presenting to the emergency department. *J Clin Outcomes Manag*. 2003;10(11):589-95.
 - Green RS, Kabani A, et al. Analgesic use in children with acute abdominal pain. *Pediatr Emerg Care*. 2004;20(11):725-9.
 - Shabbir J, Ridgway PF, et al. Administration of analgesia for acute abdominal pain sufferers in the accident and emergency setting. *Eur J Emerg Med*. 2004;11(6):309-12.
 - National Institute of Clinical Studies. Audit of Australian emergency department pain management practice. Canberra: NHMRC; 2007. Available from: www.nhmrc.gov.au/nics



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Levels of evidence

- I Evidence obtained from a systematic review of all relevant randomised controlled trials
- II Evidence obtained from at least one properly-designed randomised controlled trial
- III-1 Evidence obtained from well-designed pseudorandomised controlled trials
- III-2 Evidence obtained from comparative studies
- III-3 Evidence obtained from comparative studies with historical control, two or more single arm studies, or interrupted time series without a parallel control group
- IV Evidence obtained from case series, either post-test or pre-test/post-test
- CPP Recommended best practice based on clinical experience and expert opinion

The National Institute of Clinical Studies (NICS) works to improve health care by getting health and medical research into practice. NICS is an institute of the National Health and Medical Research Council (NHMRC), Australia's peak body for supporting health and medical research.

NICS supports the Emergency Care Community of Practice for all individuals and organisations involved in the delivery of emergency care to share their knowledge and expertise in implementation of best practice to improve patient care

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Australasian College for Emergency Medicine
College of Emergency Nursing Australasia
Australian College of Emergency Nursing

For more information

Emergency Care Community of Practice
National Institute of Clinical Studies
National Health and Medical Research Council
GPO Box 4530, Melbourne VIC 3001 Australia
T: 61 3 8866 0400
F: 61 3 8866 0499
E: emergencycare@nhmrc.gov.au
W: www.nhmrc.gov.au/nics

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