AUSTRALIA

Communicable Diseases Intelligence

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Contents:

VIRUS REPORTING SCHEME - A total of 857 reports were submitted this period. However due to data processing difficulties, the virus tables for this period are not available. They will be included with the next issue of the Bulletin.

Reports of interest include:-

. Group B arbovirus infections - Three cases of arbovirus group B infection were reported from the State Health Laboratory, Brisbane:

A 30 year old female with meningoencephalitis, who had been stationed with the army in Malaysia, exhibited IgM titres to Australian encephalitis virus and Kunjin, but had no identity with dengue virus.

A 44 year old male orderly in a Brisbane hospital, who claimed he had not travelled outside Brisbane, exhibited a rise in titre by H1 from 1:20-1:640 with three consecutive sera to group B arbovirus antigen. No identity was made with Australian encephalitis, Kunjin or dengue.

The third case is of particular interest. A 43 year old housewife from the Burnett area of Queensland whose first serum sample in late April showed a titre of 1:40 to group B arbovirus antigen. This subsequently rose to 1:1280. In spite of no recent history of overseas travel she showed IgM activity against dengue types 2 and 3, but not against dengue 1 and 4, Kunjin or Australian encephalitis. Her serum is being investigated further by the Queensland Institute of Medical Research. If the findings and her history are corroborated, it could be the first indication of the possible re-establishment of indigenous dengue in Australia, although further cases would be necessary to substantiate this. The usual vector of dengue Aedes aegypti has been reported in Queensland in recent years as far south as Monto, which is at a similar latitude to Burnett where the patient resided.

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Figures given may be subject to revision.

THE ROLE OF ANTIBIOTICS IN THE TREATMENT OF DIARRHOEA

At the meeting of the National Health and Medical Research Council in Melbourne in June, 1980, the Council endorsed the following paper by A. Kucers, Fairfield Hospital, Victoria. The Council observed that the use of antibiotics for the treatment of diarrhoeal disease is controversial and commended the policies contained in the paper as an attempt to rationalise the attitude of medical practitioners on this issue.

Introduction. Diarrhoea is a common symptom of many non-infective diseases, and sometimes it may be prominent in infections which primarily do not affect the bowel, e.g. malaria. It is also a frequent side-effect of drug administration, including the use of antibiotics. Antibiotic-induced diarrhoea is occasionally very severe and many even cause death.

Many infective diarrhoeal diseases such as rotavirus gastro-enteritis and staphylococcal toxin food-poisoning do not benefit from antibiotics. In addition some bacterial gastro-intestinal infections such as salmonellosis are not improved by antibiotic administration despite the *in vitro* sensitivity of the salmonella species strain concerned. For these reasons antimicrobial agents should only be prescribed for certain selected gastro-intestinal infections which have been shown to benefit clinically from specific chemotherapy. An accurate diagnosis of a diarrhoeal disease is a prerequisite to this.

Acute diarrhoea - diagnosis pending. Chemotherapy is rarely necessary in these circumstances. Rehydration, if necessary, is the essential measure in acutely ill patients. Immediate chemotherapy, after the collection of appropriate specimens for culture, may be considered for selected patients if the epidemiology strongly favours a particular aetiology such as giardiasis or cholera. If salmonella food poisoning is suspected, empirical chemotherapy may be considered for patients who are prone to septicaemia because of impaired defence mechanisms, e.g. immunosuppression.

Salmonella gastro-enteritis. In uncomplicated salmonella gastro-enteritis antibiotics are of no value, either for the treatment of the disease or for the resultant asymptomatic salmonella carrier state, which is usually temporary. On the contrary, the use of absorbable antibiotics such as ampicillin, co-trimoxazole or chloramphenicol may prolong the period of excretion of salmonellae after clinical recovery[2,17]. The same is true when non-absorbable antibiotics such as neomycin are used[15].

In occasional patients with severe salmonella gastro-enteritis with suspected or confirmed septicaemia, treatment using either chloramphenicol, ampicillin, amoxycillin or co-trimoxazole is indicated. One of these drugs may also be necessary if salmonella gastro-enteritis develops in immuno-compromised patients.

