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Treatment for peritoneal dialysis-associated peritonitis — Source link

Angela E Ballinger, Suetonia C. Palmer, Kathryn J. Wiggins, Jonathan C. Craig ...+3 more authors

Institutions: University of Otago, Royal Melbourne Hospital, University of Sydney, Princess Alexandra Hospital

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Treatment for peritoneal dialysis-associated peritonitis (Review)

Wiggins KJ, Craig JC, Johnson DW, Strippoli GFM

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[Intervention Review]

Treatment for peritoneal dialysis-associated peritonitis

Kathryn J Wiggins[1], Jonathan C Craig[2], David W Johnson[3], Giovanni FM Strippoli[4]

[1]Department of Nephrology, St Vincent's Hospital, Fitzroy, Australia. [2](a) Cochrane Renal Group, Centre for Kidney Research, The Children's Hospital at Westmead, (b) School of Public Health, The University of Sydney, Westmead, Australia. [3]Department of Nephrology, Princess Alexandra Hospital, Woolloongabba, Australia. [4]a) School of Public Health, University of Sydney, b) Cochrane Renal Group, c) Diaverum Medical Scientific office, d) Mario Negri Sud Consortium, Italy, Westmead, Australia

Contact address: Kathryn J Wiggins, Department of Nephrology, St Vincent's Hospital, Level 4, Clinical Sciences Building, Fitzroy, VIC, 3065, Australia. kate.wiggins@mh.org.au.

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ABSTRACT

Background

Peritonitis is a common complication of peritoneal dialysis (PD) and is associated with significant morbidity. Adequate treatment is essential to reduce morbidity and recurrence.

Objectives

To evaluate the benefits and harms of treatments for PD-associated peritonitis.

Search methods

We searched the Cochrane Renal Group's specialised register, the Cochrane Central Register of Controlled Trials (CENTRAL, in *The Cochrane Library)*, MEDLINE, EMBASE and reference lists without language restriction.

Selection criteria

All randomised controlled trials (RCTs) and quasi-RCTs assessing the treatment of peritonitis in peritoneal dialysis patients (adults and children) evaluating: administration of an antibiotic(s) by different routes (e.g. oral, intraperitoneal, intravenous); dose of an antibiotic agent(s); different schedules of administration of antimicrobial agents; comparisons of different regimens of antimicrobial agents; any other intervention including fibrinolytic agents, peritoneal lavage and early catheter removal were included.

Data collection and analysis

Two authors extracted data on study quality and outcomes. Statistical analyses were performed using the random effects model and the dichotomous results were expressed as risk ratio (RR) with 95% confidence intervals (CI) and continuous outcomes as mean difference (MD) with 95% CI.

Main results

We identified 36 studies (2089 patients): antimicrobial agents (30); urokinase (4), peritoneal lavage (1) intraperitoneal (IP) immunoglobulin (1). No superior antibiotic agent or combination of agents were identified. Primary response and relapse rates did not differ between IP glycopeptide-based regimens compared to first generation cephalosporin regimens, although glycopeptide regimens were more likely to achieve a complete cure (3 studies, 370 episodes: RR 1.66, 95% CI 1.01 to 3.58). For relapsing or persistent peritonitis,

simultaneous catheter removal/replacement was superior to urokinase at reducing treatment failure rates (1 study, 37 patients: RR 2.35, 95% CI 1.13 to 4.91). Continuous IP and intermittent IP antibiotic dosing had similar treatment failure and relapse rates. IP antibiotics were superior to IV antibiotics in reducing treatment failure (1 study, 75 patients: RR 3.52, 95% CI 1.26 to 9.81). The methodological quality of most included studies was suboptimal and outcome definitions were often inconsistent. There were no RCTs regarding duration of antibiotics or timing of catheter removal.

Authors' conclusions

Based on one study, IP administration of antibiotics is superior to IV dosing for treating PD peritonitis. Intermittent and continuous dosing of antibiotics are equally efficacious. There is no role shown for routine peritoneal lavage or use of urokinase. No interventions were found to be associated with significant harm.

PLAIN LANGUAGE SUMMARY

Treatment for peritoneal dialysis-associated peritonitis

People with advanced kidney disease may be treated with peritoneal dialysis (PD) where a catheter is permanently inserted into the peritoneum (lining around abdominal contents) through the abdominal wall and sterile fluid is drained in and out a few times each day. The most common serious complication is infection of the peritoneum - peritonitis. Effective treatment for PD-associated peritonitis is necessary to reduce morbidity and possibly mortality associated with the acute episode and to reduce relapse rates. This review of interventions for PD-associated peritonitis identified 36 studies (2089 participants). We found that intraperitoneal (IP) antibiotics are superior to intravenous (IV) antibiotics. No other single intervention was found to be superior. There appears to be no role for routine peritoneal lavage or use of fibrinolytic agents. Many of the studies were small, outdated, of poor quality, and had inconsistent outcome definitions and dosing regimens. Further RCTs within this area are required.

BACKGROUND

Peritoneal dialysis (PD) is an effective form of renal replacement therapy. However, peritonitis continues to represent a significant complication of PD (Voinescu 2002) despite the introduction of effective prevention strategies such as disconnect and double bag systems (Bazzato 1980; Monteon 1998; Strippoli 2004). The reported incidence of peritonitis episodes varies from 1/9 patient-months to 1/53 patient-months (Grunberg 2005; Kawaguchi 1999). Risk factors for its development include diabetes mellitus (Oxton 1994), some racial origins (Juergensen 2002; Lim 2005), obesity (McDonald 2004), temperate climates (Alves 1993; Szeto 2003), and depression (Troidle 2003). In addition some studies have shown that PD modality may influence peritonitis rates, although other studies have not confirmed this (Huang 2001; Oo 2005).

PD-associated peritonitis results in significant morbidity and in some cases mortality. Catheter removal becomes necessary in cases not responding to antibiotic therapy. This may be temporary and followed by a return to PD, or permanent resulting in technique failure. Ultrafiltration failure can occur both acutely due to increases in capillary permeability (Ates 2000; Smit 2004) and in the longer term resulting in technique failure (Coles 2000; Davies 1996). In many countries peritonitis is a leading cause of permanent transfer to haemodialysis. Peritonitis is prevalent amongst patients with encapsulating sclerosing peritonitis and may be a causal factor (Kawanishi 2005; Rigby 1998). In some patient groups peritonitis is thought to increase overall mortality rates (Fried 1996). It is estimated that PD-associated peritonitis results in death in 6% of affected patients (Troidle 2006).

Early and effective management of peritonitis is important to reduce the risk of adverse outcomes such as catheter removal (Choi 2004) and increase uptake of this renal replacement method (Heaf 2004). The mainstay of treatment is antimicrobial therapy, although adjunctive therapies have been employed including the use of fibrinolytic agents (Innes 1994; Pickering 1989), peritoneal lavage (Ejlersen 1991) and routine early catheter removal.

Current guidelines recommend the use of antibiotics which cover gram positive and gram negative organisms in cases of peritonitis (CARI 2005; Piraino 2005). However, several questions about the optimal treatment of PD-associated peritonitis remain unanswered, particularly with respect to choice, route of administration (Passadakis 2001) and duration of antimicrobial therapy.

Many treatment regimens are based on continuous ambulatory PD (CAPD) and their applicability to automated PD (APD) is untested (Fielding 2002). The optimal total duration of antimicrobial therapy, and the duration of systemic (IP or IV) treatment is also unclear, as are the roles of peritoneal lavage and urokinase. The majority of studies performed have focused on the outcomes of empirical antibiotic therapy, with little consideration of treatment initiated once organism identification and sensitivities are available.

To address existing uncertainties, we performed a systematic review of randomised controlled trial (RCT) evidence examining the effectiveness of different treatment options currently employed for PD-associated peritonitis.

OBJECTIVES

To evaluate the benefits and harms of treatments for PD-associated peritonitis.

METHODS

Criteria for considering studies for this review

Types of studies

All RCTs and quasi-RCTs (RCTs in which allocation to treatment was obtained by alternation, use of alternate medical records, date of birth or other predictable methods) on the effect of any interventions, including anti-infective agents, fibrinolytic agents, peritoneal lavage and early catheter removal, for the treatment of peritonitis in peritoneal dialysis patients were included.

Types of participants

Adult and paediatric patients who were receiving home-based peritoneal dialysis (CAPD or APD) and developed peritoneal dialysis-associated peritonitis.

Types of interventions

Studies looking at the use of any antimicrobial agent, fibrinolytic agent, peritoneal lavage, intraperitoneal immunoglobulin or early catheter removal were included. Interventions could be tested directly against each other or compared to placebo/no treatment. The following were included:

- Studies of the same antibiotic agent(s) administered by different routes (e.g. intraperitoneal versus oral, intraperitoneal versus intravenous).
- Studies comparing the same antibiotic agent(s) administered at different doses.
- Studies comparing different schedules of administration of antimicrobial agents (in particular regimens involving single daily dosing versus more than one daily doses).
- Comparisons of different regimens of antimicrobial agents.
- Studies comparing any other intervention including fibrinolytic agents, peritoneal lavage, intraperitoneal immunoglobulin administration and early catheter removal.

Types of outcome measures

- Primary peritonitis treatment failure (failure to achieve a clinical response, defined as resolution of symptoms and signs, by day 4-6).
- Complete cure (clinical and/or microbiological improvement with no subsequent relapse).
- Peritonitis relapse (reoccurrence of peritonitis due to the same organism with the same antibiotic sensitivities within 28 days of completing treatment).
- Time to peritonitis relapse.
- Death due to peritonitis (all-cause mortality data was also collected).
- Need to change antibiotic following culture results.
- Catheter removal and/or replacement.
- Hospitalisation (duration of hospital stay) and hospitalisation rate (number of patients hospitalised).
- Technique failure (transfer from peritoneal dialysis to haemodialysis or transplantation due to peritonitis).
- Toxicity of antibiotic treatments (ototoxicity, decline in residual kidney function, rash, nausea and vomiting, convulsions, other).

Search methods for identification of studies

Relevant studies were obtained from the following sources (see Appendix 1 *Electronic search strategies* - for search terms used);

- The Cochrane Renal Group's Specialised Register and the Cochrane Central Register of Controlled Trials (CENTRAL) in *The Cochrane Library*. CENTRAL and the Renal Group's Specialised Register contain the handsearched results of conference proceedings from general and specialty meetings. This is an ongoing activity across the Cochrane Collaboration and is both retrospective and prospective (Master List 2007). Therefore we did not specifically search conference proceedings.
- MEDLINE using the optimally sensitive strategy developed for the Cochrane Collaboration for the identification of RCTs (Dickersin 1994) with a specific search strategy developed with input from the Cochrane Renal Group Trial Search Coordinators.
- EMBASE using a search strategy adapted from that developed for the Cochrane Collaboration for the identification

of RCTs (Lefebvre 1996) with a specific search strategy developed with input from the Cochrane Renal Group Trial Search Coordinators.

- Reference lists of nephrology textbooks, review articles and relevant studies.
- Letters seeking information about unpublished or incomplete studies to investigators known to be involved in previous studies.

Data collection and analysis

The review was undertaken by four authors (KW, GFMS, JC, DJ). The search strategies described were used to obtain titles and abstracts of studies that might be relevant to the review. The titles and abstracts were screened independently by two authors (KW, GFMS), who discarded studies that were not eligible based on the inclusion criteria for this review; however studies and reviews that might include relevant data or information on additional published or unpublished studies were retained initially and their full-text version was analysed. Authors (KW, GFMS) independently assessed the retrieved abstracts and, if necessary, the full text of these studies to determine eligibility. Data extraction was carried out independently by the same authors using standard data extraction forms. Studies reported in non-English language journals were translated before assessment. Where more than one publication of one study existed, only the publication with the most complete data was included. Any further information or clarification required from the authors was requested by written or electronic correspondence and relevant information obtained in this manner were included in the review. Disagreements were resolved in consultation among authors.

Study quality

The quality of included studies was assessed independently by KW and GFMS without blinding to authorship or journal using the checklist developed by the Cochrane Renal Group. Discrepancies were resolved by discussion with DJ and JC. The quality items assessed were allocation concealment, blinding of participants, investigators and outcome assessors, intention-to-treat analysis, and the completeness of follow-up.

Quality checklist

Allocation concealment

- Adequate (A): Randomisation method described that would not allow investigator/participant to know or influence intervention group before eligible participant entered in the study.
- Unclear (B): Randomisation stated but no information on method used is available.
- Inadequate (C): Method of randomisation used such as alternate medical record numbers or unsealed envelopes; any information in the study that indicated that investigators or participants could influence intervention group.

Blinding

- Blinding of investigators: Yes/no/not stated
- Blinding of participants: Yes/no/not stated
- Blinding of outcome assessor: Yes/no/not stated
- Blinding of data analysis: Yes/no/not stated

The above are considered not blinded if the treatment group can be identified in > 20% of participants because of the side effects of treatment.

Intention-to-treat analysis

- Yes: Specifically stated by authors that intention-to-treat analysis was undertaken and this was confirmed on study assessment.
- Yes: Not specifically stated but confirmed on study assessment.
- No: Not reported and lack of intention-to-treat analysis confirmed on study assessment (Patients who were randomised were not included in the analysis because they did not receive the study intervention, they withdrew from the study or were not included because of protocol violation).
- No: Stated, but not confirmed upon study assessment.
- Not stated.

Completeness of follow-up

Per cent of participants excluded or lost to follow-up.

Statistical assessment

Results were expressed as risk ratio (RR) with 95% confidence intervals (CI) for all categorical outcomes of the individual studies. Data were pooled using a random effects model. For each analysis, the fixed effects model was also evaluated to ensure robustness of the model chosen and susceptibility to outliers. Where continuous scales of measurement were used to assess the effects of treatment (time to peritonitis relapse, days of hospitalisation, measures of residual kidney function) the mean difference (MD) was used. Heterogeneity was analysed using a chi squared test on N-1 degrees of freedom, with an alpha of 0.05 used for statistical significance and with the I^2 statistic (Higgins 2003).). I^2 values of 25%, 50% and 75% correspond to low, medium and high levels of heterogeneity.

Subgroup analysis was planned to explore how possible sources of heterogeneity (paediatric versus adult population, patient's age, patient's gender, cause of end-stage kidney disease, body mass index, diabetes mellitus, duration of dialysis, PD modality (continuous ambulatory PD versus automated PD), previous peritonitis episodes, type of dialysate and microorganism isolated) might influence treatment effect. It was also planned that if sufficient RCTs were identified an attempt would be made to assess funnel plot asymmetry due to small study effect, as this may be indicative of publication bias (Egger 1997).

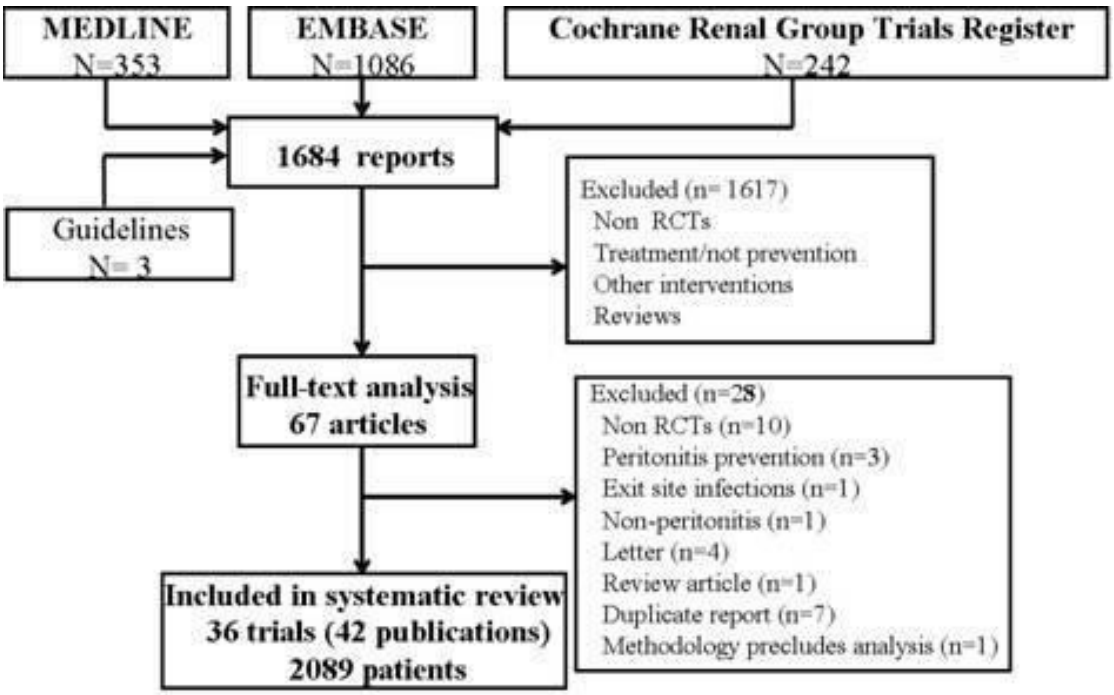
Description of studies

See: Characteristics of included studies; Characteristics of excluded studies.

The literature search retrieved 1684 reports of which 1617 were excluded. Analysis of the remaining 67 studies identified 36 studies (2089 patients, 2480 peritonitis episodes) published in 42 articles which were analysed in full-text. The search results are summarized in Figure 1. Reasons for exclusion of studies were that they were not RCTs, they considered topics other than peritonitis treatment, they were duplicate reports, or used methodology that precluded analysis.

RESULTS

Figure 1. Results of a literature review performed to identify RCTs of all treatments for peritoneal dialysis-associated peritonitis



Thirty studies (1949 patients) considered the use of antimicrobial agents. Twelve studies compared different routes of antibiotic administration - IP versus IV (2 studies, 121 patients: Bailie 1987; Bennett-Jones 1987) and IP versus oral (10 studies, 570 patients: Bennett-Jones 1990; Boeschoten 1985; Chan 1990; Cheng 1991; Cheng 1993; Cheng 1997; Cheng 1998; Gucek 1994; Lye 1993; Tapson 1990).

Different IP antibiotic classes and/or combinations were tested head-to-head in 15 studies (Anwar 1995; Bowley 1988; de Fijter

2001; Flanigan 1991; Friedland 1990; Gucek 1997; Jiménez 1996; Khairullah 2002; Leung 2004; Lui 2005; Lupo 1997; Schaefer 1999; Wale 1992; Were 1992; Wong 2001). These included three studies (234 patients) comparing glycopeptides to first generation cephalosporins (Flanigan 1991; Khairullah 2002; Lupo 1997). Four studies (274 patients) compared intermittent and continuous IP antibiotic dosing (Boyce 1988; Lye 1995; Schaefer 1999; Velasquez-Jones 1995).

There were six studies of adjunctive therapies, namely urokinase versus placebo (Gadallah 2000;Innes 1994; Tong 2005) or catheter removal/replacement (Williams 1989), peritoneal lavage (Ejlersen 1991), and IP immunoglobulin (Coban 2004).

Risk of bias in included studies

Allocation methods and concealment were generally poorly clarified and difficult to assess. Allocation concealment was adequate in seven (20%) studies, only four (11%) of studies blinded participants and investigators, and an intention-to-treat (ITT) analysis was used in 14 (40%) studies. The number of patients lost to follow-up ranged from 0% to 64.5%. Many studies had a small number of patients, limiting their ability to adequately assess many of the outcomes of therapy.

Effects of interventions

There were no significant differences in the results of analyses performed using random and fixed effects models. The results presented below therefore refer to those obtained using a random effects model. Subgroup analyses were not performed as the small number of patients and studies made the power of these analyses too small.

Intravenous (IV) versus intraperitoneal (IP) antimicrobial agents

There was a statistically significant increase in the primary treatment failure rate for IV compared to IP vancomycin/tobramycin (Analysis 1.1.2 (1 study, 75 patients): RR 3.52, 95% CI 1.26 to 9.81). It is noteworthy that in the study by Bailie 1987, in which IP versus IV administration of a loading dose of vancomycin followed by an IP maintenance dose were compared, there with no primary treatment failures reported in either group. Limitations in the RevMan software did not allow estimation of the RR for this study hence it did not contribute to the overall analysis. However, the RR for this outcome should be 1, which would be likely to lead to an insignificant result for the overall analysis.

Oral versus IP administration of the same antimicrobial agent

Oral administration of quinolone antibiotics (ciprofloxacin, ofloxacin) was not associated with a statistically significant difference in primary treatment failure compared to IP administration (Analysis 2.2 (2 studies, 83 patients): RR 1.34, 95% CI 0.71 to 2.56, P = 0.37, I^2 = 0%). There was no statistically significant difference in relapse rates (Analysis 2.3 (2 studies, 83 patients): RR 3.38, 95% CI 0.74 to 15.35, P = 0.11, I^2 = 0%). However, IP quinolone therapy trends towards superiority for complete cure (Analysis 2.1 (2 studies, 83 patients): RR 1.66, 95% CI 0.98 to 2.83, P = 0.06, I^2 = 0%). Treatment failure rates were high in both arms of these studies (52.4% and 31.7% in the oral and IP groups, respectively). There was no difference in catheter removal rates between oral and IP cephalosporin (cephradine) therapy (Analysis 2.4 (1 study, 48 patients): RR 2.00, 95% CI 0.19 to 20.61).

Oral (regimen A) versus IP (regimen B) administration of different antimicrobial agent(s)

Oral compared to IP antibiotic regimens were not associated with a statistically significant difference in failure to achieve complete cure (Analysis 3.1 (7 studies, 452 patients): RR 1.14, 95% CI 0.84 to 1.55, P = 0.41, I^2 = 0%). Subgroup analysis showed this to be applicable to oral quinolones versus IP aminoglycoside/glycopeptide combinations (Analysis 3.1.1 (5 studies, 304 patients): RR 1.19, 95% CI 0.83 to 1.72) and oral quinolones versus IP cephalosporins (Analysis 3.1.2 (2 studies, 148 patients): RR 1.00, 95% CI 0.55 to 1.81). There was no significant heterogeneity for this outcome. Similarly relapse (Analysis 3.3*)* and microbiological eradication (Analysis 3.7*)* were equivalent in both groups (Analysis 3.3 (5 studies, 303 patients: RR 1.17, 95% CI 0.64 to 2.15, P = 0.61, I2 = 1.6%) (Analysis 3.7 (1 study, 39 patients): RR 1.26, 95% CI 0.46 to 3.46). There was an increased rate of nausea and vomiting with oral antibiotics compared to IP antibiotics (Analysis 3.8.1 (3 studies, 158 patients): RR 9.91, 95% CI 1.89 to 51.99, P = 0.007, I^2 = 0%).

Low dose versus high dose antibiotic

Low dose imipenem (total of 1 g IP daily) was associated with a significant increase in failure to achieve a complete cure (Analysis 4.1 (1 study, 30 patients): RR 4.38, 95% CI 1.27 to 15.06) and relapse rates (Analysis 4.2 (1 study, 28 patients)*:* RR 12.00, 95% CI 1.60 to 90.23) compared to high dose imipenem (total of 2 g IP daily). High dose imipenem was not associated with an increase in the number of seizures (Analysis 4.3 (1 study, 30 patients): RR 0.60, 95% CI 0.03 to 11.23). However, the study was not powered to detect seizures and the protocol was changed mid-study from high dose to low dose imipenem because two patients in the imipenem group had seizures.

Intermittent versus continuous IP antimicrobial agents

Complete cure rates were no worse with intermittent than continuous dosing (Analysis 5.1 (4 studies, 338 patients): RR 0.92, 95% CI 0.64 to 1.33, P = 0.65, I^2 = 0%). Relapse rates (19.9% versus 20.9%) were also similar between both groups (Analysis

5.3 (4 studies, 338 patients): RR 0.76, 95% CI 0.45 to 1.28, P = 0.31, I^2 = 0%). The only side-effect evaluated was vancomycin-induced rash which was not different between groups (Analysis 5.4 (1 study, 51 patients): RR 0.70, 95% CI 0.05 to 10.57).

First generation cephalosporin versus glycopeptide-based regimens

Failure to achieve complete cure was significantly less likely with a glycopeptide-based regimen than one based on cephalosporins (Analysis 6.1 (3 studies, 370 patients): RR 1.66, 95% CI 1.01 to 2.72, P = 0.04, I^2 = 41.3%). This was true for both vancomycin and teicoplanin-based regimens (Analysis 6.1.1 (2 studies, 305 patients): RR 1.51, 95% CI 1.03 to 2.22; Analysis 6.1.2 (1 study, 65 patients): RR 9.65, 95% CI 1.04 to 20.58). The complete cure rates were 80% for glycopeptides and 65% for cephalosporins. Despite the overall advantage of glycopeptides there was no difference in primary treatment failure or relapse rates. It is noteworthy that these results were largely influenced by the study of Flanigan 1991 in which the cephazolin dose used was 50 mg/L, which is below the dose of 125 mg/L recommended in current ISPD guidelines. In contrast Khairullah 2002 found no difference in cure rates for vancomycin and cephazolin (50% and 40% complete cure for glycopeptides and cephalosporins respectively) when a higher cephalosporin dose was used.

There was no significant difference in relapse rates and catheter removal (Analysis 6.3 (3 studies, 350 patients): RR 1.68, 95% CI 0.84 to 3.36, P = 01.4, I^2 = 0%; Analysis 6.4 (2 studies, 305 patients): RR 0.95, 95% CI 0.41 to 2.19, P = 0.90, I^2 = 51.8%).

Teicoplanin versus vancomycin-based IP antibiotic regimens

Primary treatment failure was less likely with teicoplanin than vancomycin (Analysis 7.2 (2 studies, 178 patients): RR 0.36, 95% CI 0.13 to 0.96, P = 0.04), however, there was no difference between these two agents when complete cure was considered (Analysis 7.1 (2 studies, 178 patients): RR 0.67, 95% CI 0.40 to 1.15, P = 0.14, I^2 = 0%). The risk of relapse rates was also similar for both agents (Analysis 7.3 (2 studies, 178 patients): RR 1.01, 95% CI 0.49 to 2.11, P = 0.97, I^2 = 0%). There was no significant heterogeneity associated with either of these outcomes.

Different regimens of oral antibiotics

There was no statistically significant difference between oral rifampicin and ofloxacin (regimen 2) compared to oral ofloxacin alone (regimen 1) in achieving a complete cure (Analysis 8.1 (1 study, 74 patients): RR 0.88, 95% CI 0.35 to 2.17) and catheter removal (Analysis 8.3 (1 study, 74 patients): RR 2.00, 95% CI 0.19 to 21.11).

Fibrinolytic agents versus non-urokinase or placebo

Studies of intraperitoneal urokinase failed to show any benefit of urokinase above placebo with regards to complete cure in persistent peritonitis (Analysis 9.1 (1 study, 88 patients): RR 1.23, 95% CI 0.84 to 1.79), or primary response to treatment in the setting of resistant peritonitis (Analysis 9.2 (2 studies, 99 patients): RR 0.63, 95% CI 0.32 to 1.26, P = 0.19, I^2 = 33.1%). Similarly catheter removal and relapse rates were not affected by treatment with urokinase, either in the setting of persistent peritonitis or initiation of fibrinolytic therapy at the time peritonitis was diagnosed.

Urokinase versus simultaneous catheter removal or replacement

Simultaneous catheter removal/replacement was superior to urokinase at reducing recurrent episodes of peritonitis (Analysis 10.1 (1 study, 37 patients): RR 2.35, 95% CI 1.13 to 4.91).

Peritoneal lavage

There was no statistically significant difference in complete cure rates with no peritoneal lavage compared to a 24 hour period of lavage (Analysis 11.1 (1 study, 36 patients): RR 2.50, 95% CI 0.56 to 11.25). Lavage had no significant effect on technique failure (Analysis 11.3 (1 study, 36 patients): RR 3.00, 95% CI 0.13 to 69.09). Again, tests for heterogeneity were not applicable here as these aspects were only explored by individual studies. One serious complication (relapse of peritonitis with subsequent laparotomy and colostomy) occurred in the lavage group however there was no significant difference when compared to the control group (Analysis 11.4 (1 study, 36 patients): RR 3.00, 95% CI 0.13 to 69.09).

Intraperitoneal immunoglobulin

Use of intraperitoneal immunoglobulin was associated with a statistically significant reduction in the number of exchanges executed for the dialysate WCC to fall below 100/mL (Analysis 12.1 (1 study, 24 patients): MD -7.30 exchanges, 95% CI -8.12 to -6.48). There were no treatment failures and no relapses in any patients in this study.

Head-to-head studies (comparisons 13 to 22)

Of the 10 studies in which different regimens of IP antibiotics were compared head-to-head the only statistically significant outcome was that rifampicin/ciprofloxacin was superior to cephradine at reducing treatment failure (Analysis 22.1 (1 study, 98 patients): RR 0.50, 95% CI 0.28 to 0.89).

DISCUSSION

This review found that intermittent dosing of some antibiotics (vancomycin, gentamicin, ceftazidime and teicoplanin) is as effective as continuous use in the treatment of peritonitis, simultaneous catheter removal and replacement is superior to urokinase in relapsing and remitting PD-associated peritonitis, IP antibiotics are more effective than IV therapy. Other clinically relevant findings were that most antibiotic classes have similar efficacy rates in terms of treatment failure and relapse rates, that available study evidence does not clearly demonstrate superiority of glycopeptide-based antibiotic regimens to first generation cephalosporins, and that peritoneal lavage does not improve the response rates to concomitant antimicrobial therapy. We also found that IP immunoglobulin administration decreases the time for the dialysate WCC to fall, but is not associated with a difference in treatment failure or relapse rates. Finally, our review revealed a large paucity of evidence underlying many widely used and accepted clinical practices in the treatment of peritonitis, a condition which is associated with significant patient morbidity and, in some cases, mortality. Consequently we remain uncertain about some aspects of treatment, such as duration of antimicrobial therapy and optimal timing of catheter removal.

