Authors' objectives
To determine whether there are accurate, reliable tests to diagnose chronic abacterial prostatitis (CAP), and whether there are effective therapies for this disorder.

Searching
MEDLINE was searched from 1966 to March 1999 and an outline of the search strategy was reported; the full search strategies were described elsewhere. The Cochrane Library, reference lists of identified studies, and previous reviews were also searched for additional articles. An expert in prostatitis was consulted to identify additional treatment trials. No language restrictions were applied.

Study selection
Study designs of evaluations included in the review
Diagnostic case-control studies and randomised controlled trials (RCTs) or controlled clinical trials comparing two active treatments or treatment versus placebo were eligible for inclusion.

Specific interventions included in the review
No inclusion criteria relating to the index test were specified for diagnostic articles. Studies of a variety of diagnostic tests were included, e.g. components of clinical history, transrectal ultrasound, and biochemical, immunological and microbiological evaluations of urine or expressed prostatic excretions (EPS).

Articles on pharmacological or device therapies were eligible for inclusion. The treatments assessed in the included studies were: finasteride, alfuzosin, phenoxycbenzamine, Seaprose S plus hyperthermia, pentosan polysulphate sodium, minocycline, diazepam, allopurinol, amino acid preparation, pollen extract, and transrectal and transurethral microwave hyperthermia.

Reference standard test against which the new test was compared
The diagnostic articles did not specify any inclusion criteria relating to a reference standard of diagnosis. No reference standards of diagnosis were described.

Participants included in the review
Articles on diagnostic tests were eligible for inclusion if they described a control group and a group of men with a clinical diagnosis of CAP.

Articles on treatment were eligible for inclusion if they involved men with CAP.

Outcomes assessed in the review
No inclusion criteria relating to the diagnostic outcome measures were specified. The main outcome measures were sensitivity and specificity. The secondary outcomes were factors associated with CAP.

All treatment articles providing outcome data were eligible for inclusion. The main outcome was the change in urological symptom scale or global report of urinary tract symptoms. The secondary outcomes were changes in the prostate examination, uroflowmetry, urodynamics, analysis of urine, EPS and seminal fluid, and prostate ultrasonography.

How were decisions on the relevance of primary studies made?
The authors did not state how the papers were selected for the review, or how many reviews performed the selection.
Assessment of study quality

The quality of the diagnostic articles was assessed using seven methodological standards (see Other Publications of Related Interest).

The authors did not report a method for assessing the quality of the treatment articles.

The authors did not state how the papers were assessed for quality, or how many reviewers performed the quality assessment.

Data extraction

Two reviewers independently abstracted the data and resolved any discrepancies by discussion. Study characteristics and patient demographic information were abstracted for all studies. Details of the diagnostic test and results were abstracted for diagnostic articles. Enrolment criteria, therapy allocation, adverse effects, outcomes, and reasons for drop-out were abstracted for treatment articles.

Methods of synthesis

How were the studies combined?

A narrative synthesis of the studies, grouped by test or treatment type, was undertaken.

How were differences between studies investigated?

Differences between the studies were explored in the text.

Results of the review

Nineteen diagnostic test articles (1,384 men) met the inclusion criteria: four evaluated infection, eight evaluated inflammation, immunology and biochemistry, three investigated physiological factors, and four investigated ultrasonography.

Fourteen treatment trials (570 men) met the inclusion criteria: 7 RCTs and 7 controlled trials. Five studies used placebo and three used sham intervention.

Diagnostic articles.

No study met more than two of the seven methodological standards; twelve met only one.

No study identified a fastidious or uncommon organism, undetected by conventional culture, as a cause of CAP. One study, which used the four-glass quantitative culture test, found positive cultures from prostatic secretions (most commonly coagulase-negative staphylococci). Compared with the four-glass test, Nickel's simplified 'two-glass' had sensitivity and specificity of 91% for classifying CAP.

The included studies reported that men with CAP had higher levels of inflammatory markers (e.g. leukocytes, macrophages, interleukin-1beta) in EPS than the controls; the sensitivity and specificity of these measures were not reported.

Two small studies suggested that an immunologic analysis of prostatic fluid for antigen-specific antibodies may aid in the differential diagnosis of bacterial and abacterial prostatitis; the sensitivity and specificity were not reported.

The evidence for a relationship between zinc levels and CAP was contradictory.

Measures of depression and somatisation were higher in patients with CAP than in controls. However, the psychological profile of patients before the onset of symptoms was not reported; therefore, causality cannot be determined. The sensitivity and specificity for these parameters were not reported.

Ultrasonographic signs were associated with the presence of symptoms of CAP. In general, the sensitivity was high but
the specificity was low; ultrasonographic signs were not sufficiently specific to ascertain the presence of disease.

Treatment articles.

The studies were methodologically weak and involved small samples.

Four studies investigated the effectiveness of alpha-blockers in the treatment of CAP. The evidence was contradictory: one study reported improved symptom scores but no difference in pain ratings, one study reported no reduction in symptoms, one reported improvement in pain outcomes, and one reported improved symptoms in 50% of the patients.

Two studies reported pain reduction with anti-inflammatory medication.

There was no evidence for an improvement in symptoms with antibiotic medication.

Five studies evaluating transrectal or transurethral microwave thermotherapy noted an improvement in symptoms.

One study of allopurinol treatment reported improvements in patient-reported symptoms, investigator-graded prostate pain, and biochemical variables.

A study comparing the amino acid preparation PPC with pollen extract reported that 51% of the PCC-treated group, compared with 37% of the pollen extract group, noted 'moderate to excellent' symptom improvement.

Authors' conclusions

There is no 'gold' standard test for abacterial prostatitis, and the methodological quality of the available studies of diagnostic tests was low. The few treatment trials were methodologically weak and involved small samples. The routine use of antibiotics and alpha-blockers to treat CAP is not supported by the existing evidence.

CRD commentary

The review addressed a broad research question and, correspondingly, only limited inclusion criteria were specified. The description of the review methodology, the reporting of the included studies, and the summary of the available data were adequate. A limited number of sources were searched for primary studies and some relevant data might, therefore, have been overlooked. The authors' conclusions follow broadly from the data presented and they provide comprehensive recommendations for future research.

Implications of the review for practice and research

Practice: The authors stated that the routine use of antibiotics and alpha-blockers to treat CAP is not supported by the existing evidence. The chronic prostatitis classification system of the National Institutes of Health should be used to classify patients and code diagnoses. Clinicians who choose to perform the four-glass test should consider using the pre- and post-massage test (two-glass test) to classify patients with chronic prostatitis. Research: The authors stated that future studies of diagnostic and aetiological tests (including the unvalidated four-glass test) are needed and should meet methodological standards. In addition, further studies on the use of antibiotics or alpha-blockers for CAP are required. Finally, in small studies, thermal therapy appears to have clinically significant benefit; further evaluation is merited.

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