Shigella dysentery. Controlled studies in shigellosis indicate that the use of absorbable antibiotics such as ampicillin[13] or co-trimoxazole[26,27] cause a more rapid clinical recovery and shorten the period during which shigellae are excreted. By contrast to ampicillin, amoxycillin is relatively ineffective in this disease[25]. This is possibly because

amoxycillin is two-fold less active than ampicillin against Shigella spp. in vitro[28], and also because amoxycillin is rapidly absorbed resulting in subinhibitory concentrations in the colon[23]. However most present day data suggest that for the treatment of shigellosis good systemic absorption of a drug is more important than the attainment of high intraluminal concentrations; non-absorbable antibiotics such as neomycin are relatively ineffective in this disease[12].

The enteritis resulting from shigellosis may vary from a mild illness to severe, often life-threatening disease; the latter is typical of infection caused by Shigella dysenteriae (Shiga bacillus). Chemotherapy with oral or parenteral ampicillin or co-trimoxazole is recommended for severe cases of shigella dysentery. In many parts of the world, including developed countries, ampicillin-resistant shigellae are now common which may also be multiply-resistant to tetracyclines, chloramphenicol and sulphonamides[31]. Such strains now appear to be prevalent in South-East Asia. Co-trimoxazole is the drug of choice for the treatment of shigellosis caused by ampicillin-resistant strains[7]. Chloramphenicol may also be occasionally indicated for the treatment of seriously ill patients, provided the Shigella spp. strain is sensitive to this drug. Tetracyclines are usually not recommended; one study in adults showed that a single oral dose of 2.5 g tetracycline was effective in shigellosis, irrespective of the sensitivity of the organism[29].

Most patients with a mild shigella dysentery, especially if the infection is caused by Shigella sonnei, recover uneventfully without chemotherapy. Many clinicians prefer to treat these patients by symptomatic measures alone. Apart from their clinical status, the social and physical environment of such patients may sometimes be a consideration. For instance a reduction of the duration of faecal excretion of organisms may be important when treating patients at home where family members may be susceptible to infection[36,22]

Infective enteritis in newborns caused by enteropathogenic Escherichia coli.

Certain serogroups of Esch. coli may be enterotoxic, causing as in cholera an outgoing of fluid into the small bowel lumen. Others may be enteroinvasive, having the ability, like shigellae, to invade the intestinal mucosa[10].

Many authors recommend no chemotherapy for this disease, rehydration being the essential and most important treatment[8]. Others, on the basis of uncontrolled observations, recommend oral neomycin in a dosage of 100 mg per kilogram per day, given in four divided doses[22, 20]. Neomycin therapy should not be continued for longer than five days, otherwise neomycin-induced malabsorption may result[24]. If neomycin-resistant strains are encountered, oral polymyxin B in a dosage of 15-20 mg per kilogram per day may be considered. The use of oral gentamicin should be avoided, as this may provoke the emergence of enterobacteriaceae resistant to this valuable drug. It is not known whether absorbable antibiotics, as in shigellosis, may be more beneficial for the treatment of disease caused by enteroinvasive strains of Esch. coli.

Cholera. In this disease correction of dehydration is the most important measure. Nevertheless controlled studies show that oral tetracycline or doxycycline, given for four days, is effective in eradicating vibrios from stools and also in diminishing the volume and duration of diarrhoea[5,30]. A three-day course of tetracycline also effectively eliminates the organisms from cholera carriers[14]. A four-day course of co-trimoxazole has been reported to be as effective as tetracycline for the treatment of acute cholera[6].

Vibrio parahaemolyticus gastro-enteritis. This is usually a relatively mild acute self-limiting diarrhoeal disease, and chemotherapy is usually not used. The organism is sensitive *in vitro* to the tetracyclines[16], but it is not known whether the administration of these drugs is of any benefit.

Campylobacter enteritis. The majority of patients with this disease recover without any specific chemotherapy. As a result of *in vitro* studies erythromycin has been suggested as the drug of choice for treatment of severe cases[18], but this has not yet been confirmed by clinical studies. A small percentage of campylobacter strains are erythromycin-resistant[35].

Travellers diarrhoea. The routine prophylactic use of an antibiotic for travellers to developing countries is not recommended because of possible side effects and the likelihood of inducing resistant enteric pathogens. However, in one controlled trial, a 100 mg daily dose of doxycycline given for three weeks, was very effective in reducing the frequency of traveller's diarrhoea amongst Peace Corps volunteers in Kenya[32].

Tropical sprue. Long-term tetracycline administration is beneficial and most patients with tropical sprue show improvement after a four week's treatment[34].