As far as we are aware, this is the first published systematic review of RCTs of all PD-associated peritonitis treatment. A review of antimicrobial treatment of PD-associated peritonitis published in 1991 concluded that the optimal empirical treatment was weekly vancomycin in combination with ceftazidime (Millikin 1991). However, this review predated many of the studies included in this study, and was not confined to RCTs.

The mainstay of peritonitis treatment is timely administration of empirical antimicrobial agents that are likely to eradicate the most common causative agents. This is endorsed by guidelines of the International Society of Peritoneal Dialysis (ISPD) (Piraino 2005) and the Australian and New Zealand Society of Nephrology (Caring for Australians with Renal Impairment - CARI, CARI 2005), both of which state that broad spectrum antibiotic agents designed to cover both gram negative and gram positive organisms should be initiated at the time a diagnosis of peritonitis is suspected. There is however insufficient evidence for either group to suggest more specific agents. This has been demonstrated by this review in which we found that, in 21 studies comparing different antibiotic classes, the treatment failure rates were generally in the range of 10% to 30%, with only three studies showing a substantial difference between treatment arms (de Fijter 2001; Flanigan 1991; Lupo 1997). In each of these cases the applicability to current practice is low. de Fijter 2001 found IP ciprofloxacin/rifampicin to be superior to IP cephradine. However, monotherapy with a first generation cephalosporin is uncommon, and in this case was associated with a low initial response rate of 50%. Furthermore, the broad spectrum of action of both ciprofloxacin and rifampicin predisposes to emergence of multiresistant organisms thereby reducing their desirability as first line agents. In our meta-analysis of two studies comparing IP cephazolin and vancomycin we found vancomycin to be superior. However, this result was strongly influenced by a larger number of patients in the study by Flanigan 1991, in which the cephazolin dose of 50 mg/L was two and a half times less than that recommended in the current ISPD guidelines (Piraino 2005).

Similar efficacy rates amongst several antibiotic regimens facilitates consideration of logistical factors and adverse effect profiles when selecting antibiotics (Kan 2003). Current ISPD guidelines state that there should be centre-specific selection of agent(s) according to local causative microorganism and resistance patterns (Piraino 2005). The impact of local microbial resistance on peritonitis outcomes was apparent in two studies comparing oral and IP quinolone use (Cheng 1993; Cheng 1997). In these studies, response rates were low for both treatment arms (41.7% and 55.6% in the oral groups and 66.7% and 70.6% in the IP groups respectively). Microorganism resistance to quinolones was the major cause of treatment failure, and previous exposure to quinolones was a risk factor for infection with resistant microorganisms. The emergence of vancomycin-resistant enterococcus (VRE) is also associated with use of broad spectrum antibiotics (Carmeli 2002; Oprea 2004). Of note increasing prevalence of methicillin resistant Staphylococci (both *S. aureus* and coagulase negative species) is a relatively recent phenomenon hence limiting the ability of early studies to evaluate this problem.

In this review we found that studies in which antibiotics (ciprofloxacin, ofloxacin and cephradine) were administered either orally or IP showed no difference in outcomes for the two routes of administration. However, initial antibiotic therapy is commonly administered intraperitoneally as this theoretically achieves higher dialysate antibiotic levels than permitted with other routes. Evidence about the relative importance of dialysate antibiotic levels is unclear. In the study of oral versus IP ciprofloxacin included in this review dialysate antibiotic levels were lower in the IP group but this did not affect patient outcomes (Cheng 1993). Booranalertpaisarn reported that daily dosing of ceftazidime in patients with peritonitis led to serum levels that were above the recommended minimum inhibitory concentration (MIC) throughout 24 hours, whereas dialysate levels were below the MIC for several hours on days one and four. Despite this, the response rate was 90%, suggesting that achieving therapeutic dialysate levels may not be necessary for treatment to be effective.

Benefits of intermittent (daily) dosing of antibiotics include facilitation of outpatient management and continuation of APD. In the general population, daily dosing with aminoglycosides reduces the risk of ototoxicity compared with IV dosing (Deamer 1996). In this review, intermittent and continuous antibiotic dosing had similar outcomes. Adequate duration of antibiotic activity with daily dosing is facilitated by long drug half-lives. Studies of CAPD patients without peritonitis have shown that serum and dialysate levels of several antibiotics remain above the MIC for up to 48

hours (Grabe 1999; Manley 1999). Many drugs have peak serum levels six hours after administration suggesting that this should be the minimum dwell time. Post-antibiotic effects of drugs may also contribute to the efficacy of intermittent dosing. The applicability of results from studies of intermittent drug therapy in CAPD to APD is however unclear as drug half-lives are greater and clearances more rapid in cycler dwells compared to non-cycler dwells (Manley 2002).

The high rate of complications arising from peritonitis despite rapid institution of antibiotic therapy suggests a need exists for adjuvant treatment strategies. One such treatment is administration of IP urokinase, the rationale being to dissolve fibrin and allow access of antibiotics to entrapped bacteria (Pickering 1989). Williams 1989 showed that urokinase was inferior to simultaneous catheter removal and replacement. However, catheter removal could in itself be considered treatment failure. Meta-analysis of three other studies showed no statistically significant difference in outcomes between urokinase and catheter removal. However it is noteworthy that in the study by Tong 2005 the actual number of patients achieving a primary response was five more in the urokinase than the control group, and there were three less catheter removals. Further, adequately powered, studies in this area may be beneficial, in which the optimal outcome would be permanent transfer to haemodialysis.

Peritoneal lavage is performed at many centres as it has the potential to remove inflammatory cells and microorganisms from the peritoneal cavity while providing symptomatic relief, and has been used successfully in abdominal surgery (O'Brien 1987). It has however been the subject of only one RCT (Ejlersen 1991), in which patients with hypotension and shock, the same group in which lavage has been used in surgical settings, were excluded. In this study, peritoneal lavage did not improve response rates. This may be a true effect due to inadvertent removal of macrophages and other components of the immune system thereby a reduction of local host defences against infection However, further studies to evaluate this therapy further may be useful.

A novel strategy is administration of IP immunoglobulin in conjunction with antibiotics with the aim of improving local host defences (Carozzi 1988). In a study of 24 patients, Coban 2004 found that biochemical and clinical parameters of improvement were achieved sooner, and the duration of antibiotic therapy was shorter, in the immunoglobulin treatment group. However, the response rate of 100% was unusually high and there were no relapses during three months of follow-up. In a larger population, a difference in response rates may have become apparent.

While valuable information was gained from this review, there were deficits. Due to absence and/or poor quality of studies, there is a lack of evidence in many important areas of clinical practice. Studies tended to focus on choice and route of antibiotic without consideration of other variables such as total duration of therapy, drug dose and the role of patient factors, such as comorbidities and RRF. No RCTs have been conducted to determine if early catheter removal is beneficial in patients not responding to therapy. The follow-up period of most studies was 28 days or less. Therefore, long-term outcomes, such as technique failure and mortality, were not evaluated. Loss of residual kidney function during peritonitis may be accelerated by aminoglycoside therapy (Baker 2003; Shemin 2000). However, this was considered in very few studies, although of note Lui 2005 found that there was no increased loss of RRF with a netilmicin-based regimen. As a result of these factors there is insufficient evidence regarding several aspects of management that are clinically important. This makes the provision of definite treatment guidelines available at the present time.

The methodological quality of included studies was suboptimal. In particular, inadequate randomisation and concealment methods were common. Definitions of peritonitis, successful treatment and relapse varied between studies thereby reducing their comparability. Many studies were single centre studies with small patient numbers. As a result they were often underpowered to detect either short term (treatment failure and catheter removal), medium term (relapse and recurrence) or long term (mortality and technique failure) effects. Similarly inadequate power precluded examination of factors such as adverse effects. Hence there was significant potential for type II statistical errors in some of our analyses. Studies often predated the current era of lower peritonitis rates, newer antibiotic therapies and increased awareness of multiresistant organisms, thereby potentially reducing the applicability of our meta-analyses or the individual studies' results.

A significant issue was that there was marked heterogeneity between studies of outcome definitions. Treatment failure was variably measured by resolution of symptoms and signs, clearing of dialysate, fall in dialysate WCC and microbiological eradication of the causative organism. The time frame in which these changes were required to occur also varied, ranging from 48 hours to 28 days. Similarly there was a large degree of variation in the time elapsed after a primary peritonitis episode for a second peritonitis episode to be considered as a relapse. An additional problem was interaction of endpoints. For example primary treatment failure often necessitates catheter removal, which is an endpoint in itself. Some studies defined treatment failure as a need to change the antimicrobial agent or catheter removal. In contrast other studies defined primary failure as ongoing symptoms beyond 48 hours of antibiotic therapy, with catheter removal evaluated as a separate outcome. These factors reduced the comparability of studies.

In conclusion, this currently available evidence from RCTs has not identified any single antibiotic regimen to be superior for the treatment of PD-associated peritonitis. Intermittent antibiotic dosing appears to be as effective as continuous dosing however the applicability of this practice to APD is unclear. There appears to be no role for adjunctive therapies such as urokinase and peritoneal lavage. At the present time, broad spectrum antibiotics should

be initiated at the time a diagnosis of peritonitis is made. When choosing antibiotics, the side-effect profile, local drug resistance patterns and previous antibiotic use and infection history in the individual concerned should be considered. Further studies are required to establish the most effective treatment for PD-associated peritonitis. Future research should be adequately powered to assess outcomes such as catheter removal and mortality, and should include long-term follow-up of parameters such as UFF, loss of RRF and technique failure.

AUTHORS' CONCLUSIONS

Implications for practice

- At the present time broad spectrum antibiotics should be initiated at the time a diagnosis of peritonitis is made. When choosing antibiotics the side-effect profile, local drug resistance patterns and previous antibiotic use and infection history in the individual concerned should be considered. In cases of recurrent peritonitis dialysis catheters should be removed rather than using intraperitoneal urokinase.

- Currently available evidence from RCTs is inadequate in many areas of clinical practice important in the management of PD-associated peritonitis. This is a limiting factor in the provision of definitive treatment guidelines.

Implications for research

- Further studies are required to establish the most effective treatment for peritoneal dialysis-associated peritonitis. An essential feature of such studies is inclusion of enough patients to ensure adequate power to assess meaningful long and short term outcomes. Short term outcomes should extend beyond whether cure is achieved without catheter removal, for example duration of systemic inflammation. Study of long-term outcomes should include permanent transfer to haemodialysis, development of ultrafiltration failure patient death and late recurrent episodes of peritonitis beyond four weeks from the original episode.

- Specific interventions that would be of value include early versus late catheter removal. Studies designed to study infections due to specific organisms would also be valuable. An example is a study of glycopeptide versus cephalosporin therapy in peritonitis due to coagulase negative Staphylococcal species. The majority of studies have included patients on CAPD rather than APD hence studies designed to test the efficacy of antibiotics in APD are required. This is particularly applicable to studies of intermittent versus continuous dosing when cycler dwell times may well influence pharmacokinetics.

- Future research should be conducted using standard definitions, with inclusion of information about factors that may influence the response to therapy such as prophylaxis regimens and dialysis solutions used. Current ISPD guidelines provide a comprehensive list of requirements for future studies that should be referred to when designing studies.

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* *Indicates the major publication for the study*

CHARACTERISTICS OF STUDIES

Characteristics of included studies *[ordered by study ID]*

Anwar 1995

Methods	Country: UK Setting/Design: RCT, teaching hospital Randomisation method: Unclear Blinding: - Participants: No - Investigators: No - Outcome assessors: NS Intention-to-treat: Yes Follow-up period: 14 days Loss to follow-up: 4/60 (6.7%)
Participants	INCLUSION CRITERIA CAPD-associated peritonitis. TREATMENT GROUP Number: 30 Age: 49.4 ± 3.0 years Sex (M/F): 17/13 CONTROL GROUP Number: 30 Age: 55.0 ± 2.5 years Sex (M/F): 16/14 EXCLUSION CRITERIA Peritonitis in the preceding 3 months. Previous episode of peritonitis during the study period. Suspected of having gram negative peritonitis. An episode of peritonitis within the previous 4 weeks No organisms on gram stain
Interventions	TREATMENT GROUP Imipenem 1 g IP to alternate exchanges; changed mid-study to 0.5 g IP to alternate exchanges CONTROL GROUP Vancomycin 500 mg IP loading dose then 100 mg IP daily. Netilmicin 100 mg (if > 60 kg) or 60 mg (if < 60 kg) IP loading dose then 50 mg (if > 60 kg) or 40 mg (if < 60 kg) IP daily. Antibiotics continued for 5 days beyond total clearing of dialysate and a decrease in the dialysate WCC to < 100/mm^3
Outcomes	1. Treatment failure 2. Peritonitis relapse 3. Catheter removal 4. Adverse effects (convulsions)
Notes	DEFINITION OF PERITONITIS Dialysate WCC > 100/mm^3 with > 50% polymorphonuclear neutrophils DEFINITION OF CURE

Anwar 1995 (*Continued*)

	Clearing of peritoneal fluid. Decrease in the dialysate WCC to < 100/mm³. DEFINITION OF TREATMENT FAILURE Insufficient lessening of symptoms and signs to qualify as improvement DEFINITION OF RELAPSE Return of peritonitis with the same organism within 14 days of stopping treatment, or no growth for an initially culture negative episode COMPLETENESS OF FOLLOW-UP Eligible/considered for inclusion: 60. Enrolled/randomised: 60. Analysed: 56. Per cent followed: 93.3%.

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	D - Not used

Bailie 1987

Methods	Country: UK Setting/Design: RCT, teaching hospital Time frame: NS Randomisation method: Unclear Blinding: - Participants: No - Investigators: No - Outcome assessors: NS Intention-to-treat: Yes Follow-up period: NS Loss to follow-up: 0/20 (0%)
Participants	INCLUSION CRITERIA Probable CAPD-associated gram-positive peritonitis. OVERALL STUDY POPULATION Number: 20 Age: NS Sex (M/F): 11/9 EXCLUSION CRITERIA Suspected of having gram negative peritonitis. An episode of peritonitis within the previous 4 weeks. No organisms on gram stain.
Interventions	TREATMENT GROUP Vancomycin 1 g IV loading dose then maintenance dose 25 mg/L IP added to each exchange. Total duration of therapy 14 days. CONTROL GROUP Vancomycin 1 g IP loading dose then maintenance dose 25 mg/L IP added to each exchange.

Bailie 1987 (*Continued*)

	Total duration of therapy 14 days.
Outcomes	1. Successful treatment 2. Adverse effects
Notes	DEFINITION OF PERITONITIS The identification of gram-positive organisms on gram stain or any two of abdominal pain, a cloudy dialysate effluent or > 100 WCC/mL of dialysate DEFINITION OF CURE Clearing of dialysate. Eradication of the organism. Disappearance of physical symptoms. COMPLETENESS OF FOLLOW-UP Eligible/considered for inclusion: 20 Enrolled/randomised: 20 Analysed: 20 Per cent followed: 100%

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B - Unclear

Bennett-Jones 1987

Methods	Country: UK Setting/Design: RCT, teaching hospital Time frame: NS Randomisation method: Unclear Blinding: - Participants: No - Investigators: No - Outcome assessors: NS Intention-to-treat: No Follow-up period: 28 days Loss to follow-up: 5/80 (6.3%)
Participants	INCLUSION CRITERIA Patients receiving CAPD therapy with peritonitis. EXCLUSION CRITERIA Associated catheter leak. Catheter-tract or severe exit-site infection. Fungal peritonitis. Septicaemia. Bowel perforation. Recurrence of peritonitis within 15 days of a previous episode No demographic data provided. Pre-existing liver disease, diabetes mellitus or epilepsy.

Bennett-Jones 1987 (*Continued*)

Interventions	TREATMENT GROUP Vancomycin 0.5 g (if body surface area < 1.73 m^2) or 1.0 g (if body surface area > 1.73 m^2) loading dose then vancomycin 0.5 g on day 6. Tobramycin 1.0 mg/kg loading dose then 20-60 mg day 2, 4, 6 depending on serum levels. Change to oral antibiotics, depending on culture and sensitivity, at day 4 CONTROL GROUP Vancomycin 20 mg/L and tobramycin 4 mg/L to every exchange for 10 days; one antibiotic could be discontinued at day 4 depending on culture and sensitivity results CO-INTERVENTIONS Three rapid exchanges for symptomatic relief then return to usual CAPD regimen
Outcomes	1. Treatment failure 2. Side effects of treatment
Notes	DEFINITION OF PERITONITIS Dialysate WCC > 100/mm^3. DEFINITION OF CURE The resolution of symptoms and signs of peritonitis. Dialysate WCC < 100/mm^3 within 10 days. Absence of a subsequent relapse. DEFINITION OF TREATMENT FAILURE Clinical deterioration, or an increase in the dialysate WCC necessitating an alteration in antibiotics administration, continuation of treatment beyond 10 days or catheter removal DEFINITION OF RELAPSE Recurrence, with the same organism or no growth, within 15 days of completion of treatment of the previous episode COMPLETENESS OF FOLLOW-UP Eligible/considered for inclusion: 80 Enrolled/randomised: 80 Analysed: 75 Per cent followed: 93.8%

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B - Unclear

Bennett-Jones 1990

Methods	Country: UK Setting/Design: RCT, teaching hospital Time frame: NS Randomisation method: Unclear Blinding: - Participants: No - Investigators: No - Outcome assessors: NS Intention-to-treat: No Follow-up period: 15 days Loss to follow-up: 3/51 (5.8%)
Participants	INCLUSION CRITERIA Patients over the age of 18 years with a clinical diagnosis of CAPD peritonitis EXCLUSION CRITERIA Leak of dialysis from the exit site. Catheter tunnel infection. Pregnancy. No demographic data provided.
Interventions	TREATMENT GROUP Ciprofloxacin 750 mg po tds for 24 hours then 750 mg po bd. Further dose adjustments made if peak plasma levels exceeded 10 mg/L. Total duration of treatment 10 days. CONTROL GROUP Vancomycin 25 mg/L and gentamicin 8 mg/L for 48 hours then 4 mg/L. Total duration of treatment 10 days. CO-INTERVENTIONS An IV loading dose of study antibiotics was given if the patient was systemically unwell or pyrexial, or the peripheral WCC was above 12 x 10(9)/L. Flucloxacillin 500 mg po qid added to either regimen if S. aureus was isolated
Outcomes	1. Treatment failure 2. Recurrence of peritonitis 3. Side effects of treatment
Notes	DEFINITION OF PERITONITIS Cloudy dialysis effluent. > 100 leucocytes/mm³ in dialysis effluent. DEFINITION OF TREATMENT FAILURE Dialysate WCC of > 50/mm³ at completion of treatment. DEFINITION OF RELAPSE Recurrence of peritonitis within 28 days with either the same organism or no growth COMPLETENESS OF FOLLOW-UP Eligible/considered for inclusion: 61 Enrolled/randomised: 51 Analysed: 48 Per cent followed: 95.1%

Bennett-Jones 1990 (*Continued*)

Risk of bias		
Item	**Authors' judgement**	**Description**
Allocation concealment?	Unclear	B - Unclear

Boeschoten 1985

Methods	Country: The Netherlands Setting/Design: RCT, teaching hospital Time frame: January 1980 to January 1983 Randomisation method: According to date of catheter implantation Blinding: - Participants: No - Investigators: No - Outcome assessors: NS Intention-to-treat: No Follow-up period: 2 weeks after completion of treatment Loss to follow-up: 45/106 (42.5%)
Participants	INCLUSION CRITERIA Adult patients receiving CAPD therapy. OVERALL STUDY POPULATION Number: 39 patients (84 peritonitis episodes). Age: mean 47 years (range 21-66) Sex (M/F): 20/19 EXCLUSION CRITERIA Gram-negative rods or yeasts shown on gram-stained film.
Interventions	TREATMENT GROUP Cephradine 500 mg po loading dose then 250 mg po with each dialysis exchange. Treatment continued until 1 week after dialysate WCC < 100/μL and there had been a negative dialysate culture CONTROL GROUP Cephradine 500 mg IP loading dose then 250 mg IP. Treatment continued until 1 week after dialysate WCC < 100/μL and there had been a negative dialysate culture CO-INTERVENTIONS Heparin (500 U/L) was added to dialysate as long as the fluid remained cloudy. Cephradine replaced by another antibiotic when the causative organism was found to be resistant in vitro
Outcomes	1. Successful treatment
Notes	DEFINITION OF PERITONITIS Cloudy dialysate with WCC > 100/μL with or without abdominal symptoms DEFINITION OF CURE Disappearance of symptoms and signs within 48 hours. DEFINITION OF TREATMENT FAILURE

Boeschoten 1985 (*Continued*)

	Persistent clinical symptoms and bacteriological findings. DEFINITION OF RELAPSE An episode of peritonitis with the same causative organism after an initial improvement, either during or within two weeks after stopping the antibiotics

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	No	C - Inadequate

Bowley 1988

Methods	Country: UK Setting/Design: RCT, teaching hospital Time frame: NS Randomisation method: Unclear Blinding - Participants: NS - Investigators: NS - Outcome assessors: NS Intention-to-treat: Yes Follow-up period: NS Loss to follow-up: 0/11 (0%)
Participants	INCLUSION CRITERIA CAPD-associated peritonitis caused by gram-positive organisms OVERALL STUDY POPULATION Number: 11 patients (12 episodes of peritonitis). EXCLUSION CRITERIA: NS
Interventions	TREATMENT GROUP Teicoplanin IP 50 mg/2L bag for 48 hours then teicoplanin IP 25 mg/2L bag for a further 5 days CONTROL GROUP Vancomycin IP 50 mg/2L bag for 48 hours then vancomycin IP 25 mg/2L bag for a further 5 days C0-INTERVENTIONS Netilmicin IP 25 mg in alternate bags for 48 hours (both study arms) Two patients with S. aureus infection were also treated with oral clindamycin for 7 days
Outcomes	1. Successful treatment 2. Relapse of peritonitis
Notes	DEFINITION OF PERITONITIS: NS DEFINITION OF CURE "Judged by clinical criteria" DEFINITION OF TREATMENT FAILURE: NS DEFINITION OF RELAPSE Further infection with the same organism within 14 days of completion of therapy

Bowley 1988 (*Continued*)

	COMPLETENESS OF FOLLOW-UP Eligible/considered for inclusion: 11 Enrolled/randomised: 11 Analysed: 11 Per cent followed: 100%

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B - Unclear

Boyce 1988

Methods	Country: Australia Setting/Design: RCT, parallel, teaching hospital Time frame: April 1986 to January 1987 Randomisation method: Unclear Blinding - Participants: No - Investigators: No - Outcome assessors: NS Intention-to-treat: No Follow-up period: 4 weeks Loss to follow-up: 39/90 (43.3%)
Participants	INCLUSION CRITERIA All patients who presented with peritonitis. OVERALL STUDY POPULATION Number: 90
Interventions	TREATMENT GROUP Vancomycin 30 mg/kg in a 2L peritoneal dialysate for a 6 hours dwell; repeated after 1 week CONTROL GROUP Vancomycin 1 g IP loading dose then 30 mg/L dialysate continued for 5 days following macroscopic clearing of the dialysate CO-INTERVENTIONS All patients initially managed with 2-3 rapid 2L peritoneal lavages with heparinised dialysate
Outcomes	1. Treatment failure 2. Recurrence of peritonitis 3. Skin rash
Notes	EXCLUSIONS POST RANDOMISATION BUT PRE-INTERVENTION All patients with fungal or gram-negative peritonitis were excluded from analysis DEFINITION OF PERITONITIS Abdominal pain and cloudy dialysate effluent with a peritoneal WCC > 100/μL COMPLETENESS OF FOLLOW-UP - Eligible/considered for inclusion: 90

Boyce 1988 (*Continued*)

	- Enrolled/randomised: 90 - Analysed: 51 - Per cent followed: 56.7%

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B - Unclear

Chan 1990

Methods	Country: Hong Kong Setting/Design: RCT, parallel, university department, teaching hospital Time frame: October 1, 1987 to September 30, 1998 Randomisation method: Random arrangement of treatment regimen code numbers in a table Blinding - Participants: No - Investigators: No - Outcome assessors: NS Intention-to-treat: No Follow-up period: 28 days Loss to follow-up: 6/117 (5.1%)
Participants	INCLUSION CRITERIA CAPD peritonitis. TREATMENT GROUP 1 Number: 34 Age: 44 ± 15 years (SEM) Sex (M/F): 18/16 TREATMENT GROUP 2 Number: 36 Age: 22 ± 14 years (SEM) Sex (M/F): 22/14 CONTROL GROUP Number: 36 Age: 53 ± 14 years (SEM) Sex (M/F): 21/15
Interventions	TREATMENT GROUP 1 Ofloxacin 400 mg po loading dose on the first day then 300 mg po daily TREATMENT GROUP 2 Ofloxacin 400 mg po loading dose on the first day then 300 mg po daily. Rifampicin 300 mg po daily. CONTROL GROUP Cephalothin 250 mg/L IP and tobramycin 8 mg/L. CO-INTERVENTIONS Two rapid 1 hour exchanges were performed at the time of diagnosis in all patients. Further peritoneal lavage (rate 1 L/h) was performed in 25 patients

Chan 1990 (*Continued*)

	Total duration of antibiotic therapy 10 days.
Outcomes	1. Treatment failure 2. Catheter removal 3. Side effects of treatment
Notes	EXCLUSIONS POST RANDOMISATION BUT PRE-INTERVENTION Fungal peritonitis (5) Tuberculous peritonitis (1) DEFINITION OF PERITONITIS Abdominal pain and cloudy effluent with or without fever. Patients who responded initially but had another episode more than 28 days after the onset of the first episode was considered to have a new infection and entered into the study as a separate episode. DEFINITION OF CURE Complete resolution of symptoms and signs and negative bacterial cultures on repeat sampling, including day 28 DEFINITION OF TREATMENT FAILURE Any episode that required a change in antibiotic therapy. DEFINITION OF RELAPSE Repeat infection within 28 days of receiving treatment. COMPLETENESS OF FOLLOW-UP Eligible/considered for inclusion: 117 episodes of peritonitis in 85 patients Enrolled/randomised: 117 Analysed: 110 Per cent followed: 94.9%

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B - Unclear

Cheng 1991

Methods	Country: Hong Kong Setting/Design: RCT, multicentre, teaching hospital, university hospital Time frame: NS Randomisation method: Table of random numbers Blinding - Participants: No - Investigators: No - Outcome assessors: NS Intention-to-treat: Yes Follow-up period: 28 days after treatment Loss to follow-up: 3/46 (6.5%)
Participants	INCLUSION CRITERIA Patients on CAPD who developed peritonitis. OVERALL STUDY POPULATION

Cheng 1991 (*Continued*)

	Number: 48 episodes of peritonitis in 46 patients. EXCLUSION CRITERIA Known sensitivity to quinolones, vancomycin and aztreonam. Peritonitis secondary to fungi. Tuberculous peritonitis. Relapsing peritonitis.
Interventions	TREATMENT GROUP Ofloxacin 400 mg po loading dose then 300 mg po daily for 10 days CONTROL GROUP Vancomycin 500 mg/L IP loading dose then 30 mg/L IP maintenance dose. Aztreonam 500 mg/L IP loading dose then 250 mg/L IP maintenance dose CO-INTERVENTIONS 3 flushes with 1L 1.5% solution prior to the beginning of treatment if the peritoneal effluent was very turbid
Outcomes	1. Treatment failure 2. Relapse of peritonitis 3. All cause mortality 4. Hospitalisation (number of patients and duration of stay) 5. Side effects of treatment
Notes	EXCLUSIONS POST RANDOMISATION BUT PRE-INTERVENTION 3 patients (2 transfers to other hospitals, 1 case of fungal peritonitis) DEFINITION OF PERITONITIS Abdominal pain and cloudy peritoneal dialysate occurred with or without fever. Peritoneal WCC > 200/mm³ with > 50% polymorphs. DEFINITION OF TREATMENT FAILURE Persistent fever, abdominal pain and cloudy effluent, less than 50% reduction in the total WCC compared to the pretreatment value after 3 days of antibiotic treatment DEFINITION OF RELAPSE Recurrence of peritonitis with the same organism within 18 days after stopping treatment COMPLETENESS OF FOLLOW-UP Eligible/considered for inclusion: 48 episodes of peritonitis Enrolled/randomised: 48 Analysed: 45 Per cent followed: 93.8%

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	No	C - Inadequate

Cheng 1993

Methods	Country: Hong Kong Setting/Design: RCT, parallel, teaching hospital, university hospital Time frame: NS Randomisation method: NS Blinding - Participants: No - Investigators: No - Outcome assessors: NS Intention-to-treat: No Follow-up period: 28 days Loss to follow-up: 6/54 (11.1%)
Participants	INCLUSION CRITERIA Patients on CAPD who developed peritonitis. OVERALL STUDY POPULATION Number: 54 episodes in 46 patients. Treatment and control groups were comparable with regards to age and sex (data not shown) EXCLUSION CRITERIA Known sensitivity to fluoroquinolones. Peritonitis secondary to fungi. Tuberculous peritonitis. Relapsing peritonitis.
Interventions	TREATMENT GROUP Ciprofloxacin 750 mg po bd. Total duration of treatment 10 days. CONTROL GROUP Ciprofloxacin 200 mg IP in the first bag then 25 mg/L in subsequent bags. Total duration of treatment 10 days. ADDITIONAL TREATMENT Patients randomised to oral ciprofloxacin with primary treatment failure were given IP ciprofloxacin if the microorganism was sensitive on culture, or it was a culture negative episode. Patients randomised to IP ciprofloxacin were changed to IP vancomycin and amikacin
Outcomes	1. Treatment failure 2. Relapse 3. Catheter removal 4. Hospitalisation (number of patients and duration of stay) 5. Side effects of treatment
Notes	EXCLUSIONS POST RANDOMISATION BUT PRE-ANALYSIS Fungal peritonitis (3) Tuberculous peritonitis (1) Non-compliance with treatment protocol (2) DEFINITION OF PERITONITIS Abdominal pain and cloudy peritoneal dialysate occurred with or without fever. Peritoneal WCC > 100/mm³ with > 50% polymorphs. DEFINITION OF CURE Complete resolution of symptoms and signs with a negative culture, and no further episodes in the

Cheng 1993 (*Continued*)

	following 28 days DEFINITION OF TREATMENT FAILURE The persistence of signs and symptoms and if total peritoneal WCC count was more than 50% of the pretreatment value after 3 days of antibiotic treatment DEFINITION OF RELAPSE Recurrence with the same microorganism within 28 days of clearing of the initial peritonitis episode COMPLETENESS OF FOLLOW-UP Eligible/considered for inclusion: 54 episodes in 46 patients Enrolled/randomised: 54 Analysed: 48 Per cent followed: 88.9%

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B - Unclear

Cheng 1997

Methods	Country: Hong Kong Setting/Design: RCT, parallel, multicentre, teaching hospital, university Time frame: NS Randomisation method: Unclear Blinding - Participants: No - Investigators: No - Outcome assessors: NS Intention-to-treat: No Follow-up period: 28 days after commencement of treatment Loss to follow-up: 8/36 (22.2%)
Participants	INCLUSION CRITERIA Patients on CAPD who developed peritonitis. TREATMENT GROUP Number: 19 episodes Age: 51.5 years (range 26-71) Sex (M/F): 11/7 CONTROL GROUP Number: 17 episodes Age: 51 years (range 36-80) Sex (M/F): 6/11 EXCLUSION CRITERIA Known sensitivity to fluoroquinolones. Peritonitis secondary to fungi or tuberculous bacteria. Relapsing peritonitis.

