



Paediatric Evidence Centre

Evidence Request #P0013

Antibiotics for bloody diarrhoea in children

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Abstract

Background: In current practice, children with fever and bloody diarrhoea presenting to the Emergency Department may be given antibiotics before infection with a bacterial pathogen is confirmed. A clinical path is being developed to manage children with diarrhoea and clinicians queried whether this practice is evidence-based.

Clinical Question: In children with bloody diarrhoea and fever, does providing antibiotics before bacterial infection is confirmed, as compared to not providing antibiotics until bacterial infection is confirmed, affect clinical outcomes such as length of stay or duration of diarrhoea?

Methods: To be included trials had to be carried out in infants or children in developed countries and be published in English.

We searched The Cochrane Library, including The Cochrane Database of Systematic Reviews, DARE, CENTRAL and HTA in April 2006. We also searched Medline and CINAHL and several key guideline websites.

Studies were selected by one reviewer in consultation with colleagues, using inclusion, exclusion and appraisal criteria established a priori.

Results: No relevant studies were identified.

Conclusions: There is no high quality evidence to inform the decision to give or not give antibiotics to children with fever and bloody diarrhoea before bacterial infection is confirmed. Given the lack of evidence to assess effectiveness, the many complex and interrelated factors that affect the decision, and the likelihood that children with fever and bloody diarrhoea will be very unwell, it seems inappropriate for a guideline or clinical path to dictate the decision to give or not give antibiotics to children with fever and bloody diarrhoea before bacterial infection is confirmed.

Implications for Practice: The decision to give or not give antibiotics to children with fever and bloody diarrhoea before bacterial infection is confirmed should be made in consultation with an emergency physician or paediatrician. An additional section outlining this will be added to the Evidence-based Guideline and Clinical Path for the Management of Children with Diarrhoea.

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Background

In current practice, children with fever and bloody diarrhoea presenting to the Emergency Department may be given antibiotics before infection with a bacterial pathogen is confirmed. A clinical path is being developed to manage children with diarrhoea and clinicians queried whether this practice is evidence-based.

Clinical Question

In children with bloody diarrhoea and fever, does providing antibiotics before bacterial infection is confirmed, as compared to not providing antibiotics until bacterial infection is confirmed, affect clinical outcomes such as length of stay or duration of diarrhoea?

Methods

Study Selection Criteria

Patient	Infants or children with bloody diarrhoea and fever		
Intervention	Antibiotics prescribed before bacterial infection is confirmed		
Comparison	Antibiotics prescribed only after bacterial infection is confirmed		
Outcomes	Any	Publication Date	Any
Study Type	Any	Language	English

Search Strategy

Evidence Source	Date of Search	Evidence Source	Date of Search
The Cochrane Library *	3 rd April 2006	CINAHL (Ovid)	3 rd April 2006
Medline (Ovid)	3 rd April 2006	Relevant websites**	3 rd April 2006

*Including The Cochrane Database of Systematic Reviews, DARE, CENTRAL and HTA

**Including www.nzgg.org.nz, www.guidelines.gov, www.nhmrc.gov.au, www.cebpagan.org, www.tg.com.au, www.bestbets.org, www.mja.com.au/public/guides/guides.html, www.leitlinien.de/leitlinienanbieter/fremdsprachig_en/view,

Search Terms in Medline

Patient	(child\$ OR infant\$).mp AND (exp Diarrhea/ OR (diarrhoea or diarrhea).mp OR exp Gastroenteritis/ OR (gastroenteritis or gastro-enteritis).mp) AND (exp Fever/ OR (febrile or fever\$).mp) AND (exp Dysentery/ OR exp Gastrointestinal Hemorrhage/ OR exp Occult Blood/ OR blood\$.mp)
Intervention	exp Anti-Bacterial Agents/ OR (anti-biotic\$ or antibiotic\$ or anti-microb\$ or antimicrob\$ or anti-bacterial or antibacterial).mp
Comparison	-
Outcomes	-

Data Collection & Analysis

Studies were selected by one reviewer in consultation with colleagues, using inclusion, exclusion and appraisal criteria established a priori.

Results

No studies were identified which compared the effect of providing antibiotics before bacterial infection is confirmed, to not providing antibiotics until bacterial infection is confirmed, in children with fever and bloody diarrhoea.

Discussion of other potentially relevant material

There is no high quality evidence to inform the decision to give or not give antibiotics to children with fever and bloody diarrhoea before bacterial infection is confirmed. In the absence of evidence a range of other potentially relevant resources were investigated. These resources are provided in order to support clinical decision making, and have not been systematically appraised for quality.