Pseudomembranous colitis. This is an uncommon but serious complication of treatment with antibiotics. Recent studies have indicated that an overgrowth in the bowel of toxin-producing strains of *Clostridium difficile* cause this disease[3]. All strains of *Clostridium difficile* are sensitive in vitro to vancomycin, metronidazole, and to the antifungal agent miconazole[4,11].

Metronidazole has been used to treat a few patients with antibiotic-associated pseudomembranous colitis, all of whom had a rapid clinical response[9,21]. Uncontrolled studies in a relatively small number of patients also suggest that oral vancomycin (0.5 g six-hourly) may also be beneficial[33,3].

Giardiasis. Metronidazole is now regarded as the drug of choice for the treatment of this infection. The recommended regimen for adults 2 g orally once a day for three days, produces a higher parasitological cure rate than standard courses of either mepacrine (quinacrine, "Atabrine")[38] or furazolidone[19]. For severe or recurrent cases of giardiasis a more prolonged metronidazole course may be required. Tinidazole, similar to metronidazole, is another nitroimidazole drug, and has been used in either

single or multiple-dose regimens to treat giardiasis with success[19]. In the United States of America some authors still prefer mepacrine for treatment of giardiasis, particular in children[37].

Amoebic dysentery. Metronidazole is a very effective drug for the treatment of all forms of amoebiasis. For intestinal infections and symptomless cyst passers, a regimen of 400-800 mg given orally three times a day for 5-10 days is now recommended[1].

As with giardiasis, tinidazole has also been used for the treatment of amoebic dysentery with success, but clinical experience with this drug so far is limited.

References

For reasons of space the 38 references quoted in this article have been omitted. However, a comprehensive list of the references is available from the editor of the CDI.

PSEUDOMEMBRANOUS COLITIS (PMC)

(Follow-up to article on Clostridium difficile (CDI 80/13) - contributed by I. Cook, State Health Laboratory, Brisbane.)

The Virology Section of State Health Laboratory, Brisbane, regularly performs assays in human foetal fibroblasts (WI-38 cells) for the toxin in cases of PMC. This assists clinicians wishing to "prove" that the colitis is due to Clostridium difficile before administering vancomycin. A result is usually available after 12 hours but cases in which the toxicity takes 48 hours to develop occur.

Faeces are assayed according to the protocol followed by Chang et al., (1979)[1]. Neutralization of the toxic effect is obtained using Wellcome Foundation Cl. sordellii antitoxin at 1:80 dilution.

From 1/7/79 to 30/6/80 a total of 148 specimens of faeces from 99 patients were tested. Twenty-five specimens from 14 patients were positive. All were adults.

During this reporting period, Cl. difficile toxin was also detected in the faeces of a one year old child with diarrhoea. It was not known whether antibiotics had been administered. Although there are reports of Cl. difficile being isolated from up to 15% of children of this age, the detection of the toxin in such cases appears to be unusual.

Reference

1. J. Infect. Dis. (1979) 140:765

MENINGOCOCCAL MENINGITIS IN SYDNEY

Three cases of meningococcal meningitis have been reported by the Liverpool District Hospital and the Parramatta office of the N.S.W. Health

Commission:

1. A male aged 43, a heavy drinker, admitted with a chest infection on 23 June 1980. Meningeal symptoms developed two days later.
2. A male aged 22, admitted on 24 June. His father was a drinking companion of the first case.
3. A male aged 19, admitted approximately two weeks later on 7 July. Although his drinking habits were unknown, he lived very close to the "pub" frequented by the first two patients.

Laboratory serotyping on cerebrospinal fluid specimens at the Westmead Hospital laboratory identified all three cases as group A Neisseria meningitidis infections. It seems possible that the infection in the three cases was associated with the "pub". This was not confirmed since no epidemiological investigations were undertaken. About one week previously another apparently separate case of bacterial meningitis was reported from the Royal North Shore Hospital, Sydney. A 37 year old male, who worked in Parramatta, was admitted initially to Windsor Hospital with a febrile illness and in a confused state. Although he had been treated with tetracycline, N. meningitidis group A was isolated.

Editorial Comment

The normal habitat of N. meningitidis is the human nasopharynx; and many persons may carry the organism asymptomatically for indefinite periods(1). In susceptible persons however, meningococci can cause a suppurative meningitis following a bacteraemia. N. meningitidis may be classified serologically into eight groups by agglutination (A,B.C,X,Y,Z, 29E and W135). Group A is frequently associated with epidemics of meningitis occurring in closed communities of susceptible individuals, such as in military recruitment camps, nurseries or boarding schools(2).