Cheng 1997 (*Continued*)

Interventions	TREATMENT GROUP Ofloxacin 400 mg po loading dose then 300 mg po daily maintenance dose. Total duration of treatment 10 days. CONTROL GROUP Ofloxacin 100 mg/L for the first bag then 25 mg/L of dialysate in subsequent bags. Total duration of treatment 10 days. CO-INTERVENTIONS Aluminium phosphate binders were stopped in patients receiving pefloxacin orally but not in those receiving the IP drug
Outcomes	1. Treatment failure 2. Relapse of peritonitis
Notes	EXCLUSIONS POST RANDOMISATION BUT PRE-INTERVENTION 7/41 patients were excluded because of protocol violation after an interim analysis DEFINITION OF PERITONITIS Abdominal pain and cloudy peritoneal dialysate occurred with or without fever. Peritoneal WCC > 100/mm³ with > 50% polymorphs. DEFINITION OF CURE Complete resolution of symptoms and signs with a negative culture, and no further episodes in the following 28 days DEFINITION OF TREATMENT FAILURE The persistence of fever, abdominal pain and cloudy peritoneal effluent and if total peritoneal WCC count > 50% of the pretreatment value after 3 days of antibiotic treatment DEFINITION OF RELAPSE Recurrence with the same microorganism within 28 days of clearing of the initial peritonitis episode COMPLETENESS OF FOLLOW-UP Eligible/considered for inclusion: 41 patients Enrolled/randomised: 34 patients (36 peritonitis episodes) Analysed: 33 patients (35 peritonitis episodes) Per cent followed: 94.3%

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B - Unclear

Cheng 1998

Methods	Country: Hong Kong Setting/Design: RCT, parallel, multicentre, teaching hospital Time frame: NS Randomisation method: Random selection of sealed envelopes in blocks of 20 patients. Blinding - Participants: No - Investigators: No - Outcome assessors: NS Intention-to-treat: Yes Follow-up period: 28 days from clearing of effluent Loss to follow-up: 1/101 (1%)
Participants	INCLUSION CRITERIA Patients on CAPD who developed peritonitis. TREATMENT GROUP Number: 47 Age: 56.5 ± 13.2 years Sex (M/F): 25/22 CONTROL GROUP Number: 54 Age: 56.6 ± 11.0 Sex (M/F): 29/25 EXCLUSION CRITERIA Severe peritonitis with evidence of septicaemia (i.e. high fever and hypotension). Peritonitis secondary to tunnel infection. Peritonitis secondary to fungi or tuberculous bacteria. Relapsing peritonitis. Known sensitivity to study medications.
Interventions	TREATMENT GROUP Levofloxacin 300 mg po daily. Total duration of treatment 10 days. Vancomycin 1 g (if < 50 kg) or 2 g (body weight > 50 kg) day 1 and day 7 CONTROL GROUP Netromycin 20 mg/L IP loading dose then 20 mg/L in the first exchange of each day. Total duration of treatment 10 days. Vancomycin 1 g (if < 50 kg) or 2 g (body weight > 50 kg) day 1 and day 7
Outcomes	1. Treatment failure 2. Relapse
Notes	DEFINITION OF PERITONITIS Abdominal pain and cloudy peritoneal dialysate occurred with or without fever. Peritoneal WCC > 100/mm³ with > 50% polymorphs. DEFINITION OF CURE Complete resolution of symptoms and signs with a negative culture, and no further episodes in the following 28 days DEFINITION OF TREATMENT FAILURE The persistence of fever, abdominal pain and cloudy peritoneal effluent and if total peritoneal WCC >

Cheng 1998 (*Continued*)

	50% of the pretreatment value after 3 days of antibiotic treatment DEFINITION OF RELAPSE Recurrence with the same microorganism within 28 days of clearing of the initial peritonitis episode COMPLETENESS OF FOLLOW-UP Eligible/considered for inclusion: 113 Enrolled/randomised: 101 Analysed: 100 Per cent followed: 99%

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Yes	A - Adequate

Coban 2004

Methods	Country: Turkey Setting/Design: Quasi-RCT, parallel, university hospital Time frame: NS Randomisation method: Consecutive allocation to each group Blinding - Participants: No - Investigators: No - Outcome assessors: NS Intention-to-treat: Yes Loss to follow-up: 0/24 (0%)
Participants	INCLUSION CRITERIA CAPD-associated peritonitis; positive dialysate culture with an organism sensitive to the study antibiotics TREATMENT GROUP Number: 12 Age: 52.6 ± 5.9 years Sex (M/F): 6/6 CONTROL GROUP Number: 12 Age: 53.2 ± 7.6 years Sex (M/F): 7/5
Interventions	TREATMENT GROUP 2 mL (320 mg) IP IgG with each exchange. Antibiotics as for control group. CONTROL GROUP IP ampicillin/sulbactam 1 g tds. IP netilmicin LD 150 mg; MD 50 mg od (added to night exchange)
Outcomes	1. Time for dialysate WCC < 100/mL. 2. Time to pain free exchange.

Coban 2004 (*Continued*)

	3. Relapse.
Notes	DEFINITION OF PERITONITIS 2 of the following: dialysate WCC > 100/mm³ with more than 50% polymorphs; peritoneal inflammation symptoms; positive dialysate gram stain and subsequent positive culture COMPLETENESS OF FOLLOW-UP Eligible/considered for inclusion: 24 Enrolled/randomised: 24 Analysed: 24 Per cent followed: 100%

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	No	C - Inadequate

de Fijter 2001

Methods	Country: The Netherlands Setting/Design: RCT, parallel, multicentre, teaching hospital, university Time frame: October 1996 to October 1999 Randomisation method: Unclear Blinding - Participants: No - Investigators: No - Outcome assessors: NS Intention-to-treat: Yes Follow-up period: 28 days from completion of therapy Loss to follow-up: 5 /98 (5.1%)
Participants	INCLUSION CRITERIA Receiving continuous peritoneal dialysis. Over 18 years of age. TREATMENT GROUP Number: 44 Age: 61.2 years (range 28-76) Sex (M/F): 26/18 CONTROL GROUP Number: 54 Age: 56.9 years (range 22-76) Sex (M/F): 24/30 EXCLUSION CRITERIA Pregnancy. Lactating females or those using inadequate contraception. Underlying rapidly fatal disease (life expectancy less than 2 months post-enrolment). Use of any concomitant systemic antimicrobial drug within 1 week prior to enrolment. Chronic liver disease (SGOT and/ or SGPT repeatedly three times over the upper normal limit).

de Fijter 2001 (*Continued*)

	Evidence or history of hypersensitivity or other contraindications to quinolones, cephalosporins or rifampicin. Prior entry into the present study.
Interventions	TREATMENT GROUP Ciprofloxacin 50 mg/L added to all exchanges. Rifampicin 50 mg/L added to all exchanges. Ciprofloxacin or cephradine stopped when appropriate following culture results CONTROL GROUP Cephradine 250 mg/L added to all exchanges. Treatment duration 14 days (both groups). CO-INTERVENTIONS: NS
Outcomes	1. Treatment failure 2. Bacteriological response 3. Relapse 4. Catheter removal 5. Side effects of treatment
Notes	DEFINITION OF PERITONITIS Dialysate WCC > 100/mm³ with > 50% polymorphs, with or without clinical symptoms and signs of peritonitis or a positive culture DEFINITION OF CURE Disappearance of all signs and symptoms related to the infection by day 4 and continued through to day 42 DEFINITION OF TREATMENT FAILURE Insufficient lessening of symptoms and signs to qualify as improvement. Ongoing symptoms and signs beyond day 4. Dialysate WWC > 100/mm³ at day 14. Death secondary to uncontrolled infection. Catheter removal. DEFINITION OF RELAPSE Recurrence with the same organism within 28 days. COMPLETENESS OF FOLLOW-UP Eligible/considered for inclusion: 367 Enrolled/randomised: 367 Analysed: 98 Per cent followed: 26.7%

Risk of bias

Item	**Authors' judgement**	**Description**
Allocation concealment?	Unclear	B - Unclear

Ejlersen 1991

Methods	Country: Denmark Setting/Design: RCT, parallel, multicentre, teaching hospital, university Time frame: NS Randomisation method: Unclear Blinding - Participants: No - Investigators: No - Outcome assessors: NS Intention-to-treat: No Follow-up period: 1 month after cessation of antibiotic treatment Loss to follow-up: 0/36 (0%)
Participants	INCLUSION CRITERIA Patients on CAPD who developed peritonitis. OVERALL STUDY POPULATION Number: 36 EXCLUSION CRITERIA Patients previously enrolled in the study. Profound hypotension and shock. Clinical exit site and/ or tunnel infection. Poor treatment compliance.
Interventions	TREATMENT GROUP Initial 24 hours of peritoneal lavage (2L exchanges, no dwell time) with 60L dialysis fluid containing vancomycin 20 mg/L and netilmicin 10 mg/L. Followed by resumption of usual CAPD regimen and 9 days of IP antibiotics in the same concentration (total 10 days of antibiotic treatment) CONTROL GROUP Initial 2 rapid exchanges followed by routine CAPD schedule. Vancomycin 40 mg/L and netilmicin 10 mg/L added to the initial 2 rapid exchanged, followed by ongoing vancomycin 20 mg/L and netilmicin 10 mg/L for a total of 10 days of antibiotic therapy
Outcomes	1. Time to resolution of peritonitis 2. Treatment failure 3. Relapse 4. Side effects of treatment
Notes	DEFINITION OF PERITONITIS 2/5 possible criteria present: positive Leukostix; cloudy dialysis effluent; abdominal pain; dialysate WCC > 100/μL and > 50% neutrophils; positive culture from dialysis effluent DEFINITION OF CURE Normalisation of WCC in the dialysate effluent. DEFINITION OF RELAPSE Recrudescence of peritonitis signs and symptoms while still under antibiotic treatment COMPLETENESS OF FOLLOW-UP Eligible/considered for inclusion: 39 Enrolled/randomised: 39 Analysed: 36 Per cent followed: 92.3%

Ejlersen 1991 (*Continued*)

Risk of bias		
Item	**Authors' judgement**	**Description**
Allocation concealment?	Unclear	B - Unclear

Flanigan 1991

Methods	Country: USA Setting/Design: Quasi-RCT, parallel, teaching hospital Time frame: January 1981 to December 1986 Randomisation method: Patients randomised according to the first letter of their given name Blinding - Participants: NS - Investigators: NS - Outcome assessors: NS Intention-to-treat: No Follow-up period: 14 days after completion of treatment Loss to follow-up: 0/263 (0%)
Participants	INCLUSION CRITERIA Receiving CAPD or CCPD OVERALL STUDY POPULATION Age: 2-82 years (total study population) TREATMENT GROUP Number: 181 episodes Age: 42.75 ± 2.10 (SEM) Male (%): 46 CONTROL GROUP Number: 82 episodes Age: 47.12 ± 2.63 years (SEM) Male (%): 51 EXCLUSION CRITERIA Allergy to both study drugs.
Interventions	TREATMENT GROUP Cephazolin 50 mg/L of dialysate IP. Total duration of treatment 14 days. CONTROL GROUP Vancomycin 25 mg/L of dialysate IP. Total duration of treatment 14 days. CO-INTERVENTIONS 2 rapid exchanges at the time of initiation of treatment followed by resumption of the normal dialysis regimen. IP heparin 250 U/L.

Flanigan 1991 (*Continued*)

Outcomes	1. Treatment failure 2. Relapse of peritonitis 3. Catheter removal
Notes	DEFINITION OF PERITONITIS Effluent WCC > 100/ μL and > 50% neutrophils. DEFINITION OF CURE Elimination of all symptoms and signs of infection by the initial 14 days of antibiotics, and remaining infection free for another 14 days following completion of antibiotic therapy DEFINITION OF RELAPSE Recurrence within 14 days of antibiotic treatment of infection with the same organism or with no growth COMPLETENESS OF FOLLOW-UP Eligible/considered for inclusion: 131 Enrolled/randomised: 131 Analysed: 95 patients (263 episodes of peritonitis) Per cent followed: 72.5%

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	No	C - Inadequate

Friedland 1990

Methods	Country: UK Setting/Design: RCT, parallel, teaching hospital Time frame: NS Randomisation method: Numbered envelopes Blinding - Participants: No - Investigators: No - Outcome assessors: NS Intention-to-treat: Yes Follow-up period: 28 days Loss to follow-up: 0/40 (0%)
Participants	INCLUSION CRITERIA Patients with CAPD-associated peritonitis. TREATMENT GROUP Number: 20 Age: 47-79 years Sex (M/F): 11/9 CONTROL GROUP Number: 20 Age: 22-77 years Sex (M/F): 13/7 EXCLUSION CRITERIA

	Known allergy to any study drug. Peritoneal dialysis catheter leak. Catheter tunnel infection. Pregnancy. Liver disease. History of convulsions. If any antibiotics had been received in the 48 hours prior to presentation. Recurrent peritonitis (any episode within the previous 28 days)
Interventions	TREATMENT GROUP Ciprofloxacin 20 mg/L IP with each exchange. Total duration of treatment 10 days. CONTROL GROUP Vancomycin 12.5 mg/L IP with each exchange. Gentamicin 4 mg/L to alternate exchanges. Total duration of treatment 10 days.
Outcomes	1. Treatment failure 2. Relapse of peritonitis 3. Catheter removal 4. Technique failure 5. Side effects of treatment
Notes	DEFINITION OF CURE No further episodes of CAPD peritonitis in the following 28 days COMPLETENESS OF FOLLOW-UP Eligible/considered for inclusion: 40 Enrolled/randomised: 40 Analysed: 40 Per cent followed: 100%

Risk of bias

Item	**Authors' judgement**	**Description**
Allocation concealment?	Yes	A - Adequate

Gadallah 2000

Methods	Country: USA Setting/Design: Quasi-RCT, parallel, teaching hospital Time frame: 3 years Randomisation method: Consecutive case approach Blinding - Participants: No - Investigators: No - Outcome assessors: NS Intention-to-treat: No Follow-up period: 6 months Loss to follow-up: 0/80 (0%)
Participants	INCLUSION CRITERIA First episode of PD-associated peritonitis. TREATMENT GROUP Number: 40 Age: 45.1 ± 12.8 years (SE) Sex (M/F): 19/21 CONTROL GROUP Number: 40 Age: 48.2 ± 3.3 years (SE) Sex (M/F): 18/22 EXCLUSION CRITERIA Exit-site or tunnel infection.
Interventions	TREATMENT GROUP Urokinase 5000 IU/2.5 mL normal saline, administered intraluminally; 4 hour dwell. IP antibiotics. CONTROL GROUP IP antibiotics.
Outcomes	1. Duration of peritonitis 2. Severity of symptoms and signs of peritonitis 3. Recurrence of peritonitis 4. Relapse 5. Catheter removal
Notes	DEFINITION OF TREATMENT FAILURE Persistent peritonitis without improvement in dialysate WCC after 4 days of treatment with specific antibiotic therapy DEFINITION OF RELAPSE Peritonitis caused by the same organism within 3 months of the initial episode of peritonitis OR three episodes of peritonitis due to the same organism within a 6 month period COMPLETENESS OF FOLLOW-UP Eligible/considered for inclusion: 80 Enrolled/randomised: 80 Analysed: 80 Per cent followed: 100%
Risk of bias	

Gadallah 2000 (*Continued*)

Item	Authors' judgement	Description
Allocation concealment?	No	C - Inadequate

Gucek 1994

Methods	Country: Slovenia Setting/Design: RCT, parallel, teaching hospital Time frame: November 1991 to June 1993 Randomisation method: NS Blinding - Participants: No - Investigators: No - Outcome assessors: NS Intention-to-treat: Yes Follow-up period: NS Loss to follow-up: 0/23 (0%)
Participants	INCLUSION CRITERIA Adults receiving CAPD therapy who developed peritonitis. OVERALL STUDY POPULATION Number: 23 Age: 53.5 ± 11 years Sex (M/F): 15/8
Interventions	TREATMENT GROUP Ofloxacin 300 mg po loading dose then 200 mg po daily for an average of 10 days CONTROL GROUP Cephazolin 100 mg IP loading dose then 250 mg IP/exchange for 10 days
Outcomes	1. Treatment failure.
Notes	DEFINITION OF PERITONITIS 2/3 criteria: abdominal discomfort and pain; cloudy peritoneal effluent with WCC > 100/mm^3; positive microbiological findings of the effluent COMPLETENESS OF FOLLOW-UP Eligible/considered for inclusion: 23 Enrolled/randomised: 23 Analysed: 23 Per cent followed: 100%

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B - Unclear

Gucek 1997

Methods	Country: Slovenia Setting/Design: RCT, parallel, university Time frame: November 1993 to September 1996 Randomisation method: Unclear Blinding - Participants: NS - Investigators: NS - Outcome assessors: NS Intention-to-treat: Yes Follow-up period: NS Loss to follow-up: 0/34 (0%)
Participants	INCLUSION CRITERIA CAPD-associated peritonitis. OVERALL STUDY POPULATION Number: 34 patients (52 episodes of peritonitis) Age: 57.2 ± 13.6 years
Interventions	TREATMENT GROUP Cephazolin 500 mg IP loading dose then 250 mg/exchange maintenance dose. Netilmicin 80-120 mg IP loading dose then 40 mg IP daily maintenance dose CONTROL GROUP Vancomycin 2 g IP every 5-7 days. Ceftazidime 1 g IP loading dose then 250 mg IP/exchange maintenance dose
Outcomes	1. Treatment failure
Notes	DEFINITION OF PERITONITIS 2/3 criteria: abdominal discomfort and pain; cloudy peritoneal effluent with WCC > 100/mm^3; positive microbiological findings of the effluent DEFINITION OF TREATMENT FAILURE Failure to show considerable clinical improvement within 2-5 days of initial antibiotic treatment COMPLETENESS OF FOLLOW-UP Eligible/considered for inclusion: 34 patients (52 episodes) Enrolled/randomised: 34 patients (52 episodes) Analysed: 34 patients (52 episodes) Per cent followed: 100%

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B - Unclear

Innes 1994

Methods	Country: UK Setting/ design: RCT, parallel, single centre Time frame: NS Randomisation method: Unclear Blinding - Participants: Yes - Investigators: NS - Outcome assessors: NS Intention-to-treat: Yes Follow-up period: 6 months Loss to follow-up: 0/24 (0%)
Participants	INCLUSION CRITERIA Resistant PD-associated peritonitis (no resolution of peritonitis within 4 days of appropriate antibiotic therapy) or recurrent peritonitis (a third episode of peritonitis with the same organism within 6 months despite appropriate antibiotic therapy) OVERALL STUDY POPULATION Number: 24 patients (11 persistent infection, 13 recurrent infection) Age: median 57 years (range 32-76) Sex (M/F): 14/10 EXCLUSION CRITERIA Fungal peritonitis. Culture negative peritonitis. Tunnel or exit site infection.
Interventions	TREATMENT GROUP 5000 Plough Units of urokinase/5 mL of normal saline, administered via IP route; 2 hour dwell. 14 days of antibiotics (determined by causative organism). CONTROL GROUP Placebo (5 mL normal saline). 14 days of antibiotics (determined by causative organism).
Outcomes	1. Treatment failure
Notes	DEFINITION OF PERITONITIS 2/3 criteria: dialysate WCC > 100 mm^3; positive dialysate culture; abdominal pain DEFINITION OF CURE Disappearance of symptoms and signs related to infection and a decrease in the dialysate WCC < 100/ mm^3 for 4 weeks after therapy DEFINITION OF TREATMENT FAILURE No clinical improvement, or modification of therapy due to clinical deterioration, or catheter removal COMPLETENESS OF FOLLOW-UP Eligible/considered for inclusion: 73 Enrolled/randomised: 73 Analysed: 65 Per cent followed: 89.0%

Risk of bias

Item	Authors' judgement	Description

Innes 1994 (*Continued*)

Allocation concealment?	Unclear	D - Not used

Jiménez 1996

Methods	Country: Spain
Participants	PATIENT CHARACTERISTICS 67 episodes in 47 patients; 33 in the treatment group and 34 in the control group
Interventions	TREATMENT GROUP Vancomycin and cefotaxime CONTROL GROUP Vancomycin and tobramycin
Outcomes	1. Treatment failure 2. Recurrence of peritonitis 3. Catheter removal
Notes	DEFINITION OF TREATMENT SUCCESS Resolution of peritonitis within 4 days of urokinase or placebo in the case of persistent infection, or no recurrence with the same organism within 6 months for recurrent infection COMPLETENESS OF FOLLOW-UP Eligible/considered for inclusion: 24 Enrolled/randomised: 24 Analysed: 24 Per cent followed: 100%

Risk of bias

Item	**Authors' judgement**	**Description**
Allocation concealment?	Unclear	B - Unclear

Khairullah 2002

Methods	Country: USA Setting/Design: RCT, parallel, teaching hospital Time frame: 1 October 1997 to 20 September 1999 Randomisation method: Allocation by dialysis nurse Blinding - Participants: No - Investigators: No - Outcome assessors: NS Intention-to-treat: No Follow-up period: NS Loss to follow-up: 9/51 (17.6%)
Participants	INCLUSION CRITERIA PD-associated peritonitis. OVERALL STUDY POPULATION Number: 30 (51 episodes of peritonitis) Age: mean 48 years (range 26-74) Sex (M/F): 17/13 EXCLUSION CRITERIA Sensitivities to penicillin or vancomycin. Already receiving antibiotics. Known to be noncompliant. Could not follow instructions. < 18 years. Pregnancy.
Interventions	TREATMENT GROUP Cephazolin 1 g IP loading dose then 125 mg/L with each exchange for 2-3 weeks according to culture results CONTROL GROUP Vancomycin 1 g/L IP loading dose, repeated at day 5 or day 8 according to residual kidney function, for 2 weeks CO-INTERVENTIONS Gentamicin 40 mg/day IP added to one exchange (both groups).
Outcomes	1. Treatment failure 2. Relapse 3. Catheter removal
Notes	DEFINITION OF PERITONITIS Effluent WCC > 100/mm^3 with > 50% neutrophils. DEFINITION OF CURE Elimination of all signs and symptoms of peritonitis by the prescribed duration of treatment; infection free for 2 weeks after cessation of treatment DEFINITION OF RELAPSE Infection with the same microorganism within 2 weeks of treatment COMPLETENESS OF FOLLOW-UP Eligible/considered for inclusion: 91 patients Enrolled/randomised: 91 patients

Khairullah 2002 (*Continued*)

	Analysed: 30 patients (51 episodes) Per cent followed: 82.4%

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	No	C - Inadequate

Leung 2004

Methods	Country: Hong Kong Setting/Design: Quasi-RCT, parallel, single centre; university teaching hospital Time frame: March 2001 to February 2002 Randomisation method: According to date of presentation Blinding - Participants: No - Investigators: No - Outcome assessors: No Intention-to-treat: Yes Follow-up period: 120 days Loss to follow-up: 1/102 (0%)
Participants	INCLUSION CRITERIA PD-associated peritonitis. TREATMENT GROUP Number: 51 Age: 61.0 ± 12.2 years Sex (M/F): 26/25 CONTROL GROUP Number: 51 Age: 57.1 ± 12.2 years Sex (M/F): 25/26
Interventions	TREATMENT GROUP Iminpenem/cilastin IP LD 500 mg (6 hour dwell) then MD 100 mg/2L dialysate bag qid CONTROL GROUP Cephazolin IP LD 1 g (6 hour dwell) then MD 250 mg/2L dialysate bag qid. Ceftazidime IP LD 1 g (6 hour dwell) then MD 250 mg/ 2L dialysate bag qid CO-INTERVENTIONS Three rapid hourly dialysis cycles at presentation. Heparin sodium 1000 U IP/2L dialysis solution until dialysate cleared. Oral nystatin for fungal prophylaxis until antibiotic therapy completed. Oral rifampicin added for S. aureus infections and IP netilmicin for Pseudomonas infections, and treatment continued for at least 21 days in these cases
Outcomes	1. Primary response 2. Complete cure

Leung 2004 (*Continued*)

	3. Catheter removal
Notes	DEFINITION OF PERITONITIS Two of abdominal pain, cloudy dialysate or peritoneal effluent WCC > 100/mm³ with > 50% neutrophils and positive gram stain or culture DEFINITION OF PRIMARY RESPONSE Resolution of abdominal pain, clearing of dialysate and dialysate neutrophil count < 100/μL on day 10 DEFINITION OF RELAPSE Recurrence of peritonitis by the same organism within 28 days of completion of a course of antibiotics COMPLETE CURE Complete cure of peritonitis by antibiotics alone, without relapse within 120 days COMPLETENESS OF FOLLOW-UP Eligible/considered for inclusion: 102 Enrolled/randomised: 102 Analysed: 102 Per cent followed: 100%

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	No	C - Inadequate

Lui 2005

Methods	Country: Hong Kong Setting/Design: RCT, parallel, single centre, university teaching hospital Time frame: October 2002 to October 2004 Randomisation method: Computer generated randomisation tables Blinding - Participants: No - Investigators: No - Outcome assessors: No Intention-to-treat: Yes Follow-up period: 42 days Loss to follow-up: 2/102 (2%)
Participants	INCLUSION CRITERIA CAPD patients 18 years of age or older with clinical evidence of peritonitis TREATMENT GROUP Number: 51 Age: 66.7 ± 12.2 years Sex (M:F): 1:1 CONTROL GROUP Number: 51 Age: 63.7 ± 14.6 years Sex (M:F): 1.3:1 EXCLUSION CRITERIA

	Known hypersensitivity to cephalosporins or aminoglycosides. Suspected fungal or tuberculous peritonitis. Relapsing peritonitis. Active exit site infection.
Interventions	TREATMENT GROUP Ceftazidime 1 g/2L dialysate bag IP daily. CONTROL GROUP Netilmicin 0.6 mg/kg body weight/2L dialysate bag IP daily. CO-INTERVENTIONS Cephazolin 1 g/2L dialysate bag IP daily. Antibiotics changed if there was a failure to respond to assigned antibiotics by day 3; antibiotics either adjusted according to culture results or changed to second line antibiotics (vancomycin and amikacin) if cultures were negative
Outcomes	1. Primary treatment failure 2. Secondary treatment failure 3. Relapse of peritonitis 4. Catheter removal 5. Decline in residual kidney function
Notes	DEFINITION OF PERITONITIS Abdominal pain and cloudy dialysate, and a dialysate WCC > 100 mm^3 with > 50% neutrophils DEFINITION OF PRIMARY CURE A complete resolution of signs and symptoms of peritonitis with a negative dialysate culture and no further episodes of peritonitis within 28 days following the cessation of antibiotic treatment DEFINITION OF PRIMARY TREATMENT FAILURE The presence of fever, abdominal pain and turbid peritoneal dialysate, and if the total peritoneal WCC is > 50% of pretreatment values after 3 days of treatment by the assigned antibiotics DEFINITION OF SECONDARY TREATMENT FAILURE Treatment failure despite adjustment of antibiotics or changing to second line antibiotics DEFINITION OF RELAPSE Recurrence of peritonitis with the same microorganism within 28 days of clearing of the initial antibiotic episode and cessation of antibiotic therapy COMPLETENESS OF FOLLOW-UP Eligible/considered for inclusion: 112 Enrolled/randomised: 104 Analysed: 102 Per cent followed: 98%

Risk of bias

Item	**Authors' judgement**	**Description**
Allocation concealment?	Yes	A - Adequate