The decision as to when to provide antibiotics to children with bloody diarrhoea and fever is a complex one. Most children with acute diarrhoea do not require treatment with antibiotics. Even in children with severe diarrhoea the benefits of treatment must be carefully weighed against the risks, as the Infectious Diseases Society of America highlight:

“Because of increasing threats from antimicrobial-resistant infections, side effects of treatment with antimicrobial agents, suprainfections when normal flora are eradicated by antimicrobial agents, and the possibility of induction of disease-producing phage by antibiotics (such as Shiga-toxin phage induced by quinolone antibiotics), any consideration of antimicrobial therapy must be carefully weighed against unintended and potentially harmful consequences.”¹

The choice of whether to prescribe antibiotics, and which antibiotic to prescribe, will vary according to the prevalence of bacterial organisms in the local context. The World Health Organization manual for the Treatment of Diarrhoea in developing countries recommends that

“Any child with bloody diarrhoea and severe malnutrition should be referred immediately to hospital. All other children with bloody diarrhoea should be assessed, given appropriate fluids to prevent or treat dehydration, and given food, as described in sections 3 and 4. In addition, they should be treated for three days with ciprofloxacin, or for five days with another oral antimicrobial to which most *Shigella* in the area are sensitive (Annex 7). This is because *Shigella* cause most episodes of bloody diarrhoea in children, and nearly all episodes that are severe.”³

In Australia, the prevalence of bacterial pathogens is markedly different from developing countries. A total of less than 350 paediatric shigella infections are reported each year (see in Table 1 below) – and these 350 may well include many cases without bloody diarrhoea.

Table 1. Number of Notifications of Bacterial Pathogens in Australia in 2005⁴

	Age Group	Male	Female
Campylobacter (<i>not notified in NSW</i>)	0-4	1115	766
	5-9	571	393
	10-14	494	253
	15-19	621	434
Salmonella	0-4	1298	1165
	5-9	335	318
	10-14	245	163
	15-19	224	222
Shigella	0-4	125	99
	5-9	26	24
	10-14	15	10
	15-19	11	11

The Canadian Paediatric Society Position Statement on Treatment of Diarrheal Disease states:

“Routine empirical use of antibiotics for infectious diarrhea should be avoided because of the self-limited nature of most cases, the cost of antibiotics and the potential of worsening the already significant problem of antibiotic resistance of enteric pathogens. For patients with severe invasive or prolonged diarrhea or who are at high risk of complications, empirical treatment with a quinolone antibiotic for three to five days can be considered. Antibiotic treatment can be highly effective for *Shigella*, *Escherichia coli*, and *Vibrio cholerae* infections, and metronidazole is indicated for *Clostridium difficile* colitis. The impact of antibiotics for other specific pathogens is modest, and antibiotic therapy in these cases (ie, salmonella, campylobacter, etc) should be reserved for the same group of patients who would be considered for empirical treatment (evidence level II-2, B)”.²

However the reference to which the Position Statement refers⁵ is a narrative review, which is not specific to

children, defines high risk patients as “such as the elderly, diabetics, cirrhotics, and immunocompromised patients” and does not provide an evidence-base for the recommendation.

Australian Therapeutic Guidelines, which do sometimes include evidence, but are not developed in a rigorous evidence-based way, suggest that: “Antibiotic therapy is not required in the normal host unless there is evidence to suggest invasion with a bacterial pathogen, eg persistent fever with bloody diarrhoea and/or rigors”⁶

Conclusions

There is no high quality evidence to inform the decision to give or not give antibiotics to children with fever and bloody diarrhoea before bacterial infection is confirmed. Given the lack of evidence to assess effectiveness, the many complex and interrelated factors that affect the decision, and the likelihood that children with fever and bloody diarrhoea will be very unwell, it seems inappropriate for a guideline or clinical path to dictate the decision to give or not give antibiotics to children with fever and bloody diarrhoea before bacterial infection is confirmed.

Implications for Practice

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References

1. IDSA GUIDELINES Practice Guidelines for the Management of Infectious Diarrhea, *Clinical Infectious Diseases* 2001;32:331-351
2. Treatment of diarrheal disease. Nutrition Committee, Canadian Paediatric Society (CPS) Paediatrics & Child Health 2003;8(7):455-458 Reference No. N03-01 Reaffirmed February 2006
3. World Health Organization. 2005 The Treatment of diarrhoea: a manual for physicians and other senior health workers. -- 4th rev. ISBN 92 4 159318 0 (NLM classification: WS 312) This publication is the fourth revision of document WHO/CDD/SER/80.2 and supersedes document WHO/CDR/95.3 (1995)
4. Data extracted from the Australian National Notifiable Diseases Surveillance System (NNDSS) on April 12th, 2006. NNDSS data is available on the internet at <http://www.health.gov.au/internet/wcms/publishing.nsf/Content/Nationally+notifiable+diseases+%28NNDSS%29-1>
5. Oldfield EC 3rd, Wallace MR. 2001 The role of antibiotics in the treatment of infectious diarrhea. *Gastroenterol Clin North Am.* 30(3):817-36.
6. Acute diarrhoea of unknown cause, Australian Therapeutic Guidelines, <http://etg.hcn.net.au/>, Accessed April 2006

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