Groups A and C were both found in the 1974 epidemic in Brazil. Group B strains are frequently isolated from sporadic cases, and appear to be the most frequently isolated group in Australia (75% of all isolates in the eight year period 1971 to 1978 at the Microbiology Department, Adelaide Children's Hospital)(3). They can present as a meningococcal bronchitis(4).

Asymptomatic carriers appear to constitute the main focus of infection and may have caused the group of three cases reported in Sydney.

References

1. J. Inf. Dis. (1971) 123:67
2. J. Inf. Dis. (1970) 121:449
3. CDI (1979) 79/16 : 2
4. CDI (1979) 79/8 : 2

BRUCELLOSIS IN SOUTH AUSTRALIA

(Contributed by A. Jamieson and G. Rich, Department of Clinical Microbiology, Institute of Medical and Veterinary Science, Adelaide.)

A sharp rise in the number of cases of acute brucellosis has occurred in

South Australia, similar to that reported in Western Australia (CDI 80/11). Between July 1979 and May 1980, 22 cases in one abattoir were diagnosed at the Institute of Medical and Veterinary Science, compared with five cases at the same abattoir in the previous financial year. Blood cultures were taken from 68% of these patients and 40% of these were positive.

Editorial comment

Human brucellosis in Australia is limited almost entirely to infection by Brucella abortus from cattle. It is a "notifiable disease" in all States. Notifications received from South Australia over the six year period, 1974 to 1979, indicate a rise in the number of human cases 2(1974); 4(1975); 7(1977); 11(1978); 28(1979). For the first half of 1980 (Jan-June) 22 cases have already been notified.

A national brucellosis eradication campaign, with the objective of eradicating brucellosis in cattle throughout the whole of Australia, was officially inaugurated in July 1970. However, it became nationally effective only in July 1975 when owner compensation for any cattle slaughtered because of Br. abortus infection was instituted. Vigorous testing of herds throughout Australia has continued, and by March 1980, almost 65% of the national herd was classified as brucellosis free or "tested negative". In South Australia, 95% of the herds have been assayed, and 7.4% established as suspect or infected.

Currently the only totally free areas are Tasmania and the Kimberley area in Western Australia. National "provisional" freedom is hoped to be achieved by 1984, and complete national freedom soon after. Nevertheless the total number of infected cattle slaughtered throughout Australia is still considerable, and periodic infection of abattoir and other workers handling such animals can be expected to continue until eradication has been achieved in the areas served.

CYTOMEGALOVIRUS PNEUMONIA

(Contributed by M. Bucens and G.B. Harnett, State Health Laboratory, Perth.)

A 19 year old female was investigated for a P.U.O. of three weeks duration. She complained of mild dyspnoea and rigors. Chest X-ray revealed apical consolidation of the left lung accompanied by slight pleural effusion. Electrocardiographic charges were consistent with a small pericardial effusion. Her total white cell count was within limits with 31% lymphocytes. There were 7% atypical mononuclear cells and her E.S.R. was 93 mm per hour (Wintrobe). The diagnosis of cytomegalovirus infection was based on a fourteen-fold increase in titre by C.F.

(cont'd from page 1)

Influenza - The State Health Laboratory, Brisbane, has isolated a strain of influenza A (H_3N_2 resembling A/Bangkok/1/79) from the lungs of a 56 year old Brisbane woman who died after a short respiratory illness. Influenza B resembling B/Singapore/222/79 has also been isolated from one Brisbane and one Mackay resident, bringing the total to three in the last four weeks.

REFERENCES

1. Adams, E. B. and MacLeod, I. N. (1977), "Invasive amebiasis, I. Amebic dysentery and its complications", Medicine, 56 : 315.

2. Asèrkoff , B. and Bennett, J. V. (1969), "Effect of antibiotic therapy in acute salmonellosis on the fecal excretion of salmonellae", New Engl. J. Med., 281 : 636.

3. Bartlett, J. G., Chang, T. W., Taylor, N. S. and Onderdonk, A. B. (1979), "Colitis induced by Clostridium difficile", Rev. Infect. Dis., 1 : 370.

4. Burdon, D. W., Brown, J. D., Youngs, D. J., Arabi, Y., Shinagawa, N., Alexander-Williams, J., Keighley, M. R. B. and George, R. H. (1979), "Antibiotic susceptibility of Clostridium difficile", J. Antimicrob. Chemother., 5 : 307.