Lupo 1997

Methods	Country: Italy Setting/Design: RCT, parallel, multicentre, university Time frame: NS Randomisation method: Unclear Blinding - Participants: NS - Investigators: NS - Outcome assessors: NS Intention-to-treat: No Follow-up period: 4 weeks after completion of therapy Loss to follow-up: 8/73 (11.0%)
Participants	INCLUSION CRITERIA CAPD-associated peritonitis. TREATMENT GROUP Number: 39 Age: 66.7 ± 12 years Sex (M/F): 23/16 CONTROL GROUP Number: 34 Age: 66.9 ± 13 years Sex (M/F): 13/16 EXCLUSION CRITERIA Known or suspected sensitivity to the study drug(s). Peritonitis caused by tunnel infection. Effective antibiotic therapy in the previous 48 hours.
Interventions	TREATMENT GROUP Teicoplanin 400 mg IV loading dose then 40 mg IP added to each exchange CONTROL GROUP Cephalothin 2 g IV then 500 mg IP added to each exchange. CO-INTERVENTIONS Tobramycin 120 mg IM loading dose then 10 mg IP added to each exchange (both groups) In both groups IP antibiotics were given with each exchange in the first week of treatment, in alternate bags in the second week, and in an overnight bag in the third week
Outcomes	1. Treatment failure 2. Microbiological eradication 3. Relapse 4. Side effects of treatment
Notes	DEFINITION OF PERITONITIS 2/3 criteria: dialysate WCC > 100/mm^3; positive dialysate culture; abdominal pain DEFINITION OF CURE Disappearance of symptoms and signs related to infection and a decrease in the dialysate WCC < 100/mm^3 for 4 weeks after therapy DEFINITION OF TREATMENT FAILURE No clinical improvement, or modification of therapy due to clinical deterioration, or catheter removal COMPLETENESS OF FOLLOW-UP

Lupo 1997 (*Continued*)

	Eligible/considered for inclusion: 73 Enrolled/randomised: 73 Analysed: 65 Per cent followed: 89.0%

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B - Unclear

Lye 1993

Methods	Country: Singapore Setting/Design: RCT, parallel, teaching hospital Time frame: 1 January to 31 December 1991 Randomisation method: Unclear Blinding - Participants: No - Investigators: No - Outcome assessors: NS Intention-to-treat: Yes Follow-up period: 14 days after completion of treatment Loss to follow-up: 0/63 (0%)
Participants	INCLUSION CRITERIA CAPD-associated peritonitis. TREATMENT GROUP Number: 33 Age: 61.6 ± 8.5 years (SEM) Sex (M/F): 11/19 CONTROL GROUP Number: 30 Age: 59.0 ± 12.0 (SEM) Sex (M/F): 9/21 EXCLUSION CRITERIA History of allergy to the antibiotics. Chronic exit-site or tunnel infection.
Interventions	TREATMENT GROUP Pefloxacin 400 mg po bd. CONTROL GROUP Gentamicin 80 mg IP loading dose then 15 mg/2L dialysate bag CO-INTERVENTIONS Single dose vancomycin 1 g IP (both groups). Total duration of antibiotic therapy 14 days. Antibiotics changed after 72 hours according to culture results

Lye 1993 (*Continued*)

Outcomes	1. Treatment failure 2. Relapse 3. Catheter removal 4. Side effects of treatment
Notes	DEFINITION OF PERITONITIS Cloudy peritoneal effluent. Dialysate WWC > 100/mL with > 50% polymorphonuclear neutrophils DEFINITION OF CURE Resolution of symptoms and signs of peritonitis. Clearing of peritoneal fluid. Negative bacterial culture. DEFINITION OF TREATMENT FAILURE Persistence of cloudy dialysis effluent after 72 hours of appropriate antibiotic treatment DEFINITION OF RELAPSE Peritonitis with the same pathogen or a negative culture within 14 days after completion of treatment COMPLETENESS OF FOLLOW-UP Eligible/considered for inclusion: 60 Enrolled/randomised: 60 Analysed: 60 Per cent followed: 100%

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B - Unclear

Lye 1995

Methods	Country: Singapore Setting/Design: Quasi-RCT, parallel, teaching hospital, university Time frame: NS Randomisation method: Patients assigned alternately Blinding - Participants: No - Investigators: No - Outcome assessors: NS Intention-to-treat: Yes Follow-up period:14 days following completion of antibiotic treatment Loss to follow-up: 0/73 (0%)
Participants	INCLUSION CRITERIA New episode of CAPD peritonitis. TREATMENT GROUP Number: 37 Age: 59.6 ± 13.1 years Sex (M/F): 16/21

Lye 1995 (*Continued*)

	CONTROL GROUP Number: 36 Age: 56.6 ± 11.7 years Sex (M/F): 14/22 EXCLUSION CRITERIA: NS
Interventions	TREATMENT GROUP Gentamicin 40 mg IP daily. CONTROL GROUP Gentamicin 10 mg/2L dialysate IP 4 times daily. CO-INTERVENTIONS Vancomycin 1 g. Antibiotics modified after 72 hours according to culture results. Total of 14 days of antibiotic therapy.
Outcomes	1. Treatment failure 2. Relapse
Notes	DEFINITION OF PERITONITIS Cloudy peritoneal effluent. Dialysate WCC > 100/mL with > 50% polymorphonuclear neutrophils DEFINITION OF CURE Resolution of symptoms and signs of peritonitis. Clearing of peritoneal fluid. Negative bacterial culture. DEFINITION OF TREATMENT FAILURE Persistence of infection despite adequate antibiotic treatment DEFINITION OF RELAPSE Infection occurring within 14 days of stopping treatment. COMPLETENESS OF FOLLOW-UP Eligible/considered for inclusion: 100 episodes Enrolled/randomised: 100 Analysed: 100 Per cent followed: 100%

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	No	C - Inadequate

Schaefer 1999

Methods	Country: Germany Setting/Design: RCT, parallel, multicentre Time frame: June 1993 to January 1997 Randomisation method: Performed locally with a blocking factor of 4 Blinding - Participants: No - Investigators: No - Outcome assessors: NS Intention-to-treat: Yes Follow-up period: median 19 months (range 1-44) Loss to follow-up: 98/152 (64.5%)
Participants	INCLUSION CRITERIA Children and adolescents. Continuous peritoneal dialysis therapy. More than 4 weeks without peritonitis, exit site infections or other infections treated with antibiotics in prevalent CPD patients OVERALL STUDY POPULATION Age 11.4 years (0.7-21.8) TREATMENT GROUP 1 Number: 40 TREATMENT GROUP 2 Number: 41 CONTROL GROUP 1 Number: 40 CONTROL GROUP 2 Number: 43 EXCLUSION CRITERIA Patients receiving continuous local or systemic antibiotics.
Interventions	TREATMENT GROUP 1 Teicoplanin 7.5 mg/kg body weight loading dose then 20 mg/L dialysate added to each dialysate exchange. Ceftazidime 250 mg/L dialysate loading dose then 125 mg/L added to each dialysate exchange TREATMENT GROUP 2 Teicoplanin 15 mg/kg loading dose day 1 and day 7. Ceftazidime 500 mg/L dialysate loading dose then 250 mg/L once daily added to long (9-12 hour) dwell CONTROL GROUP 1 Vancomycin 15 mg/kg body weight loading dose then 30 mg/L dialysate added to each dialysate exchange. Ceftazidime 250 mg/L dialysate loading dose then 125 mg/L added to each dialysate exchange CONTROL GROUP 2 Vancomycin 30 mg/kg body weight day 1 and day 7. Ceftazidime 500 mg/L dialysate loading dose then 250 mg/L once daily added to long (9-12 hour) dwell CO-INTERVENTIONS Heparin 200 IU/L IP until the dialysate completely cleared.
Outcomes	1. Treatment failure 2. Relapse 3. Side effects of treatment 4. Loss of residual kidney function

Schaefer 1999 (*Continued*)

Notes	EXCLUSIONS POST RANDOMISATION BUT PRE-INTERVENTION 2 patients DEFINITION OF PERITONITIS Dialysate WCC > 100/μL with > 50% polymorphonuclear neutrophils DEFINITION OF CURE A decrease in the disease severity score (DSS) by 2 or, if less than 2 initially, when the dialysate WCC had decreased by 50% or more DEFINITION OF TREATMENT FAILURE Deterioration of clinical status after 60 h (increase in the DSS) DEFINITION OF RELAPSE Recurrence of peritonitis with the same organism within 4 weeks after termination of antibiotic treatment ADDITIONAL DATA REQUESTED FROM AUTHORS Outcomes based on modality of PD COMPLETENESS OF FOLLOW-UP Eligible/considered for inclusion: 152 patients Enrolled/randomised: 90 (195 episodes) Analysed: 195 Per cent followed: 100%

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Yes	A - Adequate

Tapson 1990

Methods	Country: UK Setting/Design: RCT, parallel Time frame: December 1988 to March 1990 Randomisation method: Computer generated randomisation code in blocks of 10 subjects Blinding - Participants: No - Investigators: No - Outcome assessors: NS Intention-to-treat: Yes Follow-up period: 28 days Loss to follow-up: 0/50 (0%)
Participants	INCLUSION CRITERIA CAPD therapy. Cloudy dialysate attributed to peritonitis. TREATMENT GROUP Number: 25 Age: 58.8 years (30-76) Sex (M/F): NS CONTROL GROUP Number: 25

	Age: 55.3 years (30-76) Sex (M/F): NS EXCLUSION CRITERIA Vomiting. Chronic liver disease. History of convulsions. Allergy to compounds of the nalidixic acid/ quinolone class. Pregnancy. Co-existing antibiotic therapy.
Interventions	TREATMENT GROUP Ciprofloxacin 500 mg (if >70 kg) or 250 mg (if < 70 kg) po qid at the time of each dialysis exchange CONTROL GROUP Vancomycin 30 mg/2L dialysate bag. Netilmicin 30 mg to alternate 2L dialysate bags. Antibiotics modified after 48 hours if appropriate according to sensitivity results CO-INTERVENTIONS 3 x 2L dialysate "flush" exchanges after the diagnosis of peritonitis was established
Outcomes	1. Treatment failure 2. Microbiological eradication 3. Relapse 4. Nausea 5. Other side effects of treatment
Notes	DEFINITION OF PERITONITIS Dialysate WCC > 100/µL with or without other symptoms and signs DEFINITION OF CURE: NS DEFINITION OF TREATMENT FAILURE: NS COMPLETENESS OF FOLLOW-UP Eligible/considered for inclusion: 25 Enrolled/randomised: 25 Analysed: 25 Per cent followed: 25%

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Yes	A - Adequate

Tong 2005

Methods	Country: China Setting/Design: single centre, RCT Time frame: March 2000 to July 2003 Randomisation method: NS Blinding - Participants: Yes - Investigators: Yes - Outcome assessors: NS Intention-to-treat: Yes Follow-up period: 28 days Loss to follow-up: 0/88 (0%)
Participants	INCLUSION CRITERIA Resistant PD-associated peritonitis. TREATMENT GROUP Number: 44 Age: 57.3 ± 13.1 years Sex (M/F): 23/21 CONTROL GROUP Number: 44 Age: 58.5 ± 12.8 years Sex (M/F): 18/26 EXCLUSION CRITERIA Fungal or mycobacterial peritonitis. Surgical cause of acute peritonitis. Allergy to urokinase.
Interventions	TREATMENT GROUP Urokinase 60,000 IU/20 mL normal saline IP, 2 hour dwell period; repeated in 2 days if required CONTROL GROUP Placebo (20 mL normal saline) CO-INTERVENTIONS Antibiotics.
Outcomes	1. Treatment failure 2. Relapse 3. Catheter removal 4. Death 5. Length of hospitalisation
Notes	DEFINITION OF PERITONITIS 2 of the following: generalised abdominal pain and/ or cloudy dialysate; dialysate WCC > 100/mL and predominant polymorphs; positive gram stain or culture DEFINITION OF CURE Disappearance of symptoms and signs and clearing of dialysate DEFINITION OF TREATMENT FAILURE Cessation of PD and initiation of haemodialysis. COMPLETENESS OF FOLLOW-UP Eligible/considered for inclusion: 95

Tong 2005 (*Continued*)

	Enrolled/randomised: 88 Analysed: 88 Per cent followed: 100%

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B - Unclear

Velasquez-Jones 1995

Methods	Country: Mexico Setting/Design: Quasi-RCT, parallel Time frame: NS Randomisation method: NS Blinding - Participants: No - Investigators: No - Outcome assessors: NS Intention-to-treat: No Loss to follow-up: 0
Participants	INCLUSION CRITERIA New episode of CAPD-associated peritonitis in paediatric patients OVERALL STUDY POPULATION Number: 21 Age: 8-17 years Sex (M/F): 11/10 TREATMENT GROUP Number: 11 CONTROL GROUP Number: 10
Interventions	TREATMENT GROUP Vancomycin 30 mg/kg IP for 6 hours day 1 and day 7. CONTROL GROUP Vancomycin 500 mg/L for 6 hours loading dose then 15 mg/L per exchange for 10 days CO-INTERVENTIONS Amikacin 7.5 mg/kg IP for 6 hours then 20 mg/L each exchange for 10 days
Outcomes	1. Treatment failure 2. Relapse
Notes	DEFINITION OF PERITONITIS Abdominal pain. Cloudy dialysate. Dialysate WCC > 100/mm^3, with > 50% polymorphonuclear neutrophils

Velasquez-Jones 1995 (*Continued*)

	DEFINITION OF CURE Resolution of abdominal pain. Clearing of dialysate, with < 100/mm³ leukocytes. Negative repeat dialysate culture. DEFINITION OF TREATMENT FAILURE Ongoing symptoms, particularly abdominal pain. Failure of dialysate to clear. Dialysate WCC > 50% of that at presentation.

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	No	C - Inadequate

Wale 1992

Methods	Country: UK Setting/Design: Parallel, RCT, university teaching hospital Time frame: NS Randomisation method: NS Blinding - Participants: No - Investigators: No - Outcome assessors: NS Intention-to-treat: Yes Follow-up period: 6 months Loss to follow-up: 7/60 (11.7%)
Participants	INCLUSION CRITERIA CAPD therapy. Cloudy dialysate attributed to peritonitis. TREATMENT GROUP Number: 30 Age: 51.3 years Sex (M/F): 19/11 CONTROL GROUP Number: 30 Age: 54.7 years Sex (M/F): 15/15 EXCLUSION CRITERIA < 18 years. Allergic to a study medication. Pregnant or lactating. Received antibiotic therapy in the previous 48 hours. Declined to give informed consent.

Interventions	TREATMENT GROUP Cefuroxime 125 mg/L IP added to each exchange. Continued for a minimum of 10 days and 5 days beyond clearing of dialysate CONTROL GROUP Teicoplanin 20 mg/L added to each exchange. Continued for a minimum of 10 days and 5 days beyond clearing of dialysate. Aztreonam 250 mg/L added to each exchange. Continued for a minimum of 10 days and 5 days beyond clearing of dialysate Antibiotics modified after 48 hours if appropriate according to sensitivity results CO-INTERVENTIONS IV loading dose of 750 mg cefuroxime (treatment group) or 400 mg teicoplanin plus 2 g aztreonam (control group) if the patient had systemic signs suggestive of bacteraemia
Outcomes	1. Treatment failure 2. Relapse 3. All-cause mortality
Notes	DEFINITION OF CURE Full recovery equated to complete cure. "Improved" was defined as sufficient recovery to allow discontinuation of antibiotics DEFINITION OF TREATMENT FAILURE Change of antibiotics or tube required. DEFINITION OF RELAPSE infection with indistinguishable organism occurring between 1 week and 6 months after end of antibiotic course COMPLETENESS OF FOLLOW-UP Eligible/considered for inclusion: 60 Enrolled/randomised: 60 Analysed: 60 Per cent followed: 100%

Risk of bias

Item	**Authors' judgement**	**Description**
Allocation concealment?	Unclear	B - Unclear

Were 1992

Methods	Country: UK Setting/Design: Parallel, RCT, teaching hospital Time frame: 6 months Randomisation method: NS Blinding - Participants: No - Investigators: No - Outcome assessors: NS Intention-to-treat: Yes Follow-up period: 14 days after completion of antibiotic therapy Loss to follow-up: 0/20 (0%)
Participants	INCLUSION CRITERIA CAPD therapy. Peritonitis. TREATMENT GROUP Number: 10 Age: NS Sex (M/F): NS CONTROL GROUP Number: 10 Age: NS Sex (M/F): NS EXCLUSION CRITERIA: NS
Interventions	TREATMENT GROUP Cefuroxime 40 mg/L IP added to each exchange. Continued for 5 days beyond clearing of dialysate. CONTROL GROUP Vancomycin 50 mg IP daily added to alternate bags (1st and 3rd exchanges). Continued for 5 days beyond clearing of dialysate. Netilmicin 50 mg (if > 60 kg) or 30 mg (if < 60 kg) IP day 1 then 25 mg (if > 60 kg) or 20 mg (if < 60 kg) IP added to alternate bags (1st and 3rd exchanges). Continued for 5 days beyond clearing of dialysate. Vancomycin or netilmicin ceased as soon as an organism was isolated and sensitivities available CO-INTERVENTIONS Heparin 500µ/L added to the dialysate fluid when indicated.
Outcomes	1. Treatment failure 2. Catheter removal 3. Ototoxicity
Notes	DEFINITION OF PERITONITIS Cloudy dialysate effluent. WCC > 100/mm³ and > 50% polymorphonuclear cells. DEFINITION OF CURE Disappearance of clinical symptoms and signs. Dialysate WCC < 100/mm³ for a period of at least 14 days. DEFINITION OF TREATMENT FAILURE Persistence of symptoms and signs after 72 hours of treatment, or catheter removal

Were 1992 (*Continued*)

	DEFINITION OF RELAPSE Peritonitis with the same organism within 14 days of stopping antibiotics COMPLETENESS OF FOLLOW-UP Eligible/considered for inclusion: 20 Enrolled/randomised: 20 Analysed: 20 Per cent followed: 100%

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B - Unclear

Williams 1989

Methods	Country: UK Setting/Design: Parallel, RCT, multicentre Time frame: NS Randomisation method: NS Blinding - Participants: No - Investigators: No - Outcome assessors: NS Intention-to-treat: Yes Follow-up period: 3-12 months Loss to follow-up: 0/37 (0%)
Participants	INCLUSION CRITERIA Adults. CAPD therapy. Second recurrence of peritonitis. TREATMENT GROUP Number: 17 Age: 52.1 ± 4.2 years Sex (M/F): 10/7 CONTROL GROUP Number: 20 Age: 54.1 ± 4.0 years Sex (M/F): 11/9 EXCLUSION CRITERIA: NS
Interventions	TREATMENT GROUP Urokinase injection (5000 IU/2 mL saline) into the Tenckhoff catheter; remained in the catheter for 2 hours. Performed on the second and fourth days following recurrence of peritonitis CONTROL GROUP Catheter removal and replacement usually within 5 days of recurrence of peritonitis CO-INTERVENTIONS

Williams 1989 (*Continued*)

	10 days of appropriate IP antibiotics.
Outcomes	1. Treatment failure 2. Recurrence of peritonitis 3. Catheter removal and replacement 4. Side effects of treatment
Notes	DEFINITION OF PERITONITIS Abdominal pain or pyrexia. Dialysate WCC > 10(5)/L. DEFINITION OF CURE Clearing of peritoneal fluid by day 10. Clinical improvement. DEFINITION OF TREATMENT FAILURE Recurrence of peritonitis (reappearance of peritonitis within 3 weeks of finishing IP antibiotic treatment) COMPLETENESS OF FOLLOW-UP Eligible/considered for inclusion: 37 Enrolled/randomised: 37 Analysed: 37 Per cent followed: 100%

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B - Unclear

Wong 2001

Methods	Country: Hong Kong Setting/Design: Parallel, RCT, teaching hospital Time frame: January 1 1998 to June 30 2000 Randomisation method: Sealed envelopes Blinding - Participants: No - Investigators: No - Outcome assessors: NS Intention-to-treat: No Follow-up period: 28 days from completion of antibiotics Loss to follow-up: 8/81 (9.9%)
Participants	INCLUSION CRITERIA Aged 18 years or older. CAPD therapy for more than 4 weeks before the onset of peritonitis TREATMENT GROUP Number: 39 Age: 58 ± 14 years Sex (M/F): 23/16 CONTROL GROUP

	Number: 34 Age: 59 ± 10 years Sex (M/F): 18/16 EXCLUSION CRITERIA Completion of antibiotic therapy for peritonitis within 28 days. Active exit site infection, tunnel infection and/or subcutaneous leakage. Signs and symptoms of septicaemia with oral temperature greater than 38.5°C and/ or systolic blood pressure < 100 mmHg. Known history of hypersensitivity to cefepime, vancomycin or netilmicin. Known history of Aminoglycoside ototoxicity. Current antibiotic therapy for any reason. Known history of cirrhosis, diverticulosis, and malignancy. Peritonitis attributed to other surgical cause suspected on clinical grounds. Inability to administer IP drugs. Presence of peritonitis attributed to fungus or mycobacterial infection. Pregnancy.
Interventions	TREATMENT GROUP Cefepime 2 g IP loading dose, 1 g IP daily for 10 days. CONTROL GROUP Vancomycin 1 g IP day 1 and day 7. Netilmicin 80 mg IP loading dose, 40 mg IP daily for 10 days. Vancomycin ceased day 5 if gram negative bacteria isolated. Netilmicin ceased day 5 if gram positive bacteria isolated CO-INTERVENTIONS Antibiotics changed if no clinical improvement; antibiotics continued if clinical improvement, even if isolated bacteria was resistant
Outcomes	1. Treatment failure 2. Relapse 3. Death due to peritonitis 4. Hospitalisation rate 5. Duration of hospitalisation 6. Side effects of treatment
Notes	EXCLUSIONS POST RANDOMISATION BUT PRE-INTERVENTION Fungal peritonitis (6) Incorrect diagnosis (2) DEFINITION OF PERITONITIS Signs and symptoms of peritoneal inflammation. Dialysate WCC > 100/mL, and > 50% polymorphonuclear cells, and bacteria on gram stain or culture DEFINITION OF CURE Clearing of peritoneal fluid by day 10. Clinical improvement. DEFINITION OF TREATMENT FAILURE Modification of treatment required because of persistence of signs and symptoms of peritonitis at days 5 through to 10. Dialysate WCC > 100 on day 10. DEFINITION OF RELAPSE

Wong 2001 (*Continued*)

	Dialysate cleared on day 10 but peritonitis due to the same organism occurred within 28 days of completion of antibiotic treatment COMPLETENESS OF FOLLOW-UP Eligible/considered for inclusion: 81 Enrolled/randomised: 81 Analysed: 73 Per cent followed: 90.1%

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Yes	A - Adequate

NS - not stated; WCC - white cell count

Characteristics of excluded studies *[ordered by study ID]*

Study	Reason for exclusion
Al-Wali 1992	Results reported according to individual agents used rather than allocated treatment group
Celik 1999	Letter, not a RCT.
Chadwick 1999	Retrospective study, not a RCT.
Chaimovitz 1994	Review article, not a RCT.
De Groc 1983	Not a RCT.
Dratwa 1987	Not a RCT.
Dryden 1993	Letter, not a RCT.
Durand 1994	Considers peritonitis prevention rather than treatment.
Ersoy 1998	Not a RCT.
Fabbri 1982	Considers peritonitis prevention rather than treatment.
Goffin 1997	Letter, not a RCT.
Guest 1996	Not a RCT.

(*Continued*)

Hancock 1989	Letter, not a RCT.
Lai 1997	Not a RCT.
Levesque 2003	Retrospective study, not a RCT.
Li 2000	Not a RCT.
Posthuma 1997	Not a study of peritonitis treatment.
Read 1985	Retrospective control, not a RCT.
Sharma 1971	Considers peritonitis prevention rather than treatment.
Wang 1996	Considers exit site infections rather than peritonitis.
Zacherle 1996	Not a RCT.

DATA AND ANALYSES

Comparison 1. Intravenous (IV) versus intraperitoneal (IP) antibiotics

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Primary treatment failure	2		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
1.1 Vancomycin	1		Risk Ratio (M-H, Random, 95% CI)	Not estimable
1.2 Vancomycin and tobramycin	1		Risk Ratio (M-H, Random, 95% CI)	Not estimable
2 Adverse events	2		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
2.1 Rash	1		Risk Ratio (M-H, Random, 95% CI)	Not estimable
2.2 Hypotension	1		Risk Ratio (M-H, Random, 95% CI)	Not estimable
3 Infusion pain	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected

Comparison 2. Oral (drug A) versus intraperitoneal (drug A) antibiotics (same antibiotic)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Failure to achieve complete cure	2	83	Risk Ratio (M-H, Random, 95% CI)	1.66 [0.98, 2.83]
2 Primary treatment failure	2	83	Risk Ratio (M-H, Random, 95% CI)	1.34 [0.71, 2.56]
3 Relapse	2	83	Risk Ratio (M-H, Random, 95% CI)	3.38 [0.74, 15.35]
4 Catheter removal	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
5 Hospitalisation rate	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
6 Adverse events	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
6.1 Nausea and vomiting	1		Risk Ratio (M-H, Random, 95% CI)	Not estimable

Comparison 3. Oral (regimen A) versus intraperitoneal (regimen B) antibiotics (different antibiotic/s)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Failure to achieve complete cure	7	452	Risk Ratio (M-H, Random, 95% CI)	1.14 [0.84, 1.55]
1.1 Quinolone (PO) versus aminoglycoside/glycopeptide (IP)	5	304	Risk Ratio (M-H, Random, 95% CI)	1.19 [0.83, 1.72]
1.2 Quinolone (PO) versus cephalosporin (IP)	2	148	Risk Ratio (M-H, Random, 95% CI)	1.00 [0.55, 1.81]
2 Primary treatment failure	6	414	Risk Ratio (M-H, Random, 95% CI)	1.10 [0.71, 1.73]
2.1 Quinolone (PO) versus aminoglycoside/glycopeptide (IP)	5	304	Risk Ratio (M-H, Random, 95% CI)	1.13 [0.66, 1.94]

2.2 Quinolone (PO) versus cephalosporin (IP)	1	110	Risk Ratio (M-H, Random, 95% CI)	1.04 [0.47, 2.33]
3 Relapse	5	304	Risk Ratio (M-H, Random, 95% CI)	1.17 [0.64, 2.15]
4 Catheter removal	2	170	Risk Ratio (M-H, Random, 95% CI)	1.18 [0.49, 2.87]
5 Hospitalisation rate	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
6 All-cause mortality	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
7 Microbiological eradication	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
7.1 Quinolone (PO) versus aminoglycoside/glycopeptide (IP)	1		Risk Ratio (M-H, Random, 95% CI)	Not estimable
8 Adverse events	3		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
8.1 Nausea/vomiting (quinolone PO versus aminoglycoside/glycopeptide IP)	3	158	Risk Ratio (M-H, Random, 95% CI)	9.91 [1.89, 51.99]
8.2 Abdominal swelling or pseudo-obstruction	1	60	Risk Ratio (M-H, Random, 95% CI)	1.0 [0.07, 15.26]
8.3 Hypotension	1	60	Risk Ratio (M-H, Random, 95% CI)	0.33 [0.01, 7.87]
8.4 Lethargy	1	50	Risk Ratio (M-H, Random, 95% CI)	3.00 [0.13, 70.30]
8.5 Myalgia	1	50	Risk Ratio (M-H, Random, 95% CI)	3.00 [0.13, 70.30]

Comparison 4. Low dose versus high dose antibiotic

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Failure to achieve complete cure	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
2 Relapse	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
3 Seizures	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected

Comparison 5. Intermittent versus continuous antibiotics

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Failure to achieve complete cure	4	338	Risk Ratio (M-H, Random, 95% CI)	0.92 [0.64, 1.33]
1.1 Gentamicin	1	100	Risk Ratio (M-H, Random, 95% CI)	0.79 [0.45, 1.37]
1.2 Vancomycin	2	72	Risk Ratio (M-H, Random, 95% CI)	0.62 [0.18, 2.11]
1.3 Tecioplanin/ceftazidime	1	86	Risk Ratio (M-H, Random, 95% CI)	1.23 [0.53, 2.90]
1.4 Vancomycin/ceftazidime	1	80	Risk Ratio (M-H, Random, 95% CI)	1.09 [0.55, 2.18]
2 Primary treatment failure	4	338	Risk Ratio (M-H, Random, 95% CI)	1.16 [0.59, 2.29]
2.1 Gentamicin	1	100	Risk Ratio (M-H, Random, 95% CI)	0.67 [0.26, 1.73]
2.2 Vancomycin	2	72	Risk Ratio (M-H, Random, 95% CI)	1.1 [0.08, 15.36]
2.3 Teicoplanin/ceftazidime	1	86	Risk Ratio (M-H, Random, 95% CI)	4.39 [0.51, 37.69]
2.4 Vancomycin/ceftazidime	1	80	Risk Ratio (M-H, Random, 95% CI)	1.6 [0.57, 4.47]
3 Relapse	4	338	Risk Ratio (M-H, Random, 95% CI)	0.76 [0.45, 1.28]
3.1 Gentamicin	1	100	Risk Ratio (M-H, Random, 95% CI)	0.9 [0.40, 2.02]

3.2 Vancomycin	2	72	Risk Ratio (M-H, Random, 95% CI)	0.53 [0.13, 2.11]
3.3 Teicoplanin/ceftazidime	1	86	Risk Ratio (M-H, Random, 95% CI)	0.78 [0.27, 2.28]
3.4 Vancomycin/ceftazidime	1	80	Risk Ratio (M-H, Random, 95% CI)	0.67 [0.20, 2.18]
4 Rash	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
4.1 Vancomycin	1		Risk Ratio (M-H, Random, 95% CI)	Not estimable

Comparison 6. First generation cephalosporin versus glycopeptide-based IP antibiotic regimen

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Failure to achieve complete cure	3	370	Risk Ratio (M-H, Random, 95% CI)	1.66 [1.01, 2.72]
1.1 Vancomycin-based regimen	2	305	Risk Ratio (M-H, Random, 95% CI)	1.51 [1.03, 2.22]
1.2 Teicoplanin-based regimen	1	65	Risk Ratio (M-H, Random, 95% CI)	4.63 [1.04, 20.58]
2 Primary treatment failure	2		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
2.1 Vancomycin-based regimen	2	305	Risk Ratio (M-H, Random, 95% CI)	1.14 [0.69, 1.87]
3 Relapse	3	350	Risk Ratio (M-H, Random, 95% CI)	1.68 [0.84, 3.36]
3.1 Vancomycin-based regimen	2	305	Risk Ratio (M-H, Random, 95% CI)	1.62 [0.69, 3.79]
3.2 Teicoplanin-based regimen	1	45	Risk Ratio (M-H, Random, 95% CI)	1.37 [0.09, 20.52]
4 Catheter removal	2	305	Risk Ratio (M-H, Random, 95% CI)	0.95 [0.41, 2.19]
5 Microbiological eradication	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected

Comparison 7. Teicoplanin versus vancomycin-based IP antibiotic regimen

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Failure to achieve complete cure	2	178	Risk Ratio (M-H, Random, 95% CI)	0.67 [0.40, 1.15]
2 Primary treatment failure	2	178	Risk Ratio (M-H, Random, 95% CI)	0.36 [0.13, 0.96]
3 Relapse	2	178	Risk Ratio (M-H, Random, 95% CI)	1.01 [0.49, 2.11]

Comparison 8. Comparison of two oral antibiotic regimens

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Failure to achieve complete cure	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
2 Change in antibiotics following culture results	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
3 Catheter removal	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
4 Adverse events	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
4.1 Nausea and vomiting	1		Risk Ratio (M-H, Random, 95% CI)	Not estimable
4.2 Rash	1		Risk Ratio (M-H, Random, 95% CI)	Not estimable

Comparison 9. Fibrinolytic agents versus non-urokinase or placebo

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Failure to achieve complete cure	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
2 Primary treatment failure (persistent peritonitis)	2	99	Risk Ratio (M-H, Random, 95% CI)	0.63 [0.32, 1.26]
3 Relapse	3	181	Risk Ratio (M-H, Random, 95% CI)	0.65 [0.31, 1.33]
3.1 Persistent peritonitis	2	101	Risk Ratio (M-H, Random, 95% CI)	0.51 [0.22, 1.17]
3.2 Peritonitis commencement	1	80	Risk Ratio (M-H, Random, 95% CI)	1.33 [0.32, 5.58]
4 Catheter removal	2	168	Risk Ratio (M-H, Random, 95% CI)	0.70 [0.37, 1.30]
4.1 Persistent peritonitis	1	88	Risk Ratio (M-H, Random, 95% CI)	0.77 [0.38, 1.57]
4.2 Peritonitis commencement	1	80	Risk Ratio (M-H, Random, 95% CI)	0.5 [0.13, 1.86]
5 All-cause mortality	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected

Comparison 10. Urokinase versus simultaneous catheter removal or replacement

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Recurrence of peritonitis	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected

Comparison 11. Peritoneal lavage

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Failure to achieve complete cure	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
2 Relapse	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
3 Technique failure	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
4 Adverse events	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected

Comparison 12. Intraperitoneal immunoglobulin

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Number of exchanges for reduction in dialysate WWC < 100/mL	1		Mean Difference (IV, Random, 95% CI)	Totals not selected
2 Relapse	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected

Comparison 13. Intraperitoneal cefepime versus intraperitoneal vancomycin/netilmicin

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Failure to achieve complete cure	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
2 Primary treatment failure	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
3 Relapse	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
4 Death due to peritonitis	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
5 Hospitalisation rate	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
6 Infusion pain	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected

Comparison 14. Intraperitoneal cefuroxime versus intraperitoneal vancomycin/netilmicin

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Primary treatment failure	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
2 Catheter removal	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected

Comparison 15. Intraperitoneal imipenem versus intraperitoneal vancomycin/netilmicin

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Failure to achieve complete cure	0		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
2 Primary treatment failure	0		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
3 Relapse	0		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
4 Catheter removal	0		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
5 Adverse events	0		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
5.1 Convulsions	0		Risk Ratio (M-H, Random, 95% CI)	Not estimable

Comparison 16. Intraperitoneal vancomycin/cefotaxime versus intraperitoneal vancomycin/tobramycin

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Failure to achieve complete cure	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
2 Primary treatment failure	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
3 Relapse	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
4 Catheter removal	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected

Comparison 17. Intraperitoneal ciprofloxacin versus intraperitoneal vancomycin/gentamicin

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Failure to achieve complete cure	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
2 Primary treatment failure	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
3 Relapse	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
4 Catheter removal	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected

Comparison 18. Intraperitoneal cephazolin/netilmicin versus intraperitoneal vancomycin/ceftazidime

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Primary treatment failure	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected

Comparison 19. Intraperitoneal cefuroxime versus intraperitoneal teicoplanin/aztreonam

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Primary treatment failure	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
2 Relapse	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
3 All-cause mortality	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected

Comparison 20. Intraperitoneal cefazolin/ceftazidime versus intraperitoneal imipenem

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Primary treatment failure	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
2 Catheter removal	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected

Comparison 21. Intraperitoneal cefazolin/ceftazidime versus intraperitoneal cefazolin/netilmicin

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Failure to achieve complete cure	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
2 Relapse	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
3 Catheter removal	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected

Comparison 22. Intraperitoneal ciprofloxacin/rifampicin versus intraperitoneal cephradine

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Primary treatment failure	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
2 Relapse	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
3 Catheter removal	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
4 Microbiological eradication	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
5 Adverse events	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
5.1 Gastrointestinal toxicity	1		Risk Ratio (M-H, Random, 95% CI)	Not estimable
5.2 Rash	1		Risk Ratio (M-H, Random, 95% CI)	Not estimable

Analysis 1.1. Comparison 1 Intravenous (IV) versus intraperitoneal (IP) antibiotics, Outcome 1 Primary treatment failure.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 1 Intravenous (IV) versus intraperitoneal (IP) antibiotics

Outcome: 1 Primary treatment failure

Study or subgroup	Intravenous n/N	Intraperitoneal n/N	Risk Ratio M-H,Random,95% CI	Risk Ratio M-H,Random,95% CI
1 Vancomycin				
Bailie 1987	0/10	0/10		Not estimable
2 Vancomycin and tobramycin				
Bennett-Jones 1987	13/36	4/39		3.52 [1.26, 9.81]

Analysis 1.2. Comparison 1 Intravenous (IV) versus intraperitoneal (IP) antibiotics, Outcome 2 Adverse events.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 1 Intravenous (IV) versus intraperitoneal (IP) antibiotics

Outcome: 2 Adverse events

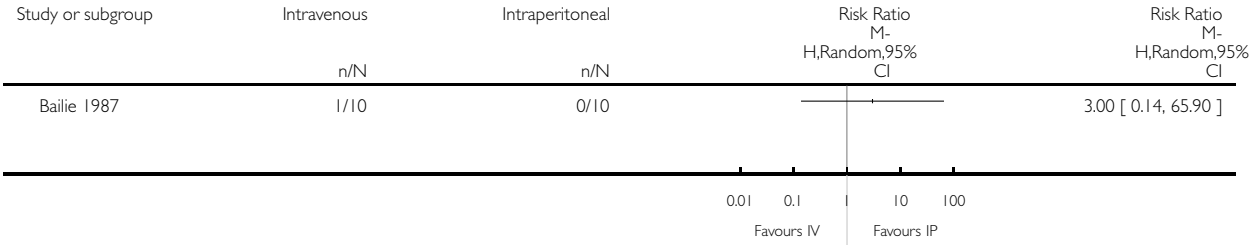
Study or subgroup	Intravenous n/N	Intraperitoneal n/N	Risk Ratio M-H,Random,95% CI	Risk Ratio M-H,Random,95% CI
1 Rash				
Bailie 1987	2/10	0/10		5.00 [0.27, 92.62]
2 Hypotension				
Bennett-Jones 1987	2/37	0/39		5.26 [0.26, 106.11]

Analysis 1.3. Comparison 1 Intravenous (IV) versus intraperitoneal (IP) antibiotics, Outcome 3 Infusion pain.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 1 Intravenous (IV) versus intraperitoneal (IP) antibiotics

Outcome: 3 Infusion pain

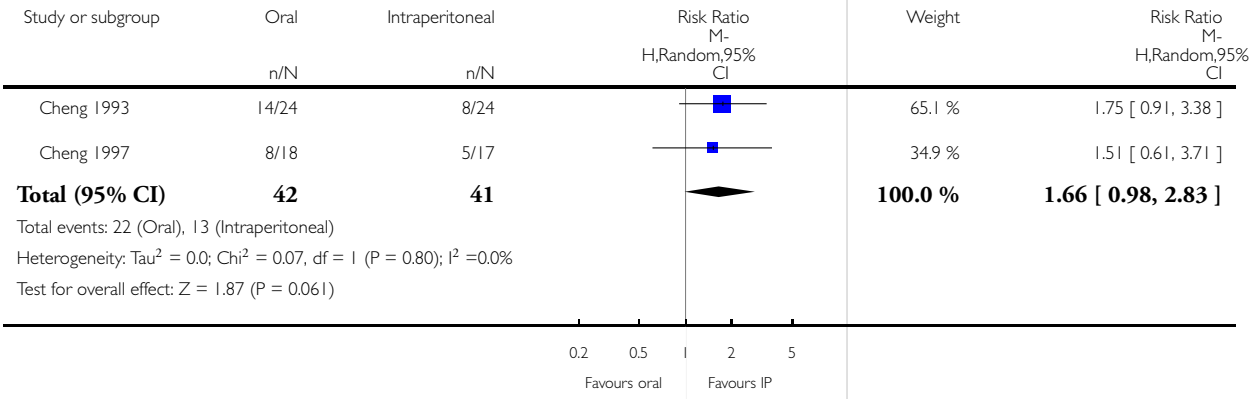


Analysis 2.1. Comparison 2 Oral (drug A) versus intraperitoneal (drug A) antibiotics (same antibiotic), Outcome 1 Failure to achieve complete cure.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 2 Oral (drug A) versus intraperitoneal (drug A) antibiotics (same antibiotic)

Outcome: 1 Failure to achieve complete cure



Analysis 2.2. Comparison 2 Oral (drug A) versus intraperitoneal (drug A) antibiotics (same antibiotic), Outcome 2 Primary treatment failure.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 2 Oral (drug A) versus intraperitoneal (drug A) antibiotics (same antibiotic)

Outcome: 2 Primary treatment failure

Study or subgroup	Oral n/N	Intraperitoneal n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Cheng 1993	10/24	7/24		67.8 %	1.43 [0.65, 3.13]
Cheng 1997	5/18	4/17		32.2 %	1.18 [0.38, 3.67]
Total (95% CI)	**42**	**41**		**100.0 %**	**1.34 [0.71, 2.56]**

Total events: 15 (Oral), 11 (Intraperitoneal)

Heterogeneity: $Tau^2 = 0.0$; $Chi^2 = 0.07$, df = 1 (P = 0.79); $I^2 = 0.0\%$

Test for overall effect: Z = 0.90 (P = 0.37)

Analysis 2.3. Comparison 2 Oral (drug A) versus intraperitoneal (drug A) antibiotics (same antibiotic), Outcome 3 Relapse.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 2 Oral (drug A) versus intraperitoneal (drug A) antibiotics (same antibiotic)

Outcome: 3 Relapse

Study or subgroup	Oral n/N	Intraperitoneal n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Cheng 1993	4/24	1/24		51.1 %	4.00 [0.48, 33.22]
Cheng 1997	3/18	1/17		48.9 %	2.83 [0.33, 24.66]
Total (95% CI)	**42**	**41**		**100.0 %**	**3.38 [0.74, 15.35]**

Total events: 7 (Oral), 2 (Intraperitoneal)

Heterogeneity: $Tau^2 = 0.0$; $Chi^2 = 0.05$, df = 1 (P = 0.82); $I^2 = 0.0\%$

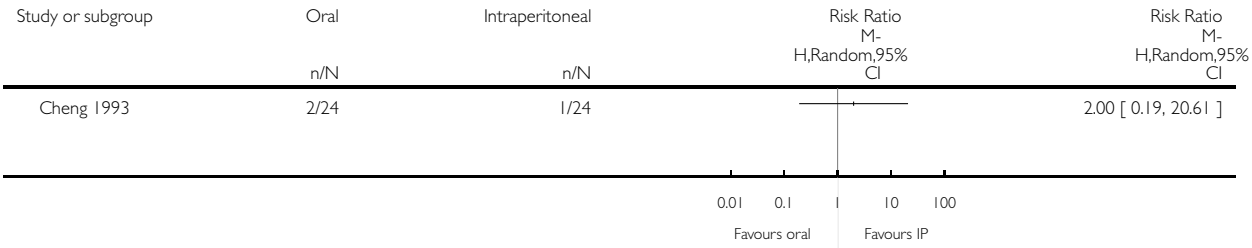
Test for overall effect: Z = 1.58 (P = 0.11)

Analysis 2.4. Comparison 2 Oral (drug A) versus intraperitoneal (drug A) antibiotics (same antibiotic), Outcome 4 Catheter removal.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 2 Oral (drug A) versus intraperitoneal (drug A) antibiotics (same antibiotic)

Outcome: 4 Catheter removal

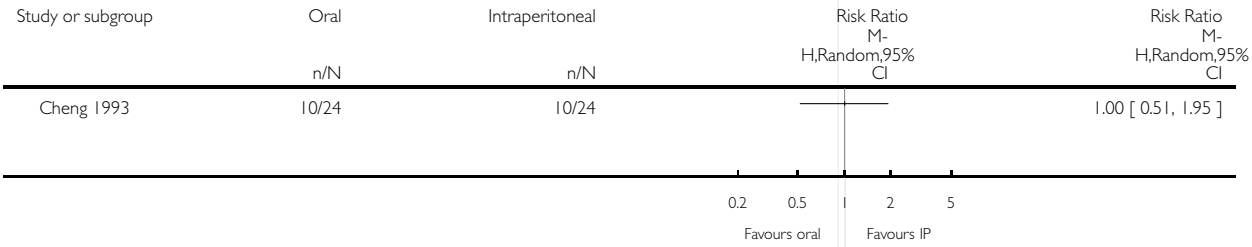


Analysis 2.5. Comparison 2 Oral (drug A) versus intraperitoneal (drug A) antibiotics (same antibiotic), Outcome 5 Hospitalisation rate.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 2 Oral (drug A) versus intraperitoneal (drug A) antibiotics (same antibiotic)

Outcome: 5 Hospitalisation rate

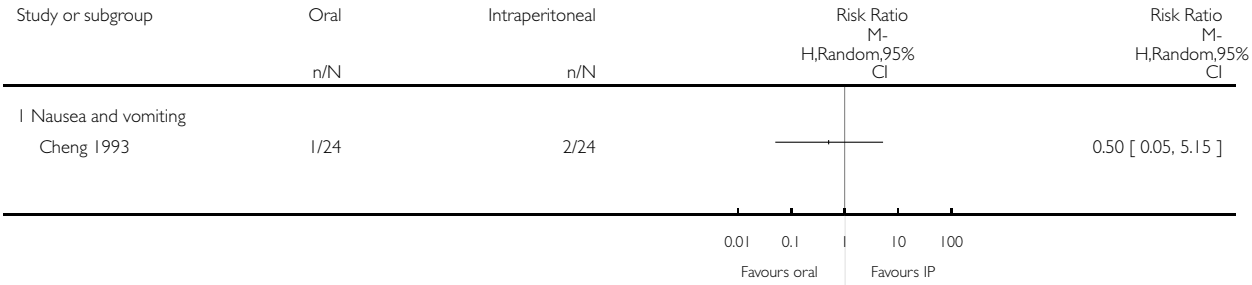


Analysis 2.6. Comparison 2 Oral (drug A) versus intraperitoneal (drug A) antibiotics (same antibiotic), Outcome 6 Adverse events.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 2 Oral (drug A) versus intraperitoneal (drug A) antibiotics (same antibiotic)

Outcome: 6 Adverse events

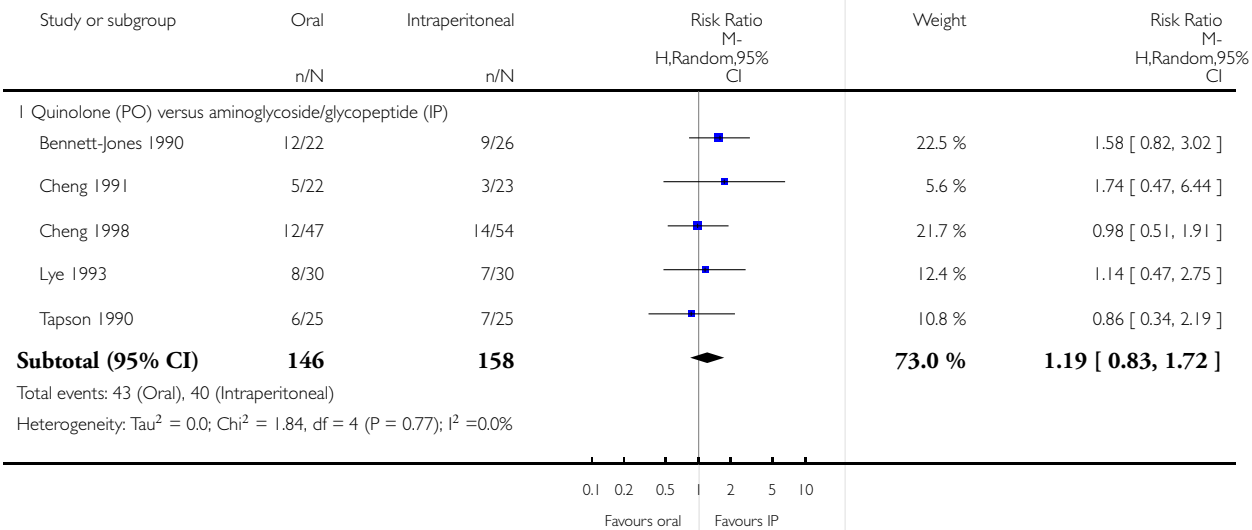


Analysis 3.1. Comparison 3 Oral (regimen A) versus intraperitoneal (regimen B) antibiotics (different antibiotic/s), Outcome 1 Failure to achieve complete cure.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 3 Oral (regimen A) versus intraperitoneal (regimen B) antibiotics (different antibiotic/s)

Outcome: 1 Failure to achieve complete cure



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Study or subgroup	Oral n/N	Intraperitoneal n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Test for overall effect: Z = 0.96 (P = 0.33)					
2 Quinolone (PO) versus cephalosporin (IP)					
Chan 1990	15/74	7/36		14.8 %	1.04 [0.47, 2.33]
Gucek 1994	6/18	7/20		12.2 %	0.95 [0.39, 2.31]
Subtotal (95% CI)	**92**	**56**		**27.0 %**	**1.00 [0.55, 1.81]**
Total events: 21 (Oral), 14 (Intraperitoneal)					
Heterogeneity: Tau^2 = 0.0; Chi^2 = 0.02, df = 1 (P = 0.88); I^2 =0.0%					
Test for overall effect: Z = 0.00 (P = 1.0)					
Total (95% CI)	**238**	**214**		**100.0 %**	**1.14 [0.84, 1.55]**
Total events: 64 (Oral), 54 (Intraperitoneal)					
Heterogeneity: Tau^2 = 0.0; Chi^2 = 2.11, df = 6 (P = 0.91); I^2 =0.0%					
Test for overall effect: Z = 0.83 (P = 0.41)					

Analysis 3.2. Comparison 3 Oral (regimen A) versus intraperitoneal (regimen B) antibiotics (different antibiotic/s), Outcome 2 Primary treatment failure.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 3 Oral (regimen A) versus intraperitoneal (regimen B) antibiotics (different antibiotic/s)

Outcome: 2 Primary treatment failure

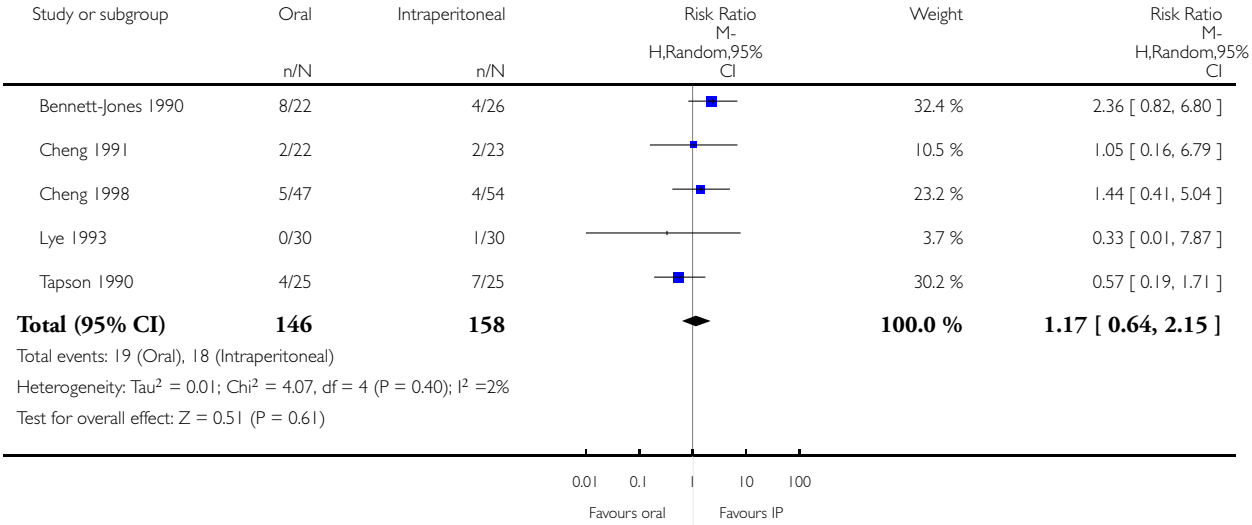
Study or subgroup	Oral n/N	Intraperitoneal n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Quinolone (PO) versus aminoglycoside/glycopeptide (IP)					
Bennett-Jones 1990	4/22	5/26		14.2 %	0.95 [0.29, 3.09]
Cheng 1991	3/22	1/23		4.2 %	3.14 [0.35, 27.92]
Cheng 1998	7/47	10/54		25.5 %	0.80 [0.33, 1.95]
Lye 1993	8/30	6/30		23.1 %	1.33 [0.53, 3.38]
Tapson 1990	2/25	0/25		2.2 %	5.00 [0.25, 99.16]
Subtotal (95% CI)	**146**	**158**		**69.2 %**	**1.13 [0.66, 1.94]**
Total events: 24 (Oral), 22 (Intraperitoneal)					
Heterogeneity: $Tau^2 = 0.0$; $Chi^2 = 2.60$, df = 4 (P = 0.63); $I^2 = 0.0\%$					
Test for overall effect: Z = 0.46 (P = 0.65)					
2 Quinolone (PO) versus cephalosporin (IP)					
Chan 1990	15/74	7/36		30.8 %	1.04 [0.47, 2.33]
Subtotal (95% CI)	**74**	**36**		**30.8 %**	**1.04 [0.47, 2.33]**
Total events: 15 (Oral), 7 (Intraperitoneal)					
Heterogeneity: not applicable					
Test for overall effect: Z = 0.10 (P = 0.92)					
Total (95% CI)	**220**	**194**		**100.0 %**	**1.10 [0.71, 1.73]**
Total events: 39 (Oral), 29 (Intraperitoneal)					
Heterogeneity: $Tau^2 = 0.0$; $Chi^2 = 2.62$, df = 5 (P = 0.76); $I^2 = 0.0\%$					
Test for overall effect: Z = 0.44 (P = 0.66)					

Analysis 3.3. Comparison 3 Oral (regimen A) versus intraperitoneal (regimen B) antibiotics (different antibiotic/s), Outcome 3 Relapse.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 3 Oral (regimen A) versus intraperitoneal (regimen B) antibiotics (different antibiotic/s)

Outcome: 3 Relapse



Analysis 3.4. Comparison 3 Oral (regimen A) versus intraperitoneal (regimen B) antibiotics (different antibiotic/s), Outcome 4 Catheter removal.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 3 Oral (regimen A) versus intraperitoneal (regimen B) antibiotics (different antibiotic/s)

Outcome: 4 Catheter removal

Study or subgroup	Oral n/N	Intraperitoneal n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Chan 1990	3/74	2/36		25.9 %	0.73 [0.13, 4.18]
Lye 1993	7/30	5/30		74.1 %	1.40 [0.50, 3.92]
Total (95% CI)	**104**	**66**		**100.0 %**	**1.18 [0.49, 2.87]**

Total events: 10 (Oral), 7 (Intraperitoneal)

Heterogeneity: $Tau^2 = 0.0$; $Chi^2 = 0.40$, df = 1 (P = 0.53); $I^2 = 0.0\%$

Test for overall effect: Z = 0.37 (P = 0.71)

Analysis 3.5. Comparison 3 Oral (regimen A) versus intraperitoneal (regimen B) antibiotics (different antibiotic/s), Outcome 5 Hospitalisation rate.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 3 Oral (regimen A) versus intraperitoneal (regimen B) antibiotics (different antibiotic/s)

Outcome: 5 Hospitalisation rate

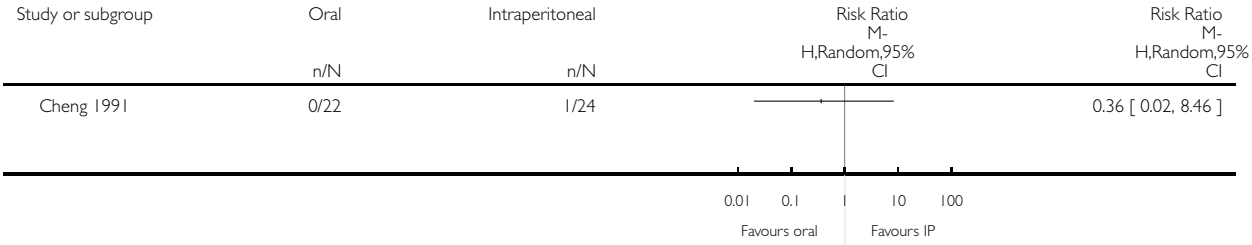
Study or subgroup	Oral n/N	Intraperitoneal n/N	Risk Ratio M-H,Random,95% CI	Risk Ratio M-H,Random,95% CI
Cheng 1991	6/22	9/23		0.70 [0.30, 1.63]

Analysis 3.6. Comparison 3 Oral (regimen A) versus intraperitoneal (regimen B) antibiotics (different antibiotic/s), Outcome 6 All-cause mortality.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 3 Oral (regimen A) versus intraperitoneal (regimen B) antibiotics (different antibiotic/s)

Outcome: 6 All-cause mortality

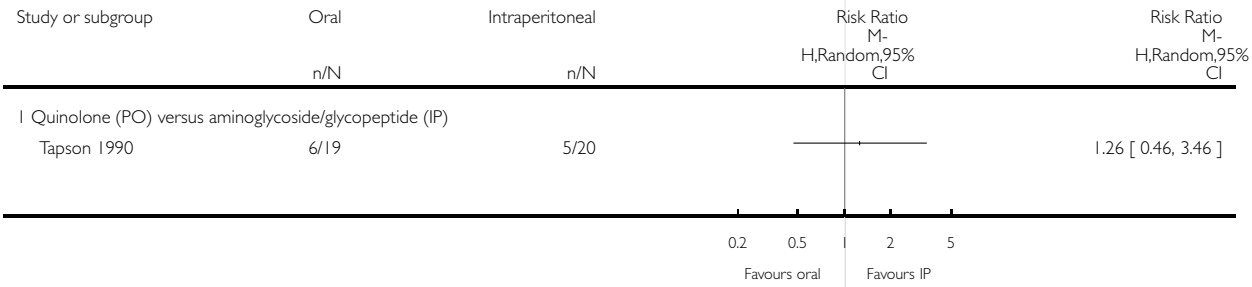


Analysis 3.7. Comparison 3 Oral (regimen A) versus intraperitoneal (regimen B) antibiotics (different antibiotic/s), Outcome 7 Microbiological eradication.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 3 Oral (regimen A) versus intraperitoneal (regimen B) antibiotics (different antibiotic/s)