5. Carpenter, C. C. J., Wallace, C. K., Mitra, P. P., Sack, R. B., Mondal, A., Wells, S. A., Dans, P. E., Lewis, G. W. and Chaudhuki, R. N. (1965), "Antibiotic therapy in cholera", Proc. Chol. Res. Symp., U.S. Dept. Health, Ed. Welfare, p. 190.

6. Cash, R. A., Northrup, R. S. and Rahman, A. S. M. M. (1973), "Trimethoprim and sulfamethoxazole in clinical cholera: comparison with tetracycline", J. Infect. Dis. (Suppl.), 128 : 749.

7. Chang, M. J., Dunkle, L. M., Van Reken, D., Anderson, D., Wong, M.L. and Feigin, R. D. (1977), "Trimethoprim-sulfamethoxazole compared to ampicillin in the treatment of shigellosis", Pediatrics, 59 : 726.

8. Christie, A. B. (1973), "Treatment of gastro-intestinal infections; a clinicians viewpoint". In Geddes, A. M. and Williams, J. D. (Ed.), Current Antibiotic Therapy, Churchill Livingstone, Edinburgh and London, p. 183.

9. Dinh, H. T., Kernbaum, S. and Frottier, J. (1978), "Treatment of antibiotic-induced colitis by metronidazole", Lancet, 1 : 338.

10. Du Pont, H. L., Formai, S. B., Hornick, R. B., Snyder, M.J., Libonati, J. P., Sheahan, D. G., La Brec, E. H. and Kalas, J. P. (1971), "Pathogenesis of Escherichia coli diarrhœa" , New Engl. J. Med., 285 : 1.

11. Fekety, R., Silva, J., Toshniwal, R., Allo, M., Armstrong, J., Browne, R., Ebright, J. and Rifkin, G. (1979), "Antibiotic-associated colitis: Effects of antibiotics on Clostridium difficile and the disease in hamsters", Rev. Infect. Dis., 1 : 386.

12. Haltalin, K. C., Nelson, J. D., Hinton, L. V., Kusmiesz, H. T. and Sladoje, M. (1968), "Comparison of orally absorbable and non-absorbable antibiotics in shigellosis", J. Pediatrics, 72 : 708.

13. Haltalin, K. C., Kusmiesz, H. T., Hinton, L. V. and Nelson, J. D. (1972), "Treatment of acute diarrhoea in outpatients: Double-blind study comparing ampicillin and placebo", Amer. J. Dis. Child., 124 : 554.

..2/

14. Joint ICMR-GWB-WHO Cholera Study Group, Calcutta, India (1971), "Effect of tetracycline on cholera carriers in households of cholera patients", Bull. Wld. Hlth. Org., 45 : 451.

15. Joint Project by Members of the Association for the Study of Infectious Disease (1970), "Effect of neomycin in non-invasive Salmonella infections of the gastrointestinal tract", Lancet, 2 : 1159.

16. Joseph, S. W., DeBell, R. M. and Brown, W. P. (1978), "In vitro response to chloramphenicol, tetracycline, ampicillin, gentamicin, and beta-lactamase production by Halophilic vibrios from human and environmental sources", Antimicrob. Ag. Chemother., 13 : 244.

17. Kazemi, M., Gumpert, T. G. and Marks, M. I. (1973), "A controlled trial comparing sulfamethoxazole-trimethoprim, ampicillin, and no therapy in the treatment of salmonella gastro-enteritis in children", J. Pediatrics, 83 : 646.

18. Leading article (1978), "Campylobacter enteritis", Lancet, 2 : 135.

19. Levi, G. C., deAvila, C. A. and Neto, V. A. (1977), "Efficacy of various drugs for treatment of giardiasis . A comparative study", Am. J. Trop. Med. Hyg., 26 : 564.

20. Marcy, S. M. (1976), "Microorganisms responsible for neonatal diarrhoea", in Infectious Diseases of the Fetus and Newborn Infant (Remington, J. S. and Klein, J. O., Eds.). W. B. Saunders Co. Philadelphia and London, p. 892.

21. Matuchansky, C., Aries, J. and Maire, P. (1978), "Metronidazole for antibiotic-associated pseudomembranous colitis", Lancet, 2 :580.

22. McCracken, G. H.,Jr. and Eichenwald, H. F. (1974), "Antimicrobial therapy: Therapeutic recommendations and a review of newer drugs. Part 1. Therapy of infectious conditions", J. Pediatrics, 85 : 297.

23. McCracken, G. H.,Jr. (1979), "Antibiotic treatment of shigellosis", J. Pediatrics, 95 : 334.

24. Nelson, J. D. (1971), "Duration of neomycin therapy for enteropathogenic Escherichia coli diarrhoeal disease: a comparative study of 113 cases", Pediatrics, 48 : 248.

25. Nelson, J. D. and Haltalin, K. C. (1974), "Amoxicillin less effective than ampicillin against Shigella in vitro and in vivo: Relationship of efficacy to activity in serum", J. Infect. Dis. (Suppl.), 129 : 222.

26. Nelson, J. D., Kusmiesz, H. and Jackson, L. H. (1976a), "Comparison of trimethoprim-sulfamethoxazole and ampicillin therapy for shigellosis in ambulatory patients", J. Pediatrics, 89 : 491.

27. Nelson, J. D., Kusmiesz, H., Jackson, L. H. and Woodman, E. (1976b), "Trimethoprim-sulfamethoxazole therapy for shigellosis", JAMA, 235 : 1239.

28. Neu, H. C. (1974), "Antimicrobial activity and human pharmacology of amoxicillin", J. Infect. Dis. (Suppl.), 129 : 123.

29. Pickering, L. K., Du Pont, H. L. and Olarte, J. (1978), "Single-dose tetracycline therapy for shigellosis in adults", JAMA, 239 : 853.

..3/

30. Rahaman, M. M., Majid, M. A., Alam, A. K. M. J. and Islam, M. R. (1976), "Effects of doxycycline in actively purging cholera patients: A double-blind clinical trial", Antimicrob. Ag. Chemother., 10 : 610.

31 Rodriguez, W. J., Kahn, W. N., Ross, S., Controni, G. and Goldenberg, R. (1978), "Trimethoprim-sulfamethoxazole in shigellosis". In Siegenthaler, W. and Lüthy, R. (Ed.), Current Chemotherapy: Proceedings of the 10th International Congress of Chemotherapy, Zurich/Switzerland, 1977. American Society of Microbiology, Washington D. C. p. 172.

32. Sack, D. A., Kaminsky, D. C., Sack, R. B., Itotia, J. N., Arthur, R. R., Kapikian, A. Z., Ørskov, F. and Ørskov, I. (1978), "Prophylactic doxycycline for Traveller's diarrhoea, Results of a prospective double-blind study of Peace Corps Volunteers in Kenya", New Engl. J. Med. 298 : 758.

33. Tedesco, F., Markham, R., Gurwith, M., Christie, D. and Bartlett, J. G. (1978), "Oral vancomycin for antibiotic-associated pseudomembranous colitis", Lancet, 2 : 226.

34. Tomkins, A. M., James, W. P. T., Walters, J. H. and Cole, A. C. E. (1974), "Malabsorption in overland travellers to India", Brit. med. J., 3 : 380.

35. Walder, M. (1979), "Susceptibility of Campylobacter fetus subsp. jejuni to twenty antimicrobial agents", Antimicrob. Ag. Chemother., 16 : 37.

36. Weissman, J. B., Gangarosa, E. J., Du Pont, H. L., Nelson, J. D. and Haltalin, K. C. (1974), "Shigellosis. To treat or not to treat?", JAMA, 229 : 1215.

37. Wolfe, M. S. (1979), "Giardiasis", Pediat. Clin. North Amer., 261 : 295.

38. Wright, S. G., Tomkins, A. M. and Ridley, D. S. (1977), "Giardiasis: Clinical and therapeutic aspects", Gut, 18 : 343.

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Disease	First Choice Antibiotic	Second Choice Antibiotic	Comments
Amoebic dysentery	Metronidazole		
Campylobacter enteritis	Erythromycin		Disease is usually self-limiting and antibiotic often unnecessary
Cholera	Oral tetracycline or doxycycline		Rehydration important
Giardiasis	Metronidazole or Tinidazole	Mepacrine	
Pseudomembranous enterocolitis	Vancomycin	Metronidazole or Miconazole	
Salmonellosis			
. Gut infections	-	-	Antibiotics may prolong carrier state
. Septicaemia	Chloramphenicol, ampicillin, amoxycillin or cotrimoxazole		
Shigellosis	Ampicillin or cotrimoxazole		Not amoxycillin; not aminoglycosides
Travellers diarrhoea	-	-	
Tropical Sprue	Tetracycline >4 weeks		
Vibrio parahaemolyticus infection	-	-	

- No Antibiotic Recommended