Outcome: 7 Microbiological eradication

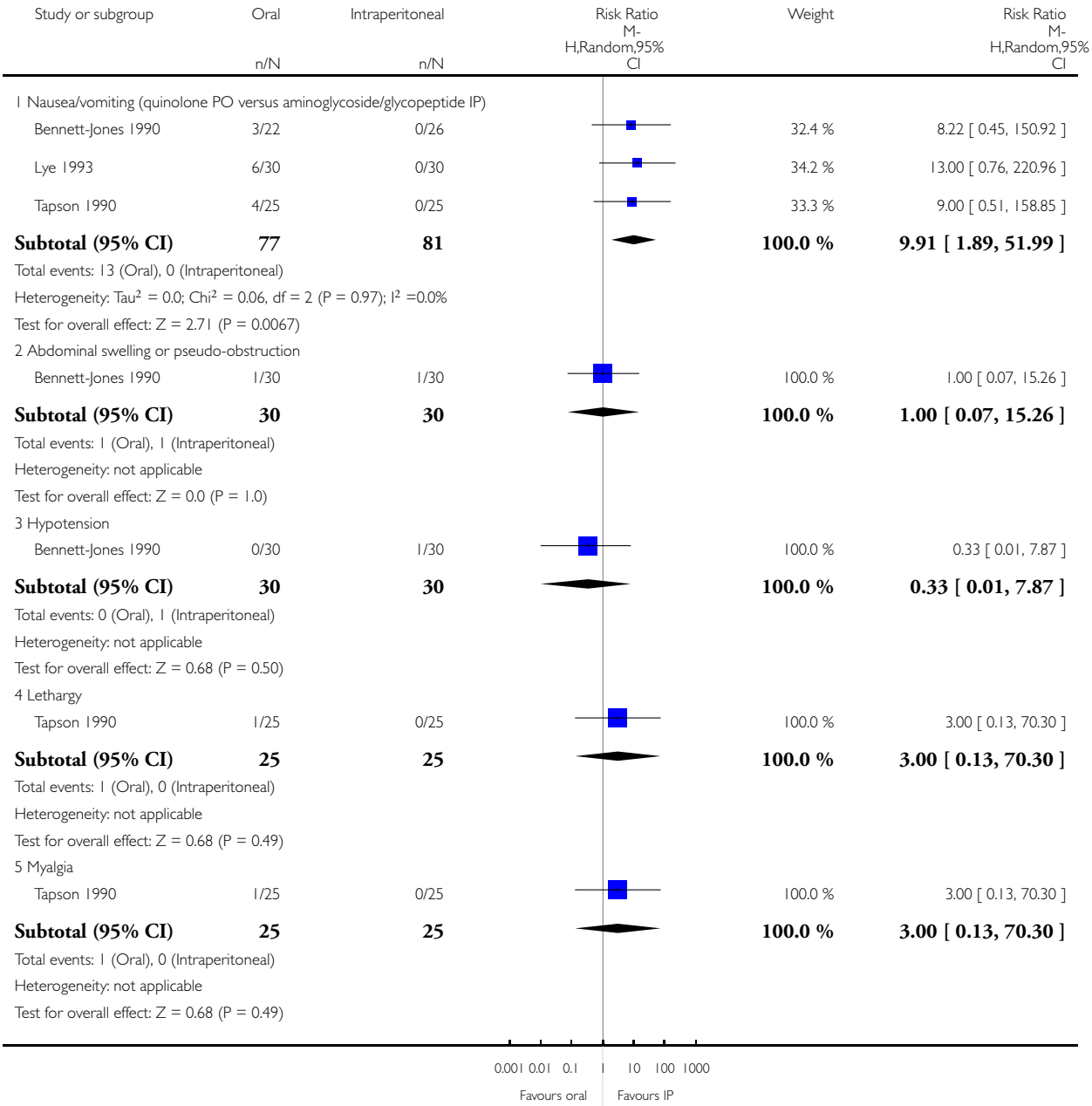


Analysis 3.8. Comparison 3 Oral (regimen A) versus intraperitoneal (regimen B) antibiotics (different antibiotic/s), Outcome 8 Adverse events.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 3 Oral (regimen A) versus intraperitoneal (regimen B) antibiotics (different antibiotic/s)

Outcome: 8 Adverse events

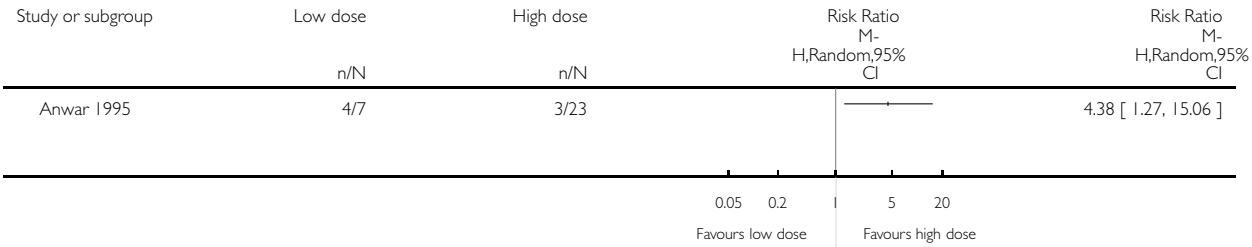


Analysis 4.1. Comparison 4 Low dose versus high dose antibiotic, Outcome 1 Failure to achieve complete cure.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 4 Low dose versus high dose antibiotic

Outcome: 1 Failure to achieve complete cure

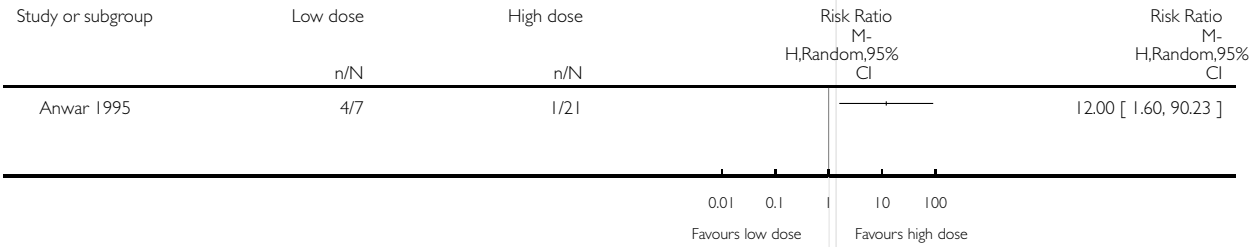


Analysis 4.2. Comparison 4 Low dose versus high dose antibiotic, Outcome 2 Relapse.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 4 Low dose versus high dose antibiotic

Outcome: 2 Relapse

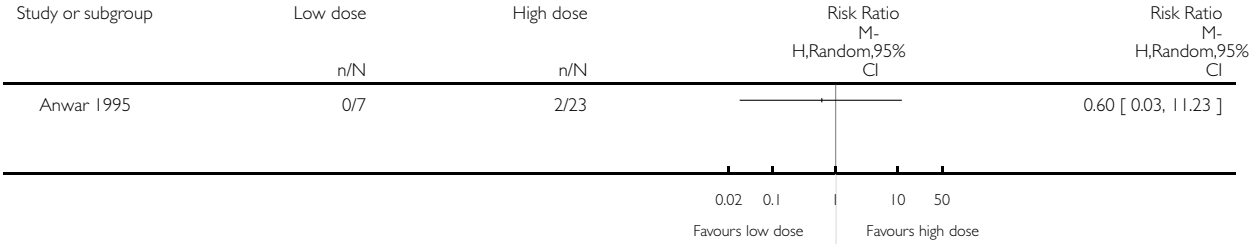


Analysis 4.3. Comparison 4 Low dose versus high dose antibiotic, Outcome 3 Seizures.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 4 Low dose versus high dose antibiotic

Outcome: 3 Seizures

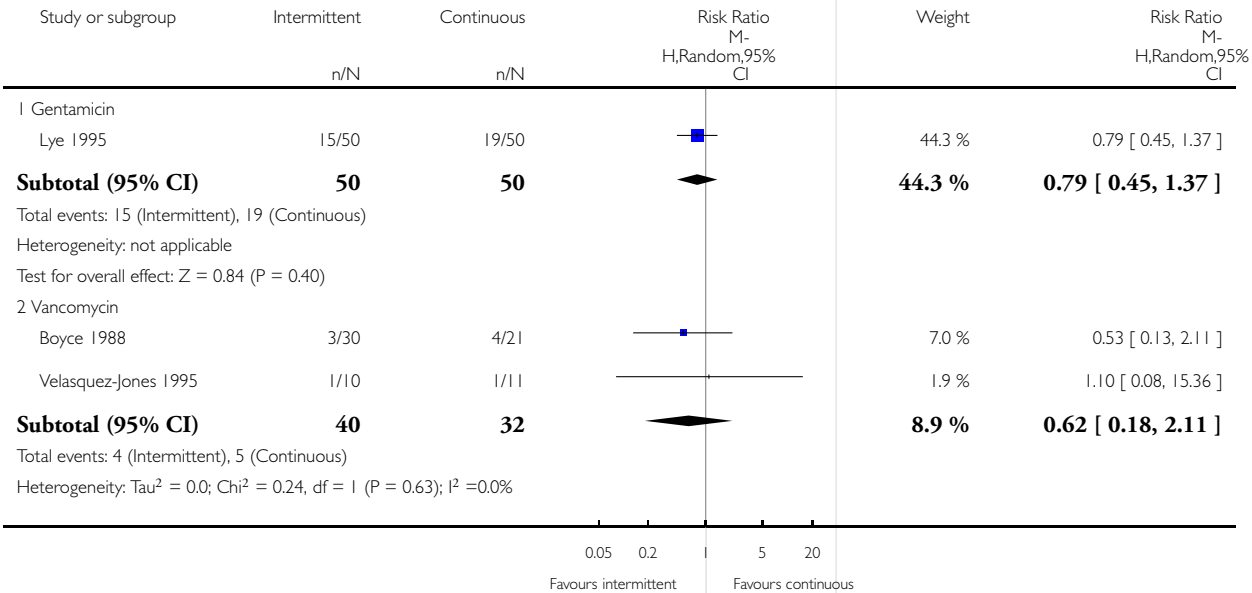


Analysis 5.1. Comparison 5 Intermittent versus continuous antibiotics, Outcome 1 Failure to achieve complete cure.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 5 Intermittent versus continuous antibiotics

Outcome: 1 Failure to achieve complete cure



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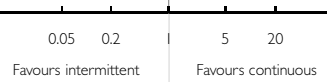
Study or subgroup	Intermittent n/N	Continuous n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Test for overall effect: Z = 0.77 (P = 0.44)					
3 Tecioplanin/ceftazidime					
Schaefer 1999	9/41	8/45		18.5 %	1.23 [0.53, 2.90]
Subtotal (95% CI)	**41**	**45**		**18.5 %**	**1.23 [0.53, 2.90]**
Total events: 9 (Intermittent), 8 (Continuous)					
Heterogeneity: not applicable					
Test for overall effect: Z = 0.48 (P = 0.63)					
4 Vancomycin/ceftazidime					
Schaefer 1999	12/40	11/40		28.3 %	1.09 [0.55, 2.18]
Subtotal (95% CI)	**40**	**40**		**28.3 %**	**1.09 [0.55, 2.18]**
Total events: 12 (Intermittent), 11 (Continuous)					
Heterogeneity: not applicable					
Test for overall effect: Z = 0.25 (P = 0.81)					
Total (95% CI)	**171**	**167**		**100.0 %**	**0.92 [0.64, 1.33]**
Total events: 40 (Intermittent), 43 (Continuous)					
Heterogeneity: $Tau^2 = 0.0$; $Chi^2 = 1.63$, df = 4 (P = 0.80); $I^2 = 0.0\%$					
Test for overall effect: Z = 0.45 (P = 0.65)					

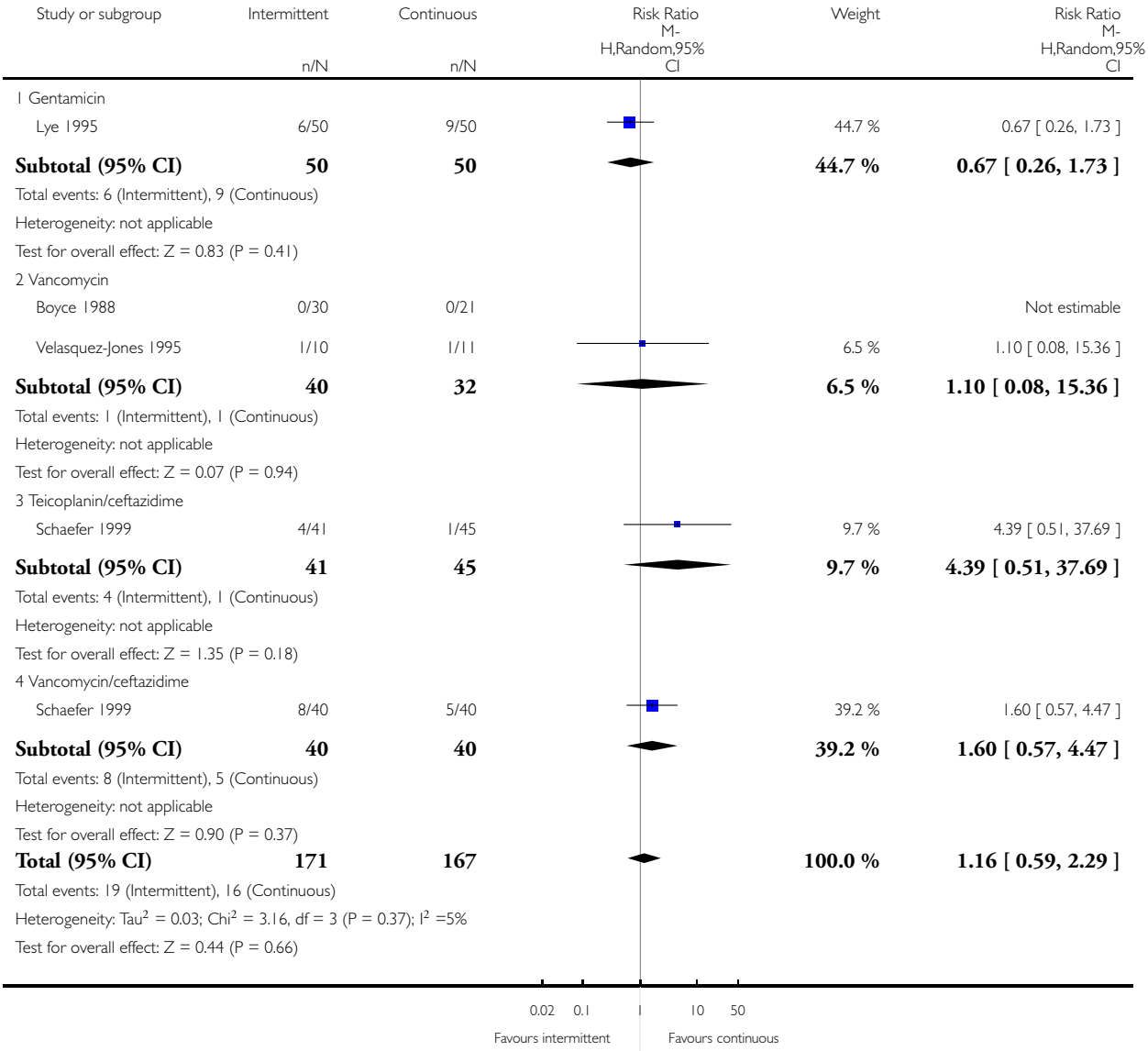


Analysis 5.2. Comparison 5 Intermittent versus continuous antibiotics, Outcome 2 Primary treatment failure.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 5 Intermittent versus continuous antibiotics

Outcome: 2 Primary treatment failure



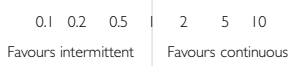
Analysis 5.3. Comparison 5 Intermittent versus continuous antibiotics, Outcome 3 Relapse.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 5 Intermittent versus continuous antibiotics

Outcome: 3 Relapse

Study or subgroup	Intermittent n/N	Continuous n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Gentamicin					
Lye 1995	9/50	10/50		41.9 %	0.90 [0.40, 2.02]
Subtotal (95% CI)	**50**	**50**		**41.9 %**	**0.90 [0.40, 2.02]**
Total events: 9 (Intermittent), 10 (Continuous)					
Heterogeneity: not applicable					
Test for overall effect: Z = 0.25 (P = 0.80)					
2 Vancomycin					
Boyce 1988	3/30	4/21		14.3 %	0.53 [0.13, 2.11]
Velasquez-Jones 1995	0/10	0/11			Not estimable
Subtotal (95% CI)	**40**	**32**		**14.3 %**	**0.53 [0.13, 2.11]**
Total events: 3 (Intermittent), 4 (Continuous)					
Heterogeneity: not applicable					
Test for overall effect: Z = 0.91 (P = 0.36)					
3 Teicoplanin/ceftazidime					
Schaefer 1999	5/41	7/45		24.2 %	0.78 [0.27, 2.28]
Subtotal (95% CI)	**41**	**45**		**24.2 %**	**0.78 [0.27, 2.28]**
Total events: 5 (Intermittent), 7 (Continuous)					
Heterogeneity: not applicable					
Test for overall effect: Z = 0.45 (P = 0.65)					
4 Vancomycin/ceftazidime					
Schaefer 1999	4/40	6/40		19.6 %	0.67 [0.20, 2.18]
Subtotal (95% CI)	**40**	**40**		**19.6 %**	**0.67 [0.20, 2.18]**
Total events: 4 (Intermittent), 6 (Continuous)					
Heterogeneity: not applicable					
Test for overall effect: Z = 0.67 (P = 0.50)					
Total (95% CI)	**171**	**167**		**100.0 %**	**0.76 [0.45, 1.28]**
Total events: 21 (Intermittent), 27 (Continuous)					
Heterogeneity: Tau^2 = 0.0; Chi^2 = 0.49, df = 3 (P = 0.92); I^2 =0.0%					
Test for overall effect: Z = 1.02 (P = 0.31)					



Analysis 5.4. Comparison 5 Intermittent versus continuous antibiotics, Outcome 4 Rash.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 5 Intermittent versus continuous antibiotics

Outcome: 4 Rash

Study or subgroup	Intermittent n/N	Continuous n/N	Risk Ratio M-H,Random,95% CI	Risk Ratio M-H,Random,95% CI
1 Vancomycin				
Boyce 1988	1/30	1/21		0.70 [0.05, 10.57]

Analysis 6.1. Comparison 6 First generation cephalosporin versus glycopeptide-based IP antibiotic regimen, Outcome 1 Failure to achieve complete cure.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 6 First generation cephalosporin versus glycopeptide-based IP antibiotic regimen

Outcome: 1 Failure to achieve complete cure

Study or subgroup	Cephalosporin n/N	Glycopeptide n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Vancomycin-based regimen					
Flanigan 1991	47/141	23/122		49.9 %	1.77 [1.14, 2.73]
Khairullah 2002	12/20	11/22		40.5 %	1.20 [0.69, 2.08]
Subtotal (95% CI)	**161**	**144**		**90.4 %**	**1.51 [1.03, 2.22]**
Total events: 59 (Cephalosporin), 34 (Glycopeptide)					
Heterogeneity: $Tau^2 = 0.02$; $Chi^2 = 1.25$, df = 1 (P = 0.26); $I^2 = 20\%$					
Test for overall effect: Z = 2.09 (P = 0.036)					
2 Teicoplanin-based regimen					
Lupo 1997	7/28	2/37		9.6 %	4.63 [1.04, 20.58]
Subtotal (95% CI)	**28**	**37**		**9.6 %**	**4.63 [1.04, 20.58]**

(*Continued* . . .)

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Study or subgroup	Cephalosporin n/N	Glycopeptide n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Total events: 7 (Cephalosporin), 2 (Glycopeptide)					
Heterogeneity: not applicable					
Test for overall effect: Z = 2.01 (P = 0.044)					
Total (95% CI)	**189**	**181**		**100.0 %**	**1.66 [1.01, 2.72]**
Total events: 66 (Cephalosporin), 36 (Glycopeptide)					
Heterogeneity: Tau² = 0.08; Chi² = 3.41, df = 2 (P = 0.18); I² =41%					
Test for overall effect: Z = 2.01 (P = 0.045)					

Analysis 6.2. Comparison 6 First generation cephalosporin versus glycopeptide-based IP antibiotic regimen, Outcome 2 Primary treatment failure.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 6 First generation cephalosporin versus glycopeptide-based IP antibiotic regimen

Outcome: 2 Primary treatment failure

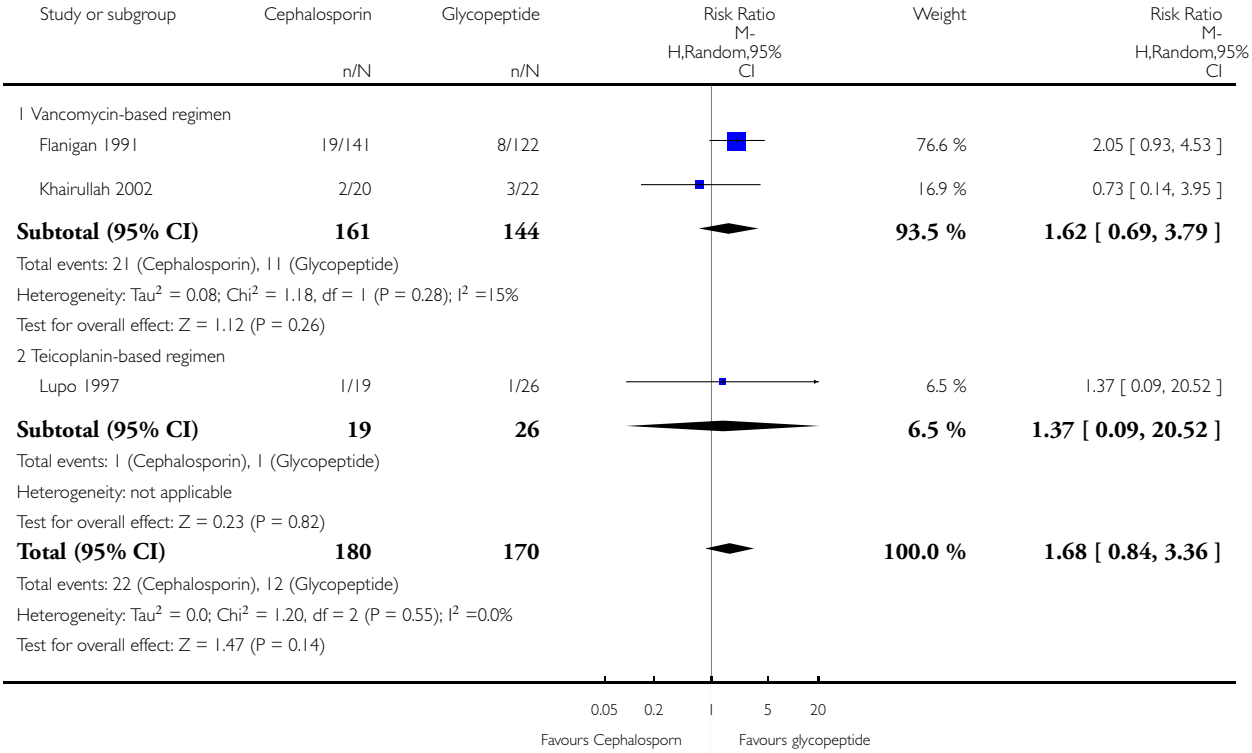
Study or subgroup	Cephalosporin n/N	Glycopeptide n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Vancomycin-based regimen					
Flanigan 1991	23/141	15/122		67.4 %	1.33 [0.73, 2.43]
Khairullah 2002	6/20	8/22		32.6 %	0.83 [0.35, 1.97]
Subtotal (95% CI)	**161**	**144**		**100.0 %**	**1.14 [0.69, 1.87]**
Total events: 29 (Cephalosporin), 23 (Glycopeptide)					
Heterogeneity: Tau² = 0.0; Chi² = 0.79, df = 1 (P = 0.38); I² =0.0%					
Test for overall effect: Z = 0.51 (P = 0.61)					

Analysis 6.3. Comparison 6 First generation cephalosporin versus glycopeptide-based IP antibiotic regimen, Outcome 3 Relapse.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 6 First generation cephalosporin versus glycopeptide-based IP antibiotic regimen

Outcome: 3 Relapse

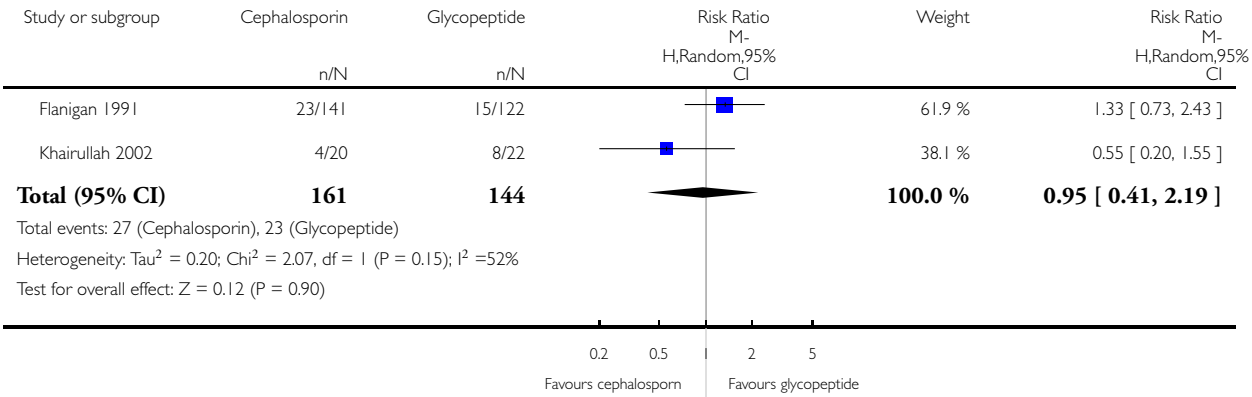


Analysis 6.4. Comparison 6 First generation cephalosporin versus glycopeptide-based IP antibiotic regimen, Outcome 4 Catheter removal.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 6 First generation cephalosporin versus glycopeptide-based IP antibiotic regimen

Outcome: 4 Catheter removal

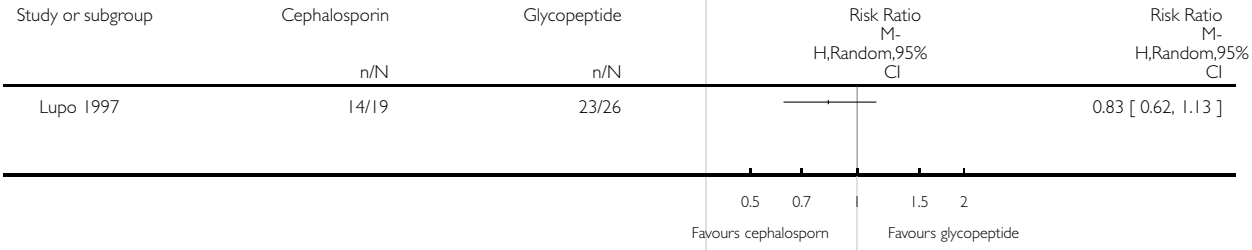


Analysis 6.5. Comparison 6 First generation cephalosporin versus glycopeptide-based IP antibiotic regimen, Outcome 5 Microbiological eradication.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 6 First generation cephalosporin versus glycopeptide-based IP antibiotic regimen

Outcome: 5 Microbiological eradication



Analysis 7.1. Comparison 7 Teicoplanin versus vancomycin-based IP antibiotic regimen, Outcome 1 Failure to achieve complete cure.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 7 Teicoplanin versus vancomycin-based IP antibiotic regimen

Outcome: 1 Failure to achieve complete cure

Study or subgroup	Teicoplanin n/N	Vancomycin n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Bowley 1988	1/6	2/6		6.3 %	0.50 [0.06, 4.15]
Schaefer 1999	17/86	23/80		93.7 %	0.69 [0.40, 1.19]
Total (95% CI)	**92**	**86**		**100.0 %**	**0.67 [0.40, 1.15]**
Total events: 18 (Teicoplanin), 25 (Vancomycin)					
Heterogeneity: $Tau^2 = 0.0$; $Chi^2 = 0.08$, df = 1 (P = 0.78); $I^2 = 0.0\%$					
Test for overall effect: Z = 1.46 (P = 0.14)					

Analysis 7.2. Comparison 7 Teicoplanin versus vancomycin-based IP antibiotic regimen, Outcome 2 Primary treatment failure.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 7 Teicoplanin versus vancomycin-based IP antibiotic regimen

Outcome: 2 Primary treatment failure

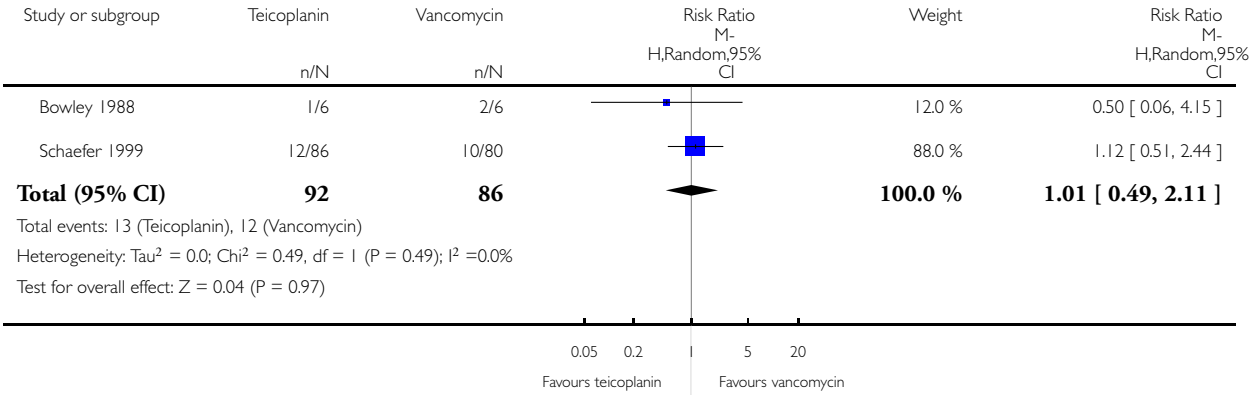
Study or subgroup	Teicoplanin n/N	Vancomycin n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Bowley 1988	0/6	0/6			Not estimable
Schaefer 1999	5/86	13/80		100.0 %	0.36 [0.13, 0.96]
Total (95% CI)	**92**	**86**		**100.0 %**	**0.36 [0.13, 0.96]**
Total events: 5 (Teicoplanin), 13 (Vancomycin)					
Heterogeneity: not applicable					
Test for overall effect: Z = 2.04 (P = 0.041)					

Analysis 7.3. Comparison 7 Teicoplanin versus vancomycin-based IP antibiotic regimen, Outcome 3 Relapse.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 7 Teicoplanin versus vancomycin-based IP antibiotic regimen

Outcome: 3 Relapse

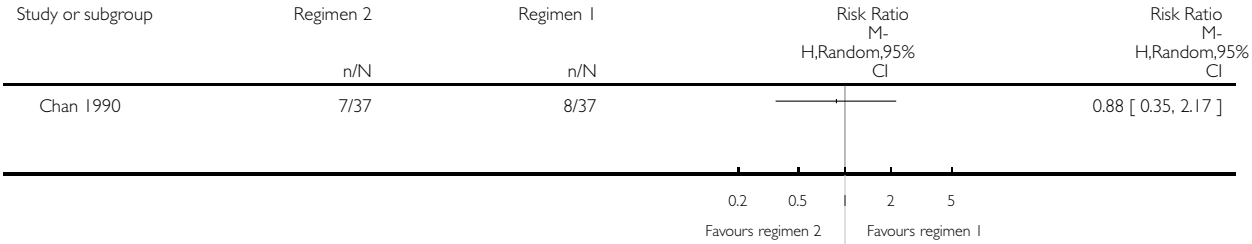


Analysis 8.1. Comparison 8 Comparison of two oral antibiotic regimens, Outcome 1 Failure to achieve complete cure.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 8 Comparison of two oral antibiotic regimens

Outcome: 1 Failure to achieve complete cure

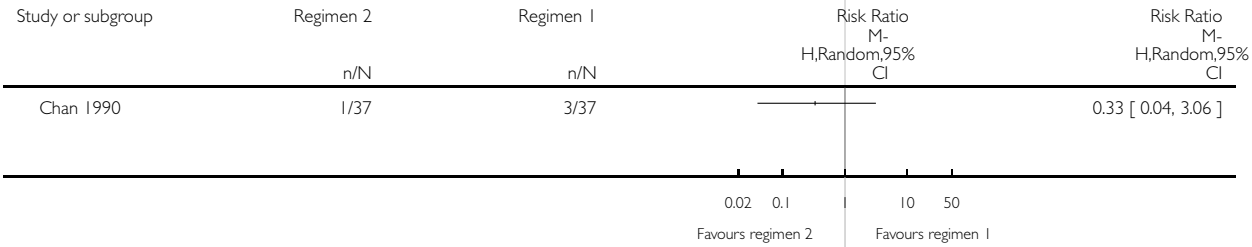


Analysis 8.2. Comparison 8 Comparison of two oral antibiotic regimens, Outcome 2 Change in antibiotics following culture results.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 8 Comparison of two oral antibiotic regimens

Outcome: 2 Change in antibiotics following culture results

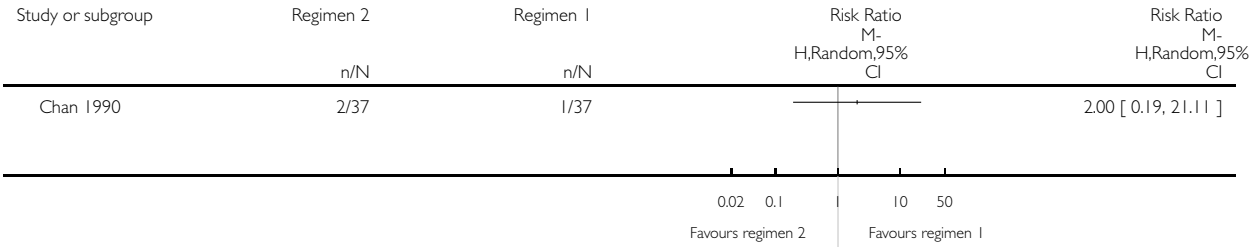


Analysis 8.3. Comparison 8 Comparison of two oral antibiotic regimens, Outcome 3 Catheter removal.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 8 Comparison of two oral antibiotic regimens

Outcome: 3 Catheter removal

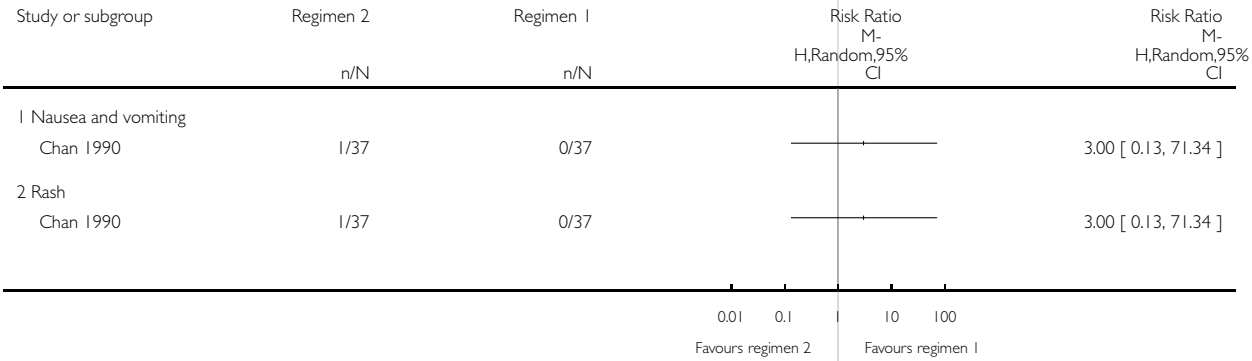


Analysis 8.4. Comparison 8 Comparison of two oral antibiotic regimens, Outcome 4 Adverse events.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 8 Comparison of two oral antibiotic regimens

Outcome: 4 Adverse events

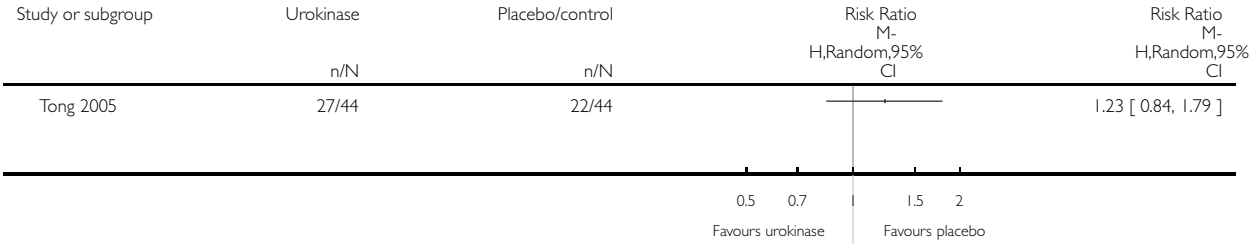


Analysis 9.1. Comparison 9 Fibrinolytic agents versus non-urokinase or placebo, Outcome 1 Failure to achieve complete cure.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 9 Fibrinolytic agents versus non-urokinase or placebo

Outcome: 1 Failure to achieve complete cure

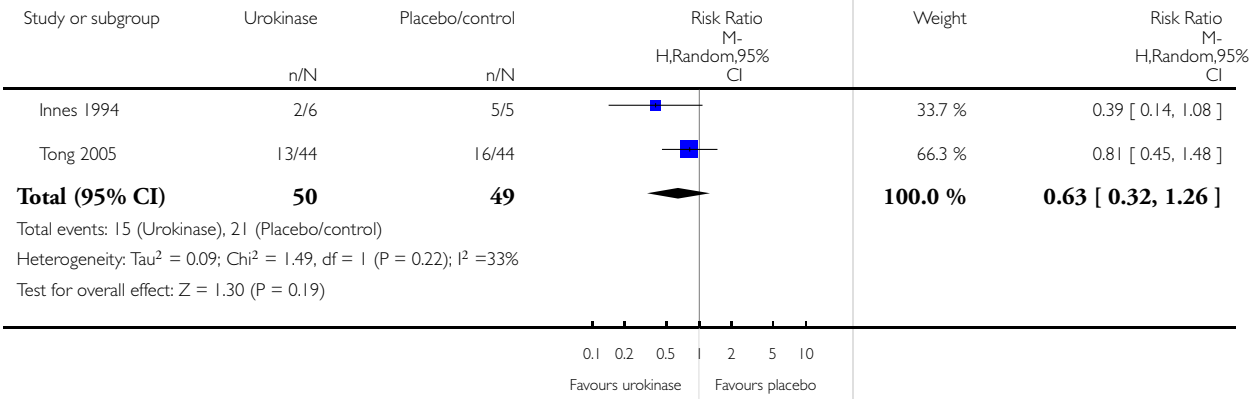


Analysis 9.2. Comparison 9 Fibrinolytic agents versus non-urokinase or placebo, Outcome 2 Primary treatment failure (persistent peritonitis).

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 9 Fibrinolytic agents versus non-urokinase or placebo

Outcome: 2 Primary treatment failure (persistent peritonitis)



Analysis 9.3. Comparison 9 Fibrinolytic agents versus non-urokinase or placebo, Outcome 3 Relapse.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 9 Fibrinolytic agents versus non-urokinase or placebo

Outcome: 3 Relapse

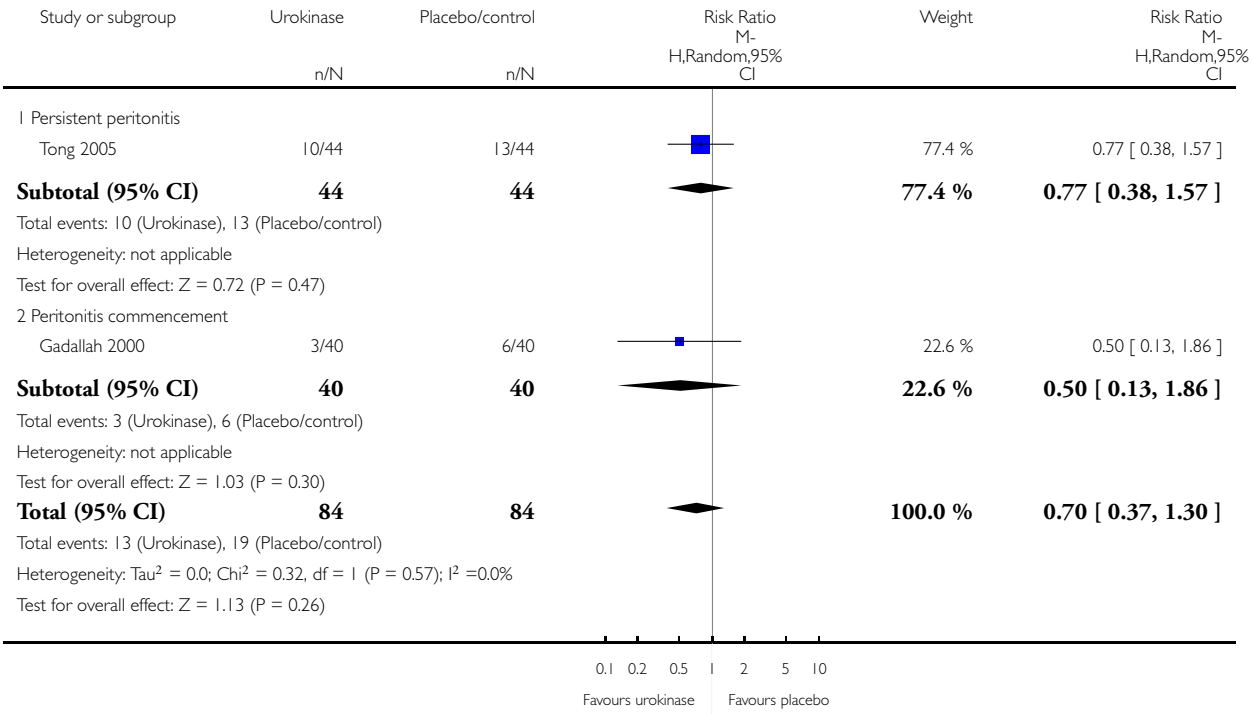
Study or subgroup	Urokinase n/N	Placebo/control n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Persistent peritonitis					
Innes 1994	2/6	6/7		38.0 %	0.39 [0.12, 1.25]
Tong 2005	4/44	6/44		36.6 %	0.67 [0.20, 2.20]
Subtotal (95% CI)	**50**	**51**		**74.6 %**	**0.51 [0.22, 1.17]**
Total events: 6 (Urokinase), 12 (Placebo/control)					
Heterogeneity: $Tau^2 = 0.0$; $Chi^2 = 0.41$, df = 1 (P = 0.52); $I^2 = 0.0\%$					
Test for overall effect: Z = 1.59 (P = 0.11)					
2 Peritonitis commencement					
Gadallah 2000	4/40	3/40		25.4 %	1.33 [0.32, 5.58]
Subtotal (95% CI)	**40**	**40**		**25.4 %**	**1.33 [0.32, 5.58]**
Total events: 4 (Urokinase), 3 (Placebo/control)					
Heterogeneity: not applicable					
Test for overall effect: Z = 0.39 (P = 0.69)					
Total (95% CI)	**90**	**91**		**100.0 %**	**0.65 [0.31, 1.33]**
Total events: 10 (Urokinase), 15 (Placebo/control)					
Heterogeneity: $Tau^2 = 0.0$; $Chi^2 = 1.75$, df = 2 (P = 0.42); $I^2 = 0.0\%$					
Test for overall effect: Z = 1.18 (P = 0.24)					

Analysis 9.4. Comparison 9 Fibrinolytic agents versus non-urokinase or placebo, Outcome 4 Catheter removal.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 9 Fibrinolytic agents versus non-urokinase or placebo

Outcome: 4 Catheter removal

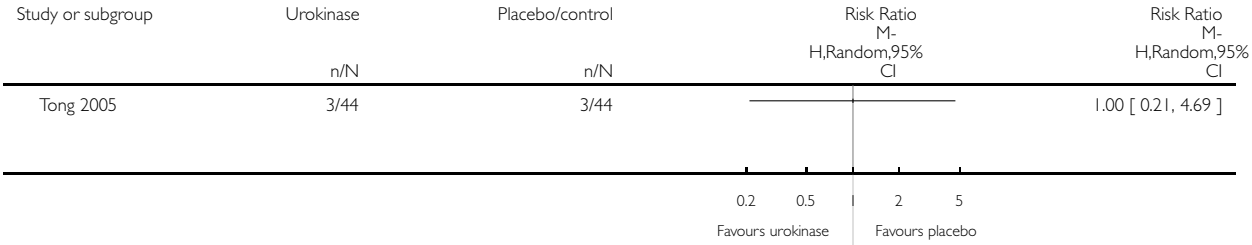


Analysis 9.5. Comparison 9 Fibrinolytic agents versus non-urokinase or placebo, Outcome 5 All-cause mortality.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 9 Fibrinolytic agents versus non-urokinase or placebo

Outcome: 5 All-cause mortality

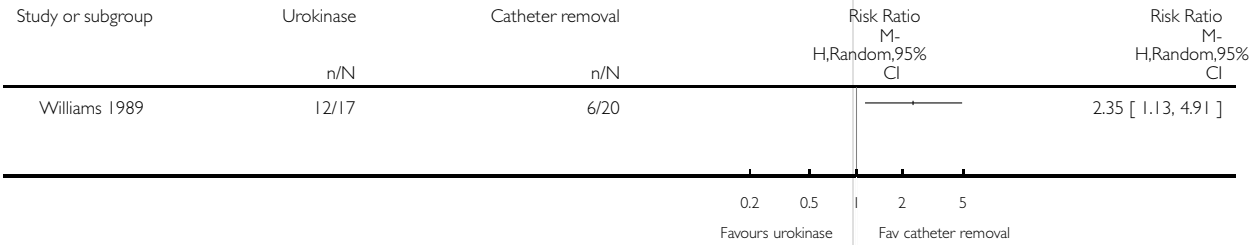


Analysis 10.1. Comparison 10 Urokinase versus simultaneous catheter removal or replacement, Outcome 1 Recurrence of peritonitis.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 10 Urokinase versus simultaneous catheter removal or replacement

Outcome: 1 Recurrence of peritonitis

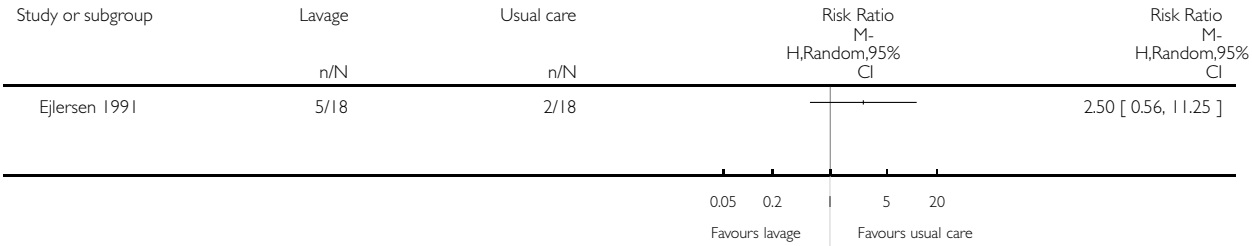


Analysis 11.1. Comparison 11 Peritoneal lavage, Outcome 1 Failure to achieve complete cure.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 11 Peritoneal lavage

Outcome: 1 Failure to achieve complete cure

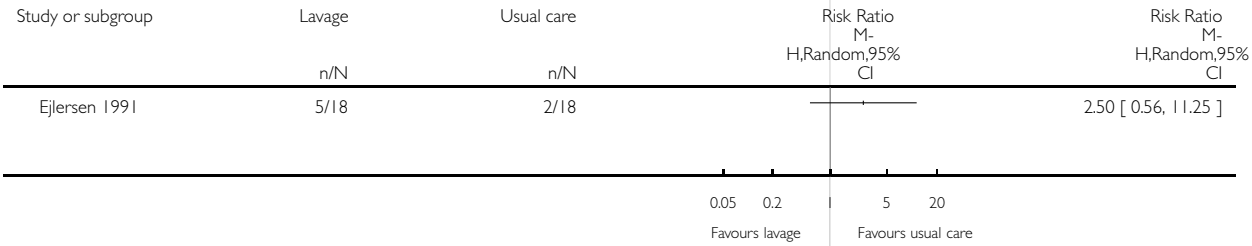


Analysis 11.2. Comparison 11 Peritoneal lavage, Outcome 2 Relapse.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 11 Peritoneal lavage

Outcome: 2 Relapse

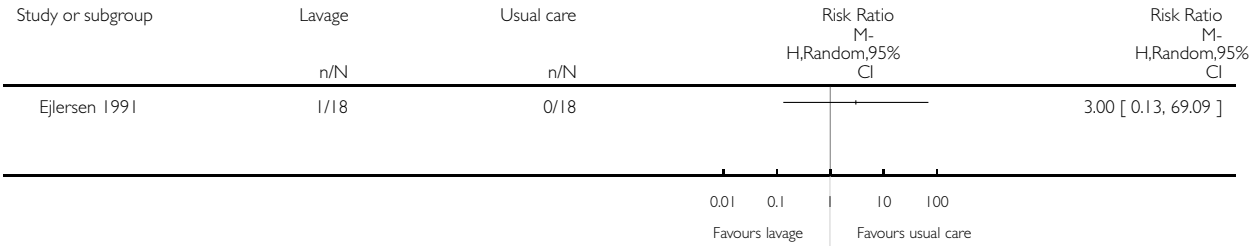


Analysis 11.3. Comparison 11 Peritoneal lavage, Outcome 3 Technique failure.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 11 Peritoneal lavage

Outcome: 3 Technique failure

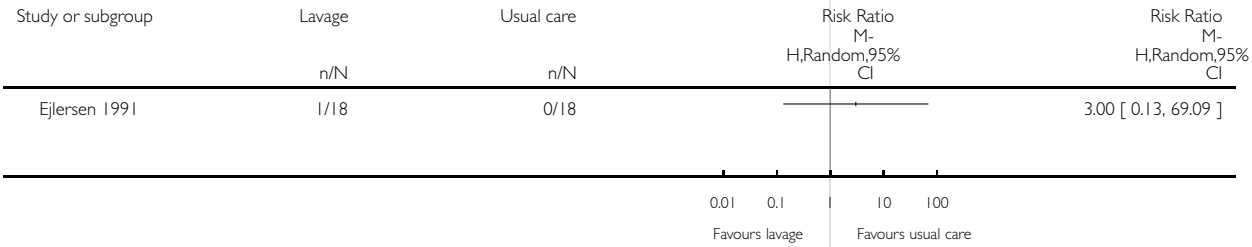


Analysis 11.4. Comparison 11 Peritoneal lavage, Outcome 4 Adverse events.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 11 Peritoneal lavage

Outcome: 4 Adverse events



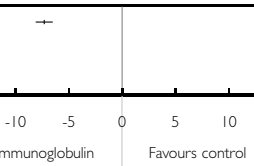
Analysis 12.1. Comparison 12 Intraperitoneal immunoglobulin, Outcome 1 Number of exchanges for reduction in dialysate WWC < 100/mL.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 12 Intraperitoneal immunoglobulin

Outcome: 1 Number of exchanges for reduction in dialysate WWC < 100/mL

Study or subgroup	Immunoglobulin N	Mean(SD)	Control N	Mean(SD)	Mean Difference IV,Random,95% CI	Mean Difference IV,Random,95% CI
Coban 2004	12	6.6 (0.4)	12	13.9 (1.4)		-7.30 [-8.12, -6.48]



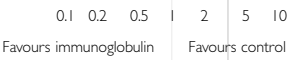
Analysis 12.2. Comparison 12 Intraperitoneal immunoglobulin, Outcome 2 Relapse.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 12 Intraperitoneal immunoglobulin

Outcome: 2 Relapse

Study or subgroup	Immunoglobulin n/N	Control n/N	Risk Ratio M-H,Random,95% CI	Risk Ratio M-H,Random,95% CI
Coban 2004	0/12	0/12		Not estimable



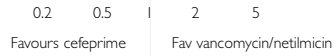
Analysis 13.1. Comparison 13 Intraperitoneal cefepime versus intraperitoneal vancomycin/netilmicin, Outcome 1 Failure to achieve complete cure.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 13 Intraperitoneal cefepime versus intraperitoneal vancomycin/netilmicin

Outcome: 1 Failure to achieve complete cure

Study or subgroup	Cefepime n/N	Vancomycin/netil n/N	Risk Ratio M-H,Random,95% CI	Risk Ratio M-H,Random,95% CI
Wong 2001	11/39	8/34		1.20 [0.55, 2.63]



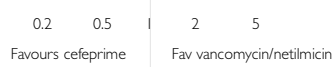
Analysis 13.2. Comparison 13 Intraperitoneal cefepime versus intraperitoneal vancomycin/netilmicin, Outcome 2 Primary treatment failure.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 13 Intraperitoneal cefepime versus intraperitoneal vancomycin/netilmicin

Outcome: 2 Primary treatment failure

Study or subgroup	Cefepime n/N	Vancomycin/netil n/N	Risk Ratio M-H,Random,95% CI	Risk Ratio M-H,Random,95% CI
Wong 2001	7/39	5/34		1.22 [0.43, 3.49]

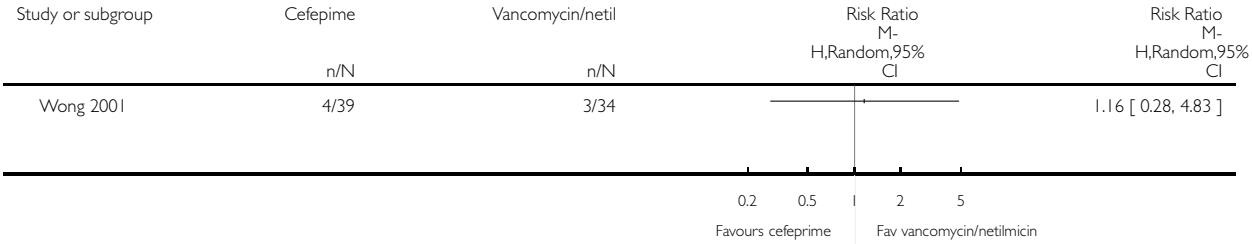


Analysis 13.3. Comparison 13 Intraperitoneal cefepime versus intraperitoneal vancomycin/netilmicin, Outcome 3 Relapse.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 13 Intraperitoneal cefepime versus intraperitoneal vancomycin/netilmicin

Outcome: 3 Relapse

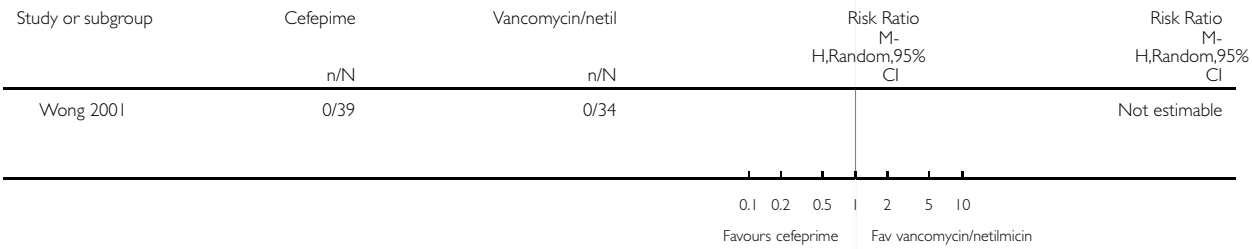


Analysis 13.4. Comparison 13 Intraperitoneal cefepime versus intraperitoneal vancomycin/netilmicin, Outcome 4 Death due to peritonitis.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 13 Intraperitoneal cefepime versus intraperitoneal vancomycin/netilmicin

Outcome: 4 Death due to peritonitis

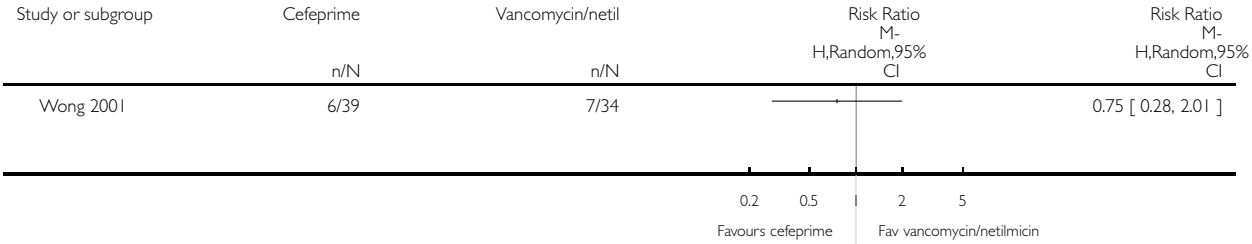


Analysis 13.5. Comparison 13 Intraperitoneal cefepime versus intraperitoneal vancomycin/netilmicin, Outcome 5 Hospitalisation rate.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 13 Intraperitoneal cefepime versus intraperitoneal vancomycin/netilmicin

Outcome: 5 Hospitalisation rate

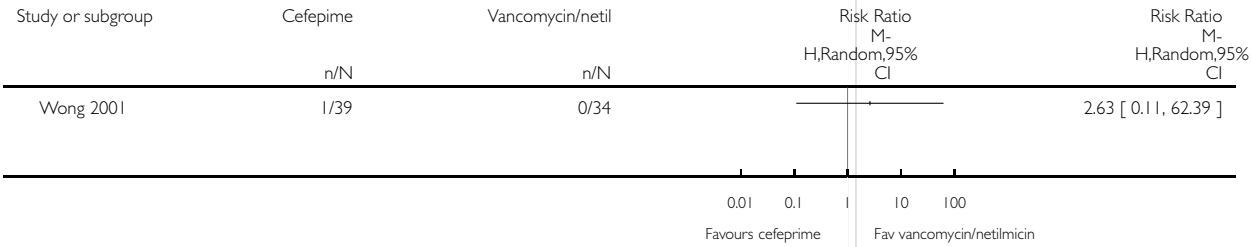


Analysis 13.6. Comparison 13 Intraperitoneal cefepime versus intraperitoneal vancomycin/netilmicin, Outcome 6 Infusion pain.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 13 Intraperitoneal cefepime versus intraperitoneal vancomycin/netilmicin

Outcome: 6 Infusion pain

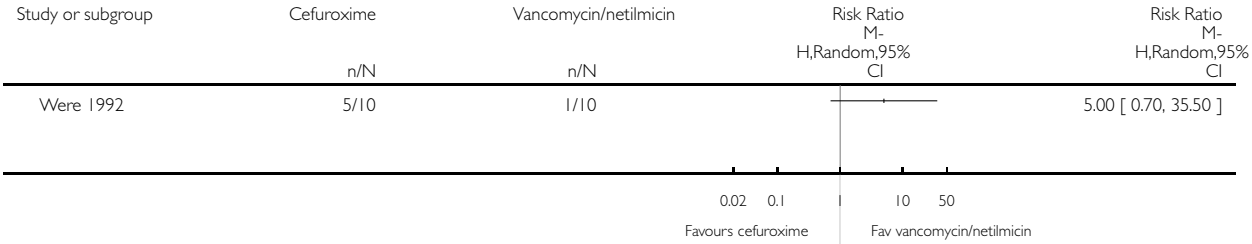


Analysis 14.1. Comparison 14 Intraperitoneal cefuroxime versus intraperitoneal vancomycin/netilmicin, Outcome 1 Primary treatment failure.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 14 Intraperitoneal cefuroxime versus intraperitoneal vancomycin/netilmicin

Outcome: 1 Primary treatment failure

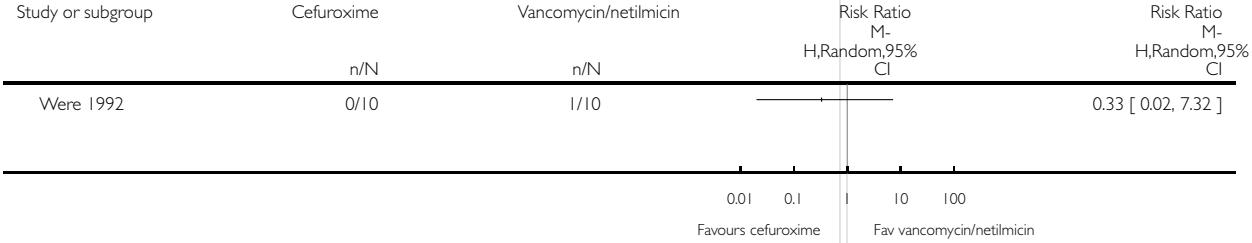


Analysis 14.2. Comparison 14 Intraperitoneal cefuroxime versus intraperitoneal vancomycin/netilmicin, Outcome 2 Catheter removal.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 14 Intraperitoneal cefuroxime versus intraperitoneal vancomycin/netilmicin

Outcome: 2 Catheter removal

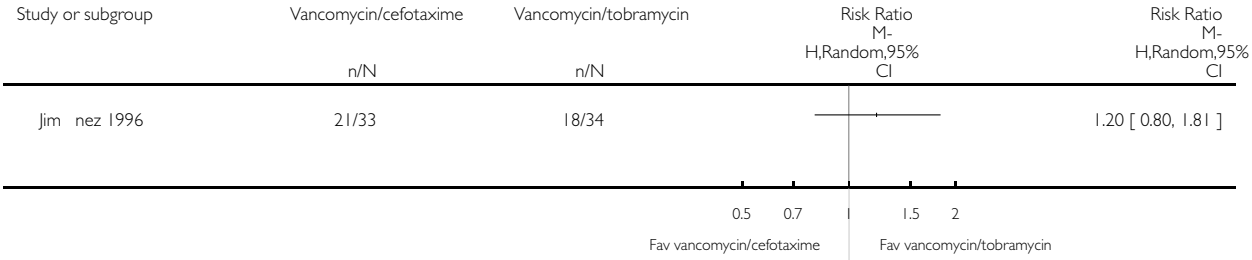


Analysis 16.1. Comparison 16 Intraperitoneal vancomycin/cefotaxime versus intraperitoneal vancomycin/tobramycin, Outcome 1 Failure to achieve complete cure.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 16 Intraperitoneal vancomycin/cefotaxime versus intraperitoneal vancomycin/tobramycin

Outcome: 1 Failure to achieve complete cure

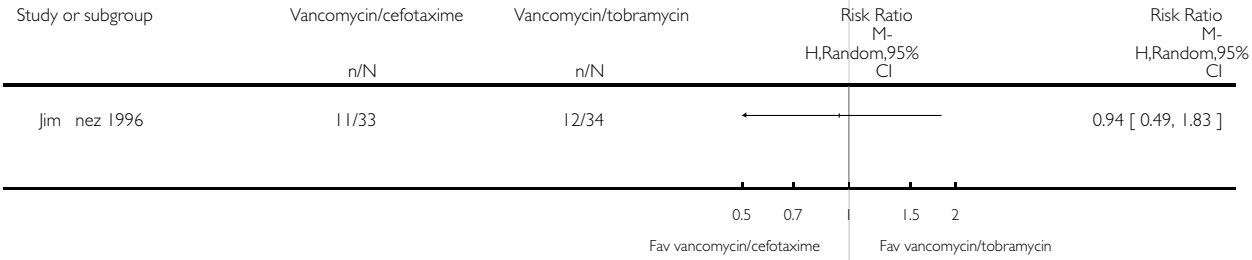


Analysis 16.2. Comparison 16 Intraperitoneal vancomycin/cefotaxime versus intraperitoneal vancomycin/tobramycin, Outcome 2 Primary treatment failure.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 16 Intraperitoneal vancomycin/cefotaxime versus intraperitoneal vancomycin/tobramycin

Outcome: 2 Primary treatment failure

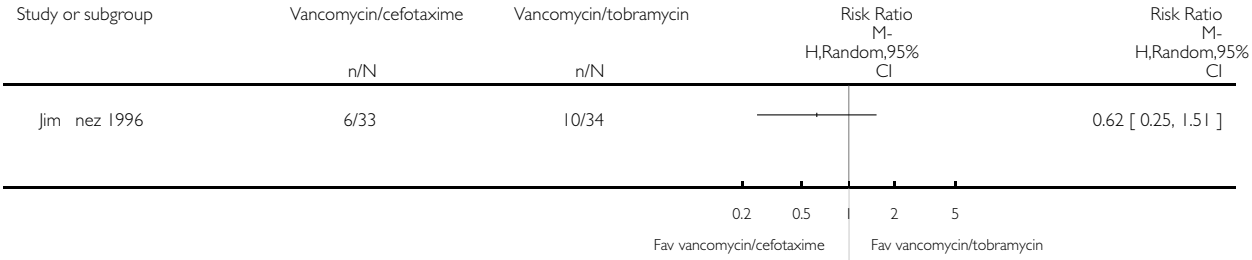


Analysis 16.3. Comparison 16 Intraperitoneal vancomycin/cefotaxime versus intraperitoneal vancomycin/tobramycin, Outcome 3 Relapse.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 16 Intraperitoneal vancomycin/cefotaxime versus intraperitoneal vancomycin/tobramycin

Outcome: 3 Relapse

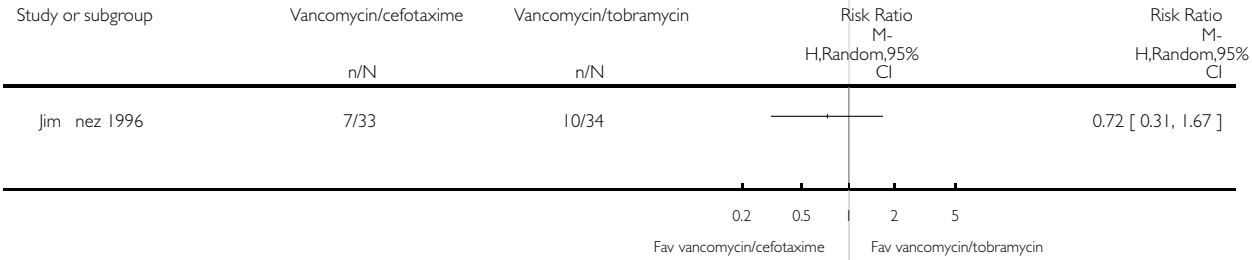


Analysis 16.4. Comparison 16 Intraperitoneal vancomycin/cefotaxime versus intraperitoneal vancomycin/tobramycin, Outcome 4 Catheter removal.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 16 Intraperitoneal vancomycin/cefotaxime versus intraperitoneal vancomycin/tobramycin

Outcome: 4 Catheter removal



Analysis 17.1. Comparison 17 Intraperitoneal ciprofloxacin versus intraperitoneal vancomycin/gentamicin, Outcome 1 Failure to achieve complete cure.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 17 Intraperitoneal ciprofloxacin versus intraperitoneal vancomycin/gentamicin

Outcome: 1 Failure to achieve complete cure

Study or subgroup	Ciprofloxacin n/N	Vancomycin/gentamicin n/N	Risk Ratio M-H,Random,95% CI	Risk Ratio M-H,Random,95% CI
Friedland 1990	18/20	16/20		1.13 [0.86, 1.46]

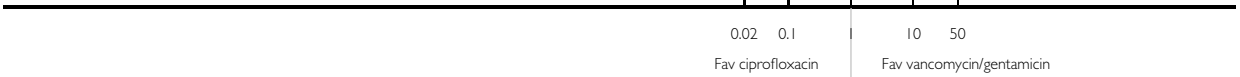
Analysis 17.2. Comparison 17 Intraperitoneal ciprofloxacin versus intraperitoneal vancomycin/gentamicin, Outcome 2 Primary treatment failure.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 17 Intraperitoneal ciprofloxacin versus intraperitoneal vancomycin/gentamicin

Outcome: 2 Primary treatment failure

Study or subgroup	Ciprofloxacin n/N	Vancomycin/gentamicin n/N	Risk Ratio M-H,Random,95% CI	Risk Ratio M-H,Random,95% CI
Friedland 1990	1/20	4/20		0.25 [0.03, 2.05]

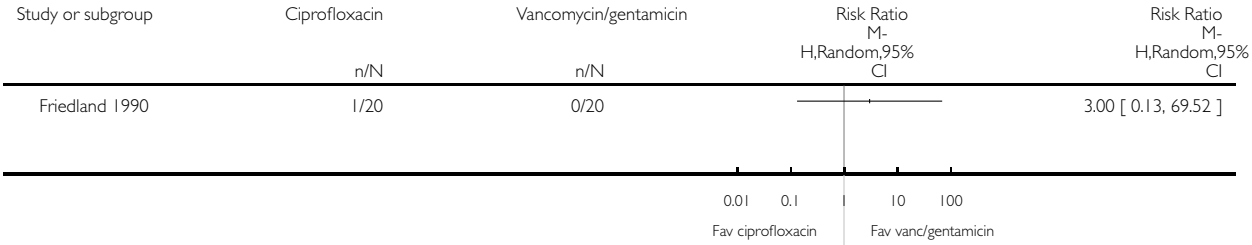


Analysis 17.3. Comparison 17 Intraperitoneal ciprofloxacin versus intraperitoneal vancomycin/gentamicin, Outcome 3 Relapse.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 17 Intraperitoneal ciprofloxacin versus intraperitoneal vancomycin/gentamicin

Outcome: 3 Relapse

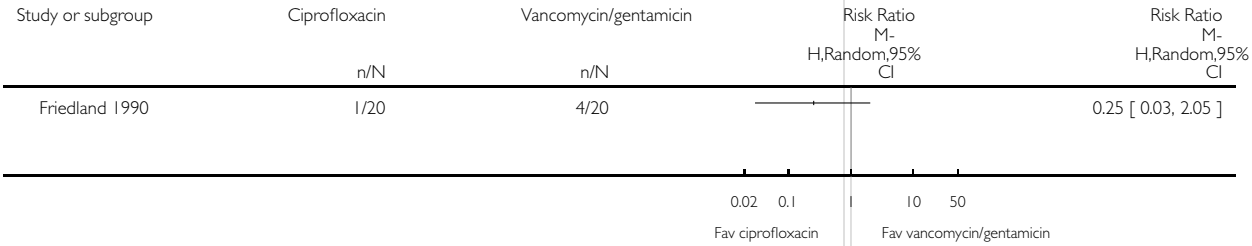


Analysis 17.4. Comparison 17 Intraperitoneal ciprofloxacin versus intraperitoneal vancomycin/gentamicin, Outcome 4 Catheter removal.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 17 Intraperitoneal ciprofloxacin versus intraperitoneal vancomycin/gentamicin

Outcome: 4 Catheter removal

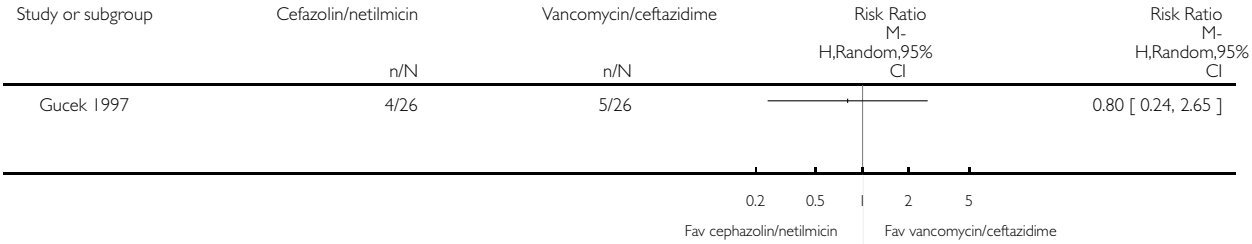


Analysis 18.1. Comparison 18 Intraperitoneal cephazolin/netilmicin versus intraperitoneal vancomycin/ceftazidime, Outcome 1 Primary treatment failure.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 18 Intraperitoneal cephazolin/netilmicin versus intraperitoneal vancomycin/ceftazidime

Outcome: 1 Primary treatment failure

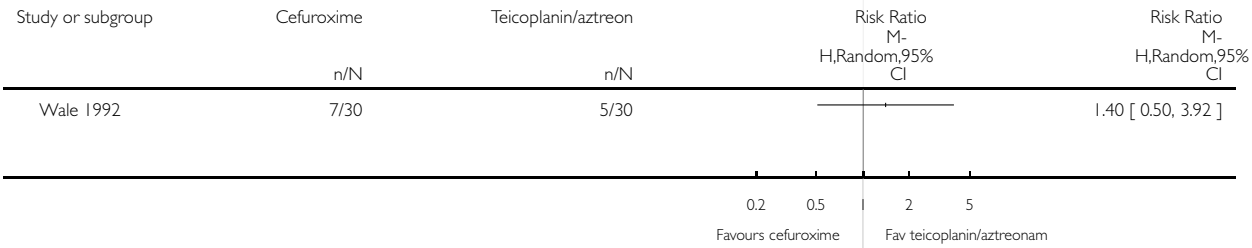


Analysis 19.1. Comparison 19 Intraperitoneal cefuroxime versus intraperitoneal teicoplanin/aztreonam, Outcome 1 Primary treatment failure.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 19 Intraperitoneal cefuroxime versus intraperitoneal teicoplanin/aztreonam

Outcome: 1 Primary treatment failure



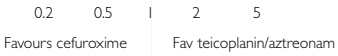
Analysis 19.2. Comparison 19 Intraperitoneal cefuroxime versus intraperitoneal teicoplanin/aztreonam, Outcome 2 Relapse.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 19 Intraperitoneal cefuroxime versus intraperitoneal teicoplanin/aztreonam

Outcome: 2 Relapse

Study or subgroup	Cefuroxime n/N	Teicoplanin/aztreonam n/N	Risk Ratio M-H,Random,95% CI	Risk Ratio M-H,Random,95% CI
Wale 1992	5/30	5/30		1.00 [0.32, 3.10]



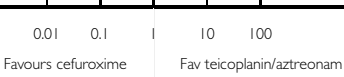
Analysis 19.3. Comparison 19 Intraperitoneal cefuroxime versus intraperitoneal teicoplanin/aztreonam, Outcome 3 All-cause mortality.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 19 Intraperitoneal cefuroxime versus intraperitoneal teicoplanin/aztreonam

Outcome: 3 All-cause mortality

Study or subgroup	Cefuroxime n/N	Teicoplanin/aztreonam n/N	Risk Ratio M-H,Random,95% CI	Risk Ratio M-H,Random,95% CI
Wale 1992	0/24	2/23		0.19 [0.01, 3.80]

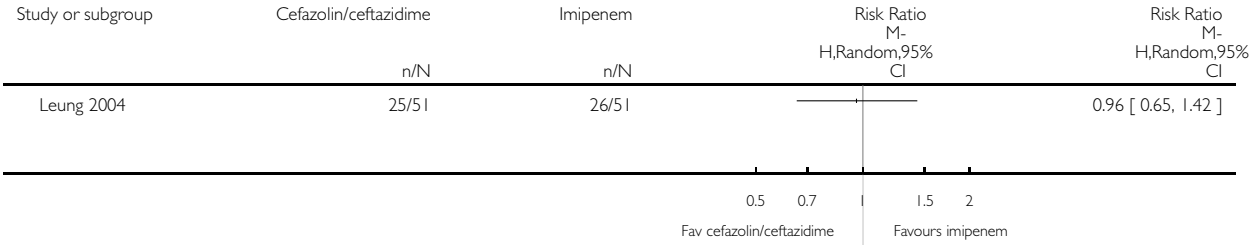


Analysis 20.1. Comparison 20 Intraperitoneal cefazolin/ceftazidime versus intraperitoneal imipenem, Outcome 1 Primary treatment failure.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 20 Intraperitoneal cefazolin/ceftazidime versus intraperitoneal imipenem

Outcome: 1 Primary treatment failure

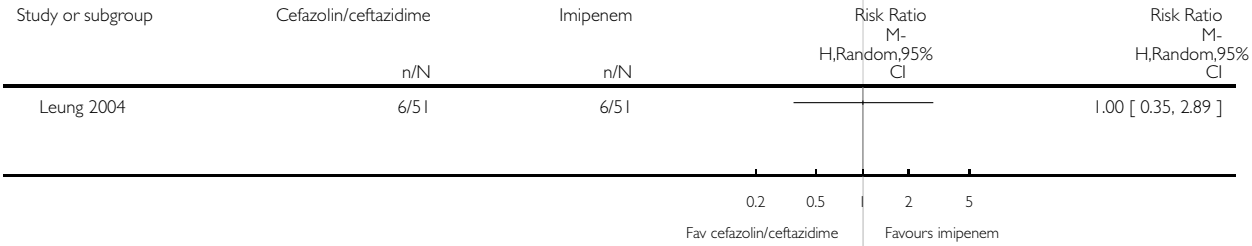


Analysis 20.2. Comparison 20 Intraperitoneal cefazolin/ceftazidime versus intraperitoneal imipenem, Outcome 2 Catheter removal.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 20 Intraperitoneal cefazolin/ceftazidime versus intraperitoneal imipenem

Outcome: 2 Catheter removal

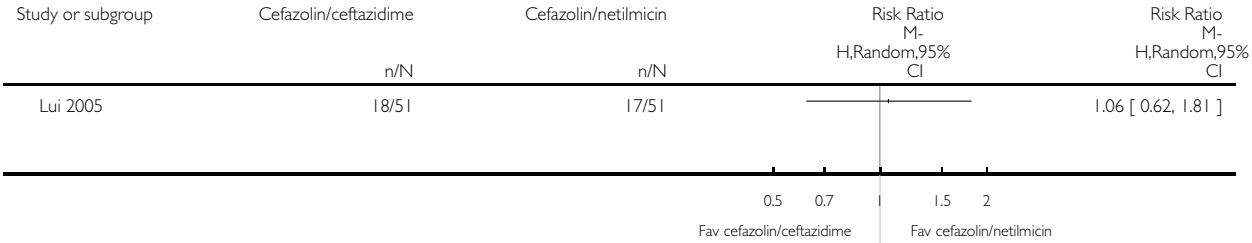


Analysis 21.1. Comparison 21 Intraperitoneal cefazolin/ceftazidime versus intraperitoneal cefazolin/netilmicin, Outcome 1 Failure to achieve complete cure.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 21 Intraperitoneal cefazolin/ceftazidime versus intraperitoneal cefazolin/netilmicin

Outcome: 1 Failure to achieve complete cure

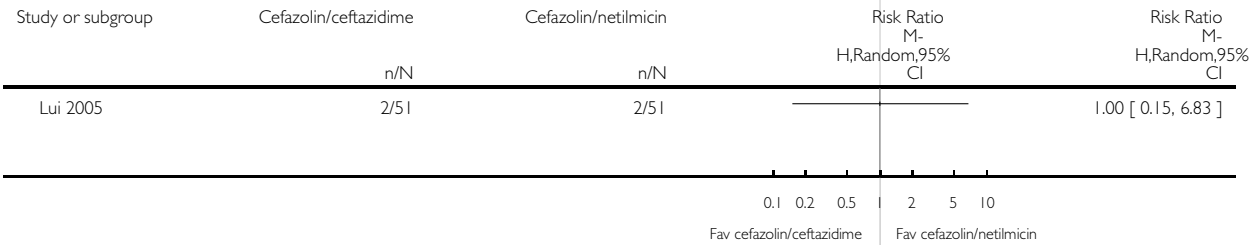


Analysis 21.2. Comparison 21 Intraperitoneal cefazolin/ceftazidime versus intraperitoneal cefazolin/netilmicin, Outcome 2 Relapse.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 21 Intraperitoneal cefazolin/ceftazidime versus intraperitoneal cefazolin/netilmicin

Outcome: 2 Relapse

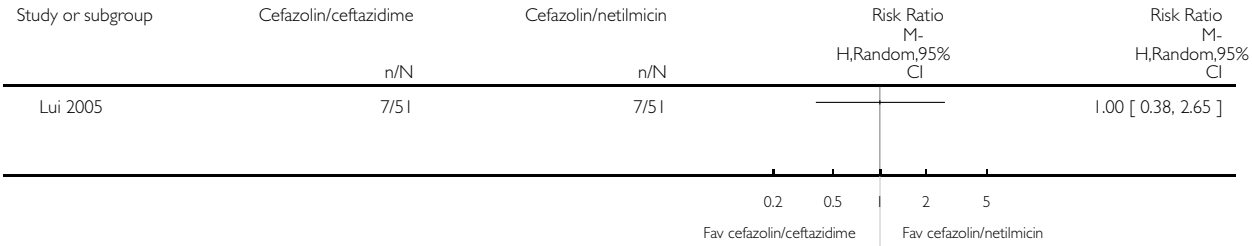


Analysis 21.3. Comparison 21 Intraperitoneal cefazolin/ceftazidime versus intraperitoneal cefazolin/netilmicin, Outcome 3 Catheter removal.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 21 Intraperitoneal cefazolin/ceftazidime versus intraperitoneal cefazolin/netilmicin

Outcome: 3 Catheter removal

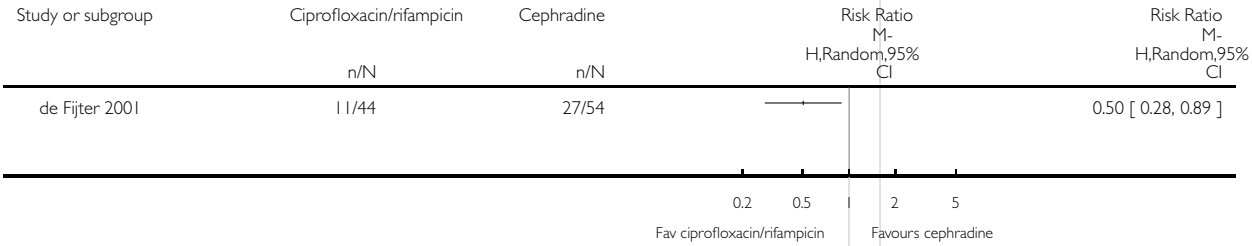


Analysis 22.1. Comparison 22 Intraperitoneal ciprofloxacin/rifampicin versus intraperitoneal cephradine, Outcome 1 Primary treatment failure.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 22 Intraperitoneal ciprofloxacin/rifampicin versus intraperitoneal cephradine

Outcome: 1 Primary treatment failure

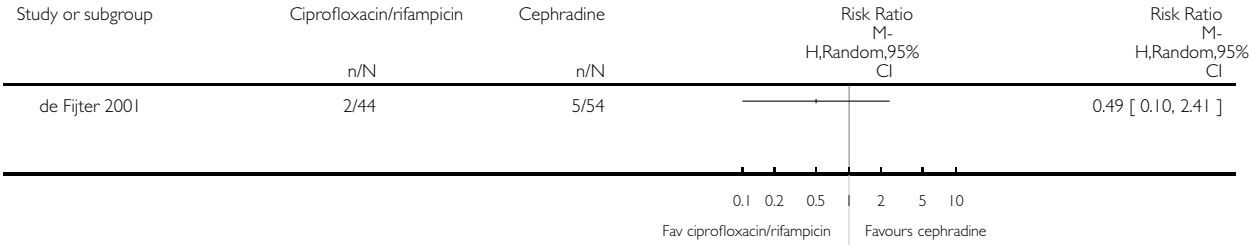


Analysis 22.2. Comparison 22 Intraperitoneal ciprofloxacin/rifampicin versus intraperitoneal cephradine, Outcome 2 Relapse.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 22 Intraperitoneal ciprofloxacin/rifampicin versus intraperitoneal cephradine

Outcome: 2 Relapse

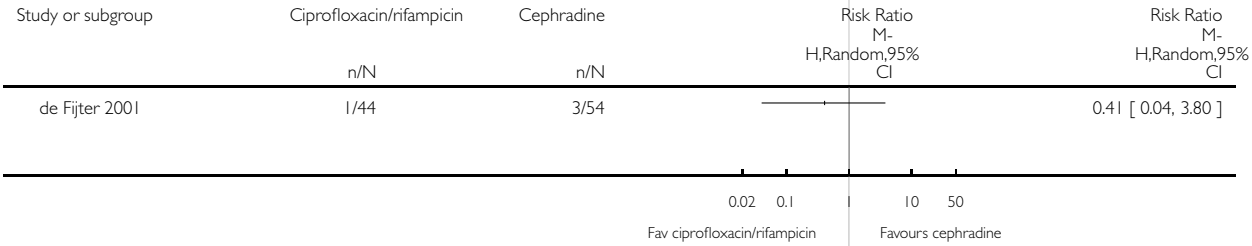


Analysis 22.3. Comparison 22 Intraperitoneal ciprofloxacin/rifampicin versus intraperitoneal cephradine, Outcome 3 Catheter removal.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 22 Intraperitoneal ciprofloxacin/rifampicin versus intraperitoneal cephradine

Outcome: 3 Catheter removal

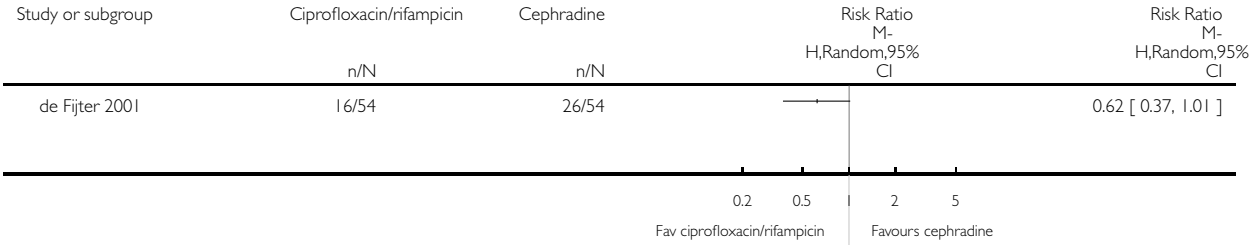


Analysis 22.4. Comparison 22 Intraperitoneal ciprofloxacin/rifampicin versus intraperitoneal cephradine, Outcome 4 Microbiological eradication.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 22 Intraperitoneal ciprofloxacin/rifampicin versus intraperitoneal cephradine

Outcome: 4 Microbiological eradication

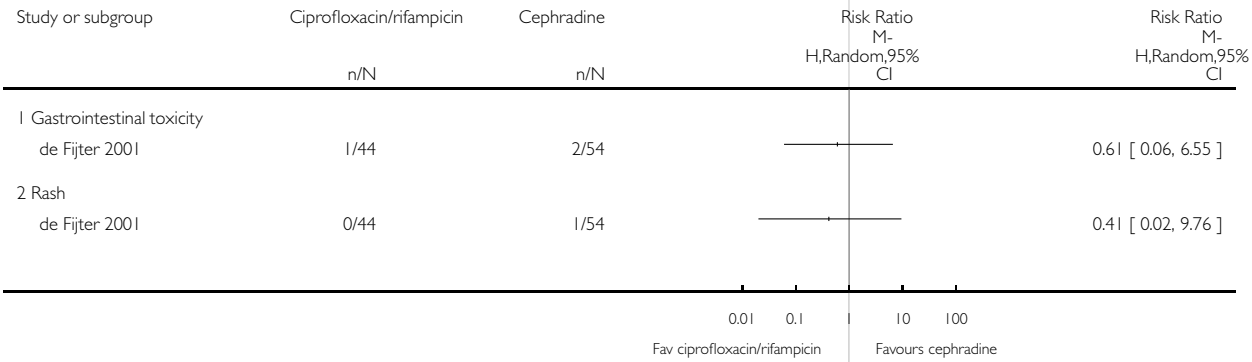


Analysis 22.5. Comparison 22 Intraperitoneal ciprofloxacin/rifampicin versus intraperitoneal cephradine, Outcome 5 Adverse events.

Review: Treatment for peritoneal dialysis-associated peritonitis

Comparison: 22 Intraperitoneal ciprofloxacin/rifampicin versus intraperitoneal cephradine

Outcome: 5 Adverse events



APPENDICES

Appendix 1. Electronic search strategies

Database	Search terms
CENTRAL	#1 PERITONEAL DIALYSIS #2 (peritoneal next dialysis) #3 pd #4 capd #5 ccpd #6 (#1 or #2 or #3 or #4 or #5) #7 PERITONITIS #8 peritonitis #9 periton* #10 infect* #11 (#9 and #10) #12 PERITONEUM #13 BACTERIAL INFECTIONS AND MYCOSES #14 (#12 and #13) #15 (#7 or #8 or #11 or #14) #16 (#6 and #15)
MEDLINE	1. exp peritoneal dialysis/ 2. peritoneal dialysis.tw. 3. (PD or CAPD or CCPD).tw. 4. or/1-3 5. Peritonitis/ 6. peritonitis.tw. 7. (periton$ and infect$).tw. 8. exp Peritoneum/ 9. exp “bacterial infections and mycoses”/ 10. 8 and 9 11. or/5-7,10 12. 4 and 11
EMBASE	1. continuous ambulatory peritoneal dialysis/ or peritoneal dialysis/ 2. peritoneal dialysis.tw. 3. (PD or CAPD or CCPD).tw. 4. or/1-3 5. exp Peritonitis/ 6. peritonitis.tw. 7. (periton$ and infect$).tw. 8. exp peritoneal cavity/ or exp peritoneum/ 9. exp Infection/ 10. 8 and 9 11. or/5-7,10 12. 4 and 11

WHAT'S NEW

Last assessed as up-to-date: 4 November 2007.

Date	Event	Description
18 March 2010	Amended	Contact details updated.

HISTORY

Protocol first published: Issue 2, 2005

Review first published: Issue 1, 2008

Date	Event	Description
11 June 2008	Amended	Converted to new review format.

CONTRIBUTIONS OF AUTHORS

Screening of titles and abstracts: KW, GFMS

Study eligibility: KW, GFMS

Quality assessment, data extraction, data analysis: KW, GFMS

Writing of review: KW, GFMS, DJ, JC

Disagreement resolution: DJ and JC

DECLARATIONS OF INTEREST

Professor David Johnson is a consultant for Baxter Healthcare Pty Ltd and has previously received research funds from this company. He has also received speakers' honoraria and research grants from Fresenius Medical Care.

INDEX TERMS

Medical Subject Headings (MeSH)

Administration, Oral; Anti-Bacterial Agents [administration & dosage]; Fibrinolytic Agents [therapeutic use]; Immunoglobulins [therapeutic use]; Infusions, Parenteral; Injections, Intravenous; Peritoneal Dialysis [*adverse effects]; Peritoneal Lavage; Peritonitis [drug therapy; etiology; *therapy]; Randomized Controlled Trials as Topic; Urokinase-Type Plasminogen Activator [therapeutic use]

MeSH check words

